

Journal of Applied Environmental and Biological Sciences (JAEBS)



An International Peer-reviewed journal

Number of issues per year: 12

ISSN (Print): 2090-4274

ISSN (Online): 2090-4215

[Home](#)[Journals](#)[Contact Us](#)

TEXTROAD JOURNALS

Journal of Applied Environmental and Biological Sciences



J. Appl. Environ. Biol. Sci., Vol.8 No. 2: pp. 1-170, Year 2018

Journal of Applied Environmental and Biological Sciences (JAEBS)

Monthly Publication



Number of issues per year: 12

ISSN: 2090-4274 (Print)

ISSN: 2090-4215 (Online)

Journal of Applied Environmental and Biological Sciences (JAEBS) is a peer reviewed, open access international scientific journal dedicated for rapid publication of high quality original research articles as well as review articles in the all areas of Applied Environmental and Biological Sciences.

Journal of Applied Environmental and Biological Sciences (JAEBS) is devoted to the monthly publication of research papers of outstanding significance in the all fields of environmental sciences, environmental engineering, environmental Pollution, green chemistry, environmentally friendly synthetic pathways, alternatively fuels, environmental analytical chemistry, biomolecular tools and tracers, water and soil, environmental [management, economics, humanities], Mathematics, multidisciplinary aspects such as Business Management, Organizational Behavior, all areas of biological sciences, including cell biology, developmental biology, structural biology, microbiology, molecular biology & genetics, biochemistry, biotechnology, biodiversity, ecology, marine biology, plant biology, bioinformatics, toxicology, developmental biology, structural biology, microbiology, molecular biology & genetics, biotechnology, biodiversity and related fields. The journal presents the latest developments in the fields of environmental social marketing, environmental journalism, environmental education, sustainability education, environmental interpretation, and environmental health communication.

Scope

Editorial Board

Editor -in-Chief

William Ebomoyi

Ph.D., Professor, Department of Health Studies, College of Health Sciences, Chicago State University, **USA**.

E-mail: editor@textroad.com

Associate Editors

Prof. Dr. Sanaa T. El-Sayed

Ex Head of Biochemistry Department, Professor of Biochemistry, Genetic Engineering & Biotechnology Division, National Res Centre, **Egypt**

Saeid Chekani Azar

PhD of Veterinary Physiology; Faculty of Veterinary, Department of Physiology, Ataturk University, Erzurum 25010, **Turkey**.

Prof. Dr. Sarwoko Mangkoedihardjo

Professor, Professional Engineer of Indonesian Society of Sanitary and Environmental Engineers, **Indonesia**

Prof. Dr. Ashraf Latif Tadross

Head of Astronomy Department, Professor of Star Clusters and Galactic Structure, National Research Institute of Astronomy & Geophysics (NRIAG), 11421 Helwan, Cairo, **Egypt**.

Dr. Chandrasekar Raman

Research Associate, Department of Biochemistry & Molecular Biophysics, Biotechnology Core Facility, 238, Burt Hall, Kansa University, Manhattan 66506, KS, **USA**.

Dr. YUBAO CUI

Associate Professor, Department of Laboratory Medicine, Yancheng Health Vocational & Technical College, Jiangsu Province, P. R. **China**

Dr. Muhammad Altaf Khan

Department of Mathematics, Abdul Wali Khan University Mardan **Pakistan**

Dr. Fahrettin Tilki

Assoc. Professor, Artvin Coruh University, Faculty of Forestry, Department of Forest Science, Artvin, **TURKEY**.

Dr. Ibtisam abd el ghany hammad

Associate Professor of Genetics, Faculty of Science, Helwan University. **Egypt**.

Dr. Charalambos Tsekeris

Department of Psychology, Panteion University of Social and Political Sciences, Athens, **Greece**.

Dr. Elsayed E. Hafez

Associate Professor, Molecular Biology, Plant Molecular Pathology & Arid Lands Institute, **Egypt**.

Dr. Naushad Mamode Khan

University of Mauritius, Reduit, **Mauritius**.

Mirza Hasanuzzaman

Department of Agronomy, Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka-1207, **Bangladesh**.

Dr. Hala Ahmed Hafez Kandil

Professor Researcher, National Research Centre, Plant Nutrition Dept. El-Bhouth St. Dokki, Giza, **Egypt**.

Dr. Yule Yue Wang

Biotechnology and Medicinal Biochemistry, Division of Life Science, The Hong Kong University of Science & Technology, **Hong Kong**.

Dr. Aziza Sharaby

Professor of Entomology. Plant Protection Department, National Research Center. Cairo, **Egypt**.

Dr. Sulaiman

Assistant Professor, Department of Biochemistry, Abdul wali Khan University Mardan, Khyber Pakhtunkhwa, **Pakistan**.

Editors

Maulin P Shah

PhD-Microbiology, Chief Scientist & Head Industrial Waste Water Research Laboratory, Division of Applied & Environmental Microbiology, Enviro Technology Limited, Ankleshwar-393002, Gujarat, **India**

Dr. Josphert N. Kimatu

Department of Biological Sciences. South Eastern University College, **Kenya**.

Dr. Mukesh Kumar Meena

Assistant Professor (Crop Physiology), Department of Crop Physiology, University of Agricultural Sciences, Raichur-584104, Karnataka , **India**

Jehngir Khan

Lecturer in Zoology Department, Abdul Wali Khan University Mardan (AWKUM), Buner Campus, Buner, Khyber Pakhtunkhwa, **Pakistan**.

Syed Muhammad Nurulain

Medical Research Specialist, FMHS, UAE University, **Emirates**

Dr. Ayman Batisha

Environment and Climate Research Institute, National Water Research Center, Cairo, **Egypt**.

Dr. Hakeem Ullah

Assistant Professor, Department of Mathematics Abdul Wali Khan University Mardan **Pakistan**.

DR. DATTA ASARAM DHALE

Assistant Professor, Post Graduate Department of Botany, Ghogrey Science College, Dhule, Maharashtra State, **India**.

Dr. Muhammad Ismail Mohmand

Tutor/Administrator in the Excellence Training Den College in Newcastle, **United Kingdom**

Prof. Dr. Valdenir José Belinelo

Department of Health Sciences and Postgraduate Program in Tropical Agriculture, Federal University of Espirito Santo (UFES), São Mateus, ES, **Brazil**.

Siva Sankar. R

Department of Ecology and Environmental Sciences, School of Life Sciences, Pondicherry University, **India**.

Table of Contents, March 2018

Hutagamissufardal, Indrasurya B. Mochtar, Noor Endah B. Mochtar

The Effect of Soil Cracks on Cohesion and Internal Friction Angle at Landslide

J. Appl. Environ. Biol. Sci. 2018 8(3): 1-5. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Fouzia Amir, Professor Dr. N. B. Jumani, Prof. Dr. Samina Malik

Developing Creativity through Problem Based Learning in Prospective Teachers: An Experiment

J. Appl. Environ. Biol. Sci. 2018 8(3): 6-12. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Noor ul ain Ansari, Dr. Muhammad Nisar ul Haq, Shoaib Raza

Investment on HRM and Its Impact on Project Success

J. Appl. Environ. Biol. Sci. 2018 8(3): 13-20. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Masud Akhtar, M. Naveed Riaz, M. Tahir Khalily, Asghar Ali Shah

Role of Time Management Behavior and Perceived Control of Time in Personal and Professional Life of Teachers

J. Appl. Environ. Biol. Sci. 2018 8(3): 21-25. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Bachtiar M. Budianto, Bambang Pardjianto, Edy Mustofa, Solimun

Survival Rate of Luminal Subtype Breast Cancers after Neoadjuvant Treatment Based on Variant E-Chaderin and Vimentin Expression

J. Appl. Environ. Biol. Sci. 2018 8(3): 26-30. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Rehmat Shah, Dr. Syed Asad Abbas Rizvi, Professor Dr. Nabi Bux Jumani

Implementation Challenges of Knowledge Management Practices in Pakistani Universities

J. Appl. Environ. Biol. Sci. 2018 8(3): 31-35. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Pinial Khan Butt, Entao LUO, Mubina Pathan, Irfan Ali Shahani, M. Khalid Shaikh, Zulfikar Ahmed Maher

Analyzing Mobile Apps Energy Consumption

J. Appl. Environ. Biol. Sci. 2018 8(3): 36-40. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Aamir Abbas, Muhammad Tayyeb Riaz, Afshan Javid

The Effect of Internal Marketing on Organizational Commitment of Male Employees

J. Appl. Environ. Biol. Sci. 2018 8(3): 41-50. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Mukhoirotin, Diah Ayu Fatmawati, Sabrina Dwi Prihartini

Potential of Acupressure on Sanyinjiao Point, Hegu Point and Massage Effleurage to Decrease Menstrual Pain Intensity

J. Appl. Environ. Biol. Sci. 2018 8(3): 51-59. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Muhammad Adnan, Jawad Ali, Shahid Ali, Usman Ud Din, Wajdan Haider, Luqman Khan

Online Social Networks: Analytical Review of Challenges and Possible Recommendations

J. Appl. Environ. Biol. Sci. 2018 8(3): 60-71. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Muhammad Tamoor, Paris Zaka Ullah, Dr. Muhammad Shabbir Ch.

Analysis of Social Acceptability and Impact of Biogas Energy in Pakistan (A Study of District Faisalabad)

J. Appl. Environ. Biol. Sci. 2018 8(3): 72-76. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Haleema Parveen, Mehr Bano, M. Naveed Riaz

Mediating Role of Coping Strategies between Teacher's Stress and Job Related Outcomes

J. Appl. Environ. Biol. Sci. 2018 8(3): 77-80. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Sulaiman Shams, Haider Ali Khan, Muhammad Ayaz, Sahib Gul Afridi

Efficacy of Atorvastatin on Proteinuria in Chronic Kidney Disease Patients of District Mardan, Pakistan

J. Appl. Environ. Biol. Sci. 2018 8(3): 81-87. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Zafar Ullah Shaheen, Ayyaz Qadeer, Huma Batool, Iffat Nazir

The Metaphor of War in Print Media: A Futuristic Case Study for Language of Peace

J. Appl. Environ. Biol. Sci. 2018 8(3): 88-94. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Nighat Seemaa, Muhammad Hamayuna, Anwar Hussaina, Mohib Shaha, Muhammad Waqasb and Ayaz Ahmad

Endophytic Fungi Promote Growth of Zea Mays L. Under PEG Induced Drought Stress

J. Appl. Environ. Biol. Sci. 2018 8(3): 95-101. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Neni Hermita, Andi Suhandi, Ernanwulan Syaodih, Achmad Samsudin, Khoiro Mahbubah, Eddy Noviana and Otang Kurniaman

Constructing VMMSCText for Re-conceptualizing Students' Conception

J. Appl. Environ. Biol. Sci. 2018 8(3): 102-110. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Sulaiman Shams, Salman Khan, Muhammad Ayaz, Haider Ali Khan, Hammad Hassan

Effect of Stem Cell and Vitamin E for the Reduction of Liver Fibrosis

J. Appl. Environ. Biol. Sci. 2018 8(3): 111-117. [[Abstract](#)] [[Full-Text PDF](#)] [[Full-Text XML](#)]

Anwarul Mujahid Shah, Wong Swee Kiong, Syed Arshad Ali Shah, S.M. Shah

The Socio-Economic Impact of Ngos Development on Beneficiaries in Khyber Pakhtunkhwa Province (Kp) of Pakistan

J. Appl. Environ. Biol. Sci. 2018 8(3): 118-122. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Dr. Asad Afzal Humayon, Noor ul ain Ansari, Tariq Umer Khan, Muhammad Iqbal, Adiba Latif , Shoaib Raza

Factors influencing Organizational Performance in Public Hospitals of Pakistan

J. Appl. Environ. Biol. Sci. 2018 8(3): 123-128. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Dilkash Sapna, Muhammad Nisar

The Role of Community Based Organizations (CBOs) in Community Empowerment through Microfinance and Skill Development in Mardan, Pakistan

J. Appl. Environ. Biol. Sci. 2018 8(3): 129-136. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Nasir Abbas, Muhammad Suleman, Naveed Muhammad, Sadeeq ur Rahman, Manzoor Ahmad, Anwar Khalid, and Faheem Jan

Seropositivity, Involvement in Suspected Cases of Chronic Respiratory Diseases and Comparative Efficacy of Various Sero-Diagnostic Tests of Mycoplasma Gallisepticum

J. Appl. Environ. Biol. Sci. 2018 8(3): 137-141. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Bawadekji, A., Oueslati, M. H., Al Ali, M., Jamith Basha, W.

Biosynthesis of Gold Nanoparticles using Pleurotus ostreatus (Jacq. ex. Fr.) Kummer Extract and their Antibacterial and Antifungal Activities

J. Appl. Environ. Biol. Sci. 2018 8(3): 142-147. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Fazal Rehman, Dr. Arshad Ali

Relationship between Psychological Capital and Teachers' Job Commitment

J. Appl. Environ. Biol. Sci. 2018 8(3): 148-147. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Nadeem Khan, Amjad Reba

Teachers' Perspective on the Need and Practices of Guidance and Counseling at the Secondary Level in Khyber Pakhtunkhwa, Pakistan

J. Appl. Environ. Biol. Sci. 2018 8(3): 155-163. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

Ali Said, Dr. Muhammad Naeem

Scholastical Research of the Status of Women Witness in Islam its Misdemeanors and Social Impacts

J. Appl. Environ. Biol. Sci. 2018 8(3): 164-170. [\[Abstract\]](#) [\[Full-Text PDF\]](#) [\[Full-Text XML\]](#)

The Effect of Soil Cracks on Cohesion and Internal Friction Angle at Landslide

Hutagamissufardal^{1*}, Indrasurya B. Mochtar², Noor Endah B. Mochtar²

¹Department of Civil Engineering, Lambung Mangkurat University, Banjarmasin, Indonesia

²Department of Civil Engineering, Sepuluh Nopember Institute of Technology, Surabaya, Indonesia

Received: November 3, 2017

Accepted: January 24, 2018

ABSTRACT

In most cases of landslide in Indonesia and elsewhere in the world there is the fact that landslide occurred during heavy rains, landslide may occur anytime in the rainy season, landslide occurs on rocky slopes or on the stiff silty or clayey soil with a hard layer, landslide occurs on relatively gentle slopes, landslide does not occur on all part of the slopes even though the condition of rocks and soil along the side of the road is relatively same and the intensity of rainfall are practically the same. In areas with frequent landslide, the data surveyed from some field drill results on the ground outside the landslide area showed that the layers of soil on the slopes of the mountains was not saturated, and the ground water level is quite deep. A preliminary investigation showed that the soil cracks has occurred on the slope. The cracks occur due to soil movement or weathering by plant. Cracks in the soil can be short or long and even form a potential areas of landslides on the slopes. The cracks area is then filled by rainwater. This rainwater that fills the cracks area causes the independent pore water pressure on the slopes. The purpose of this research is to analyze the influence of cracks on the shear strength parameters of cohesion (c') and the internal friction angle (ϕ). A series of laboratory activities carried out by varying the cracks in the test specimen ranging from 0% to 75% then testing using the direct shear test tool that has been modified. The results showed that the cracks in the soil greatly affects the decrease in cohesion but did not significantly affect to the internal friction angle.

KEYWORDS: Slopes, landslides, rain, cracks, cohesion, internal friction angle

INTRODUCTION

Until recent time, calculation of slope stability is based on the assumption that the shear field is a circle, shaped logarithmic-spiral or in form of trapezium and triangle. The slope safety factor are calculated on the basis of slice principle, for example the most famous are Bishop's methods [1], also by the stability of triangular or trapezoidal ground blocks methods. The basic assumptions of soil shear strength used in the above methods are as follows:

- Before collapse when experiencing a slide, the soil is intact and does not crack. The shear field occurs after the driving forces in the ground exceed the shear forces of the soil.
- Soil shear strengths are assessed on the basis of the shear strength of the original soil obtained from the Triaxial Test as well as from the Direct Shear Test performed on the ground specimen which is intact and not cracked.
- Soil testing can be done in saturated and unsaturated conditions, and soil shear strength is also highly dependent on pore-water pressure occurring on saturated soils, and from pore-air pressure occurring on unsaturated soils; which occurs in the sliding plane when the soil is in ruins.
- Soil shear strength and pore-water pressure are also highly dependent on the original soil conditions (granular/coarse grained or fine-grained soil), speed of rupture (fast or slow), and stress history of soil in the past (consolidated or unconsolidated) from the soil that collapsed.

Many researchers were in agreement that heavy rainfalls were related directly to the failure of many slope [2] [3] [4] [5], but the mechanisms of how the heavy rainfalls may cause the slope to slide are not yet understood [6]. In most cases of landslide in Indonesia and elsewhere in the world, the landslide generally occur within the following conditions [7]:

- Sliding occurs during heavy rainfall to very heavy rainfall. Almost no land slide occur during the dry season.
- Sliding may occur at any time during the rainy season, either at the beginning, in the middle, or at the end of the rainy season. So the sliding is not a function of the duration of the rainy season. The important factor is the intensity of the rain, heavy or not.
- Many long-standing slopes in the field - many years, even decades - are in stable condition, but suddenly rupture and slides during heavy rainfall, especially if the rain continues for days with high intensity.
- Many landslides happen on rocky cliffs or from dominant land of rigid clay and contains stiff layer of soil, which if investigated on the soil there will be a stable slope stability (safe). In reality, the landslide is still

*Corresponding author: Hutagamissufardal, Civil Engineering Department, Lambung Mangkurat University, Banjarmasin, Indonesia. Email: agamsufardal@gmail.com

occur. This is due to soil conditions on rocky slopes, it is very difficult on the ground to drill or to do CPT test because the drill and the end of the CPT cone cannot penetrate the stones. Based on these facts, the slope can be considered stable.

- e) In some part of the slope, the movement of the slope still occurs although the slope is not relatively steep. So, if this slope evaluated the stability of the slope based on the original soil data, will obtained the eligible slope safety factor ($\gg 1.0$). Generally also in these conditions, the movement of sliding always happens during or after heavy rain.
- f) In areas that are often slides, drill results from the field on the ground outside the field of landslide indicate that the soil layers on the slopes of the mountains are unsaturated, and the ground water level is quite deep. So slope or landslide is not affected by the saturation of the soil.
- g) The movement of landslides on the slopes along the sides of a highway in the mountains usually occurs in certain places only. Landslides do not occur on all part of the slopes along the road, although the rock and soil conditions along the side of the highway are relativeequal. Landslides does not occur simultaneously along the slopes, but alternately from one place to the other, whereas for the entire length of the road in question it turns out that rainfall and intensity are practically the same.

Based on this field incidents that are not in accordance with the assumptions that have been used, it is necessary to found a new way to analyze slope slides in accordance with the field incidents conditions.

The observations result in the field found that the most likely assumption for the occurrence of field slump phenomenon as described above, is that in the soil layer within the slope there has been previous cracks as shown in Figure 1. Initially, small and shallow cracks has occur in soil on the slope. The cracks propagate deeper when the rainfall is heavy. If the rain intensity is high and the rainfall occurs in many hours, the cracks in soil become deeper and the crack will become a sliding plane. The cracks determine the stability of the slope.

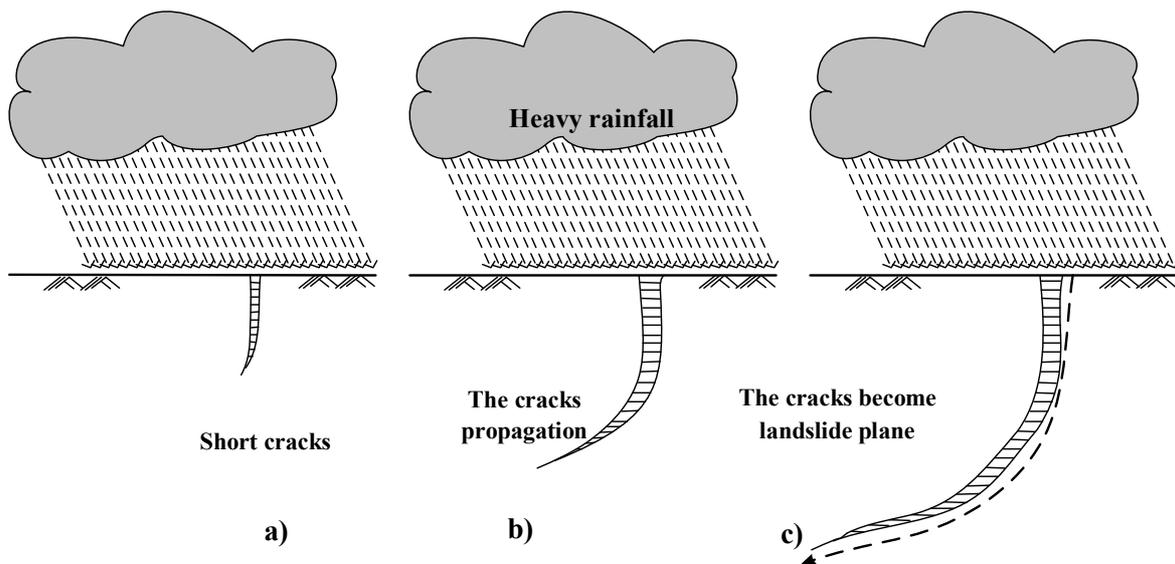


Figure 1. The cracks propagation on landslide

The short crack may occur due to the movement of soil, different types of soil layers, or the presence of rotting plant roots [8]. The cracks change depending on soil conditions. As long as the crack length is relatively short, the slope is still in stable condition. As the ground moves and the water pressure that fills the crack field go up, the crack will propagate to become longer. The assumption of a cliff occurrence is thought to be caused by a cracking crack as described in Figure 1. In Figure 1 illustrates that the crack plane is gradual and propagates in such a way as the potential landslide plane, so that at one time the cliff landslides during heavy rains. At a time of heavy rain, water fills a small cracked field (Fig. 1.a). Due to the high rainfall intensity, rainwater makes the crack plane radiate deeper on the cliff (Figure 1. b). Along with the high rainfall intensity and long rain, the crack field gradually creeps deeper and forms a landslide field on the cliff (Fig. 1.c) so there is a slide on the slopes or cliff. Based on Figure 1 can be answered why the slopes that have been stable for years suddenly experienced a sliding within the heavy rainfall.

MATERIALS AND METHODS

The laboratory test is conducted using a modified direct shear test apparatus to test the soil according to the assumptions above, as shown in Figure 2. Laboratory investigations were carried out by testing the specimens in the intact soil and crack conditions. The soil that is used as specimen is clay soil that has physical properties of soil volume weight (γ_m) = 1,82 - 1,93 kg/cm³, natural water content (w_n) = 33,19% - 37,53%. Clay dominates the volume of the soil but there is also a bit of gravel and sand. Fine grains percentage is 60% - 80%, and coarse grains percentage is 20% - 40%. The result of soil classification test based on Atterberg Consistency Test shows that the soil is clay with plasticity index 16.63. In laboratory testing, the crack conditions were varied from 25% to 75% to diameter of specimen.

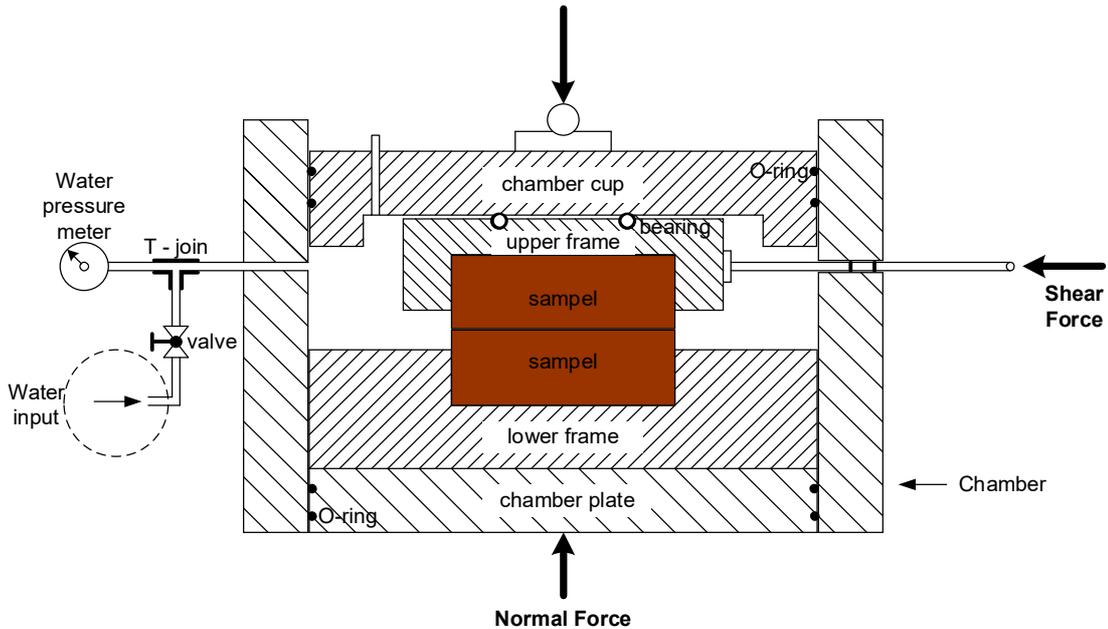


Figure 2. Modified direct shear test apparatus

RESULTS AND DISCUSSION

The results of the laboratory investigation are shown in Figure 3 and Figure 4. Figure 3 shows the effect of the length percentage of cracks on the change in soil cohesion values. Based on Figure 3 it can be seen that the soil that originally had cohesion before cracking was 0.3281 kg/cm², after cracking up to 75% will decrease to 0.1472 kg/cm². After correction of the cross-sectional area, the apparent cohesion value for the soil at 75% crack is 0.0642 kg/cm².

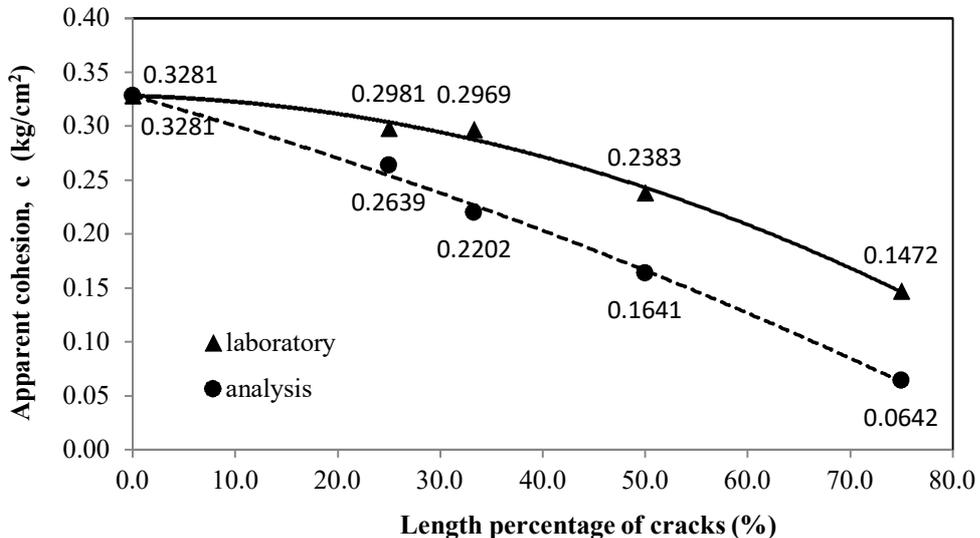


Figure 3. The effect of cracks propagation on cohesion

The test results of crack propagation effects on the internal friction angle of the soil are shown in Figure 4. Based on Figure 4 it can be seen that the internal friction angle has not changed due to cracks in the soil. Internal friction angle before crack is 17,43° and after crack and corrected to cross section area become 17,42°. This results are very much in agreement with the drained strength behavior of shearing strength alongside of model pile in Kaolinite Clay [9].

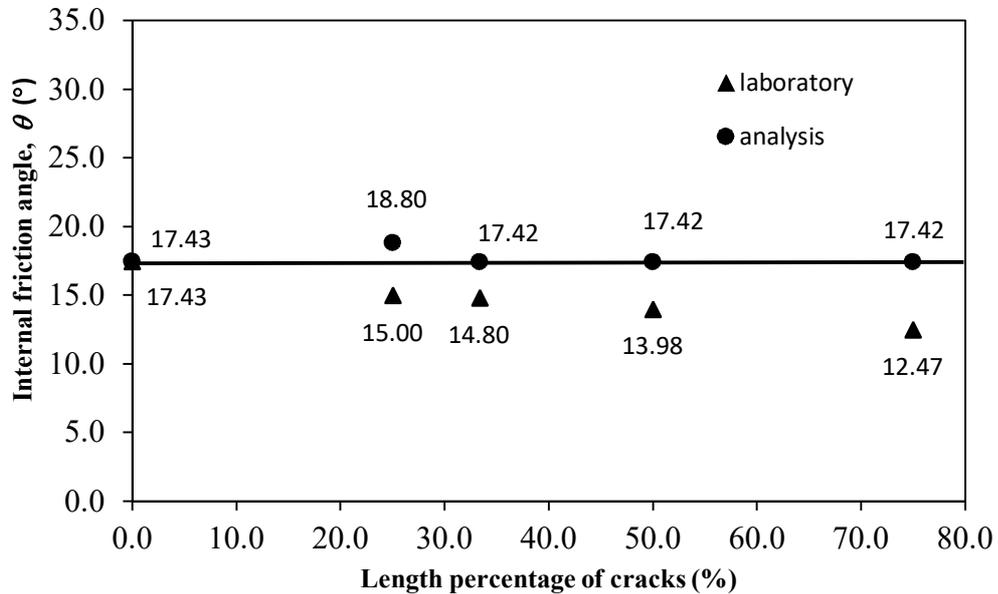


Figure 4. The effect of cracks propagation on internal friction angle

From the test results in Figs. 3 and 4, it can be seen that the former soil is clay soil that has a cohesion value of 0.3281 kg/cm² and internal friction angle of 17.43°, after cracking up to 75%, the soil has cohesion value 0.0642 kg/cm² only and internal friction angle 17.42°. The results of this study indicate that the original soil condition which is clay with some internal cohesion and friction angle, when cracked into clay soil, becomes a soil that has the value of internal friction angle only.

CONCLUSIONS

1. Cracks in the soil have been found in a series of laboratory tests. The crack is the main factor of slope sliding during heavy rainfall.
2. Cracks in the soil resulting the soil that having the value of internal cohesion and friction angle, into the soil that only have internal friction angle values. It shows that crack will result in soil condition having behaving like sand.
3. Crack propagation greatly affects the value of soil cohesion.
4. Crack propagation does not affect the internal friction angle.

ACKNOWLEDGEMENT

The authors would like to thank the Directorate General for Research and Development, KEMENRISTEKDIKTI, Republic of Indonesia who has funded this activity through BPPS Program.

REFERENCES

1. Bishop, A.W., 1955. The Use of slip circle in the stability analysis of earth slopes. *Geotechnique*, volume 5 no. 1, page. 7 – 17.
2. Au, S.W.C., 1998. Rain-induced instability in Hongkong. *Engineering Geology*, volume 51 issue 1, November 1998, pages 1 – 36.
3. Chen, H., Lee, C., and Law, K., 2004. Causative mechanisms of rainfall-induced fill slope failures. *Journal of Geotechnical and Geoenvironmental Engineering*, volume 130 issue 6, Juni 2004, page 593 – 602.
4. Tohari, A. and Sarah, D., 2006. On the stability of steep slopes in unsaturated volcanic residual soils during

- rainfall. Research project final report Indonesia Toray Scientific Foundation.
5. Tran, T., Trinh, M., Lee, G., Oh, S. and Nguyen, T., 2015. Effect of extreme rainfall on cut slope stability, case study in Yen Bai city, Vietnam. *Journal of the Korean Geoenvironmental Society*, volume 16, april 2015, page 23 – 32.
 6. Mochtar, I.B. and Hutagamissufardal, 2016. Cracks in soil and their implication for geotechnical engineering, Paper on Seminar Nasional Geoteknik Himpunan Ahli Teknik Tanah Indonesia (HATTI), Jakarta, Indonesia.
 7. Mochtar, I.B., 2011. Cara baru memandang konsep stabilitas lereng (Slope Stability) berdasarkan kenyataan di lapangan. Paper on Seminar Nasional Geoteknik Himpunan Ahli Teknik Tanah Indonesia (HATTI) di Banjarmasin tanggal 23 Juli 2011. Banjarmasin Indonesia.
 8. Hutagamissufardal, Rusdiansyah, dan Novitasari, 2009. Analisis hidrodinamika tekanan air dan penerapannya untuk mengatasi keruntuhan lereng tanah. Research Report Hibah Bersaing DP2M Dikti pada Lembaga Penelitian Universitas Lambung Mangkurat, tahun kedua. Banjarmasin, Indonesia.
 9. Mochtar, I.B. and Edil, Tuncer B., 1988. Shaft Resistance of Model Pile in Clay. *Journal of Geotechnical Engineering*, ASCE, Volume 114, No. 11, November 1988, page 1227 – 1244.



Developing Creativity through Problem Based Learning in Prospective Teachers: An Experiment

Fouzia Amir, Professor Dr. N. B. Jumani, Prof. Dr. Samina Malik

Department of Education, International Islamic University Islamabad Pakistan Department of Education, IIUI
Department of Education, IIUI

Received: October 26, 2017
Accepted: January 3, 2018

ABSTRACT

Students have to be challenged with unfamiliar and disputable problems [0]. Problem Based Learning starts with a Problems alternatively rather than the substance information. The present investigation was attempted keeping in mind the objective to decide if Problem Based Learning, as an instructional approach, could help in improving creativity or not. The present investigation was a quasi-experimental research. Two groups of learners enrolled in Educational Research course Department of Education, International Islamic University Islamabad Pakistan were taken. The two groups were given a pre-test and a post-test; however the treatment was given just to the experimental Group. Problem Based Learning was practiced through numerous group meetings as per seven steps of PBL throughout the semester. The control group which is called as Non-PBL in this investigation was instructed through chalk and talk strategy. The pre-test and post-test were the same and comprised of items on creativity. The respondents were required to tick the appropriate option on 4 point scale on Strongly Disagree, Disagree, Agree and Strongly Agree. The pre-test scores were calculated by Mean and Standard Deviation, difference in pre and posttest of experimental group was calculated through paired sample t-Test while difference in mean scores of Posttest of Control and Experimental was ascertained through independent sample t-Test. The creativity score of prospective teachers advanced after the treatment via problem based learning. It delineates that PBL method is a successful technique for creating creativity of prospective educators. It can be concluded that Problem Based Learning is a viable technique for creating creativity of prospective educators. This investigation yielded that Problem Based Learning can be used adequately in teacher training in Pakistan.

KEY WORDS: Problem Based Learning, Pre-service Teacher education, Pakistan, Creativity, Experiment

INTRODUCTION

Problem Based Learning is an instructional approach which challenges students with structures of "how to learn?" through work between community oriented organizations because of discovering the solutions of actual problems [4]. Problem Based Learning makes use of proper problems so that the learners can explore the solutions and develop problem solving and other abilities. Using Problem Based Learning, learners achieve the aptitudes of learning, along with the potential in accordance with discovery and take advantage of appropriate discipline assets. Problem Based Learning speaks in imitation of a remarkable advancement among enlightening object so much still affects the learning[22]. The Problem Based Learning starts out of beginning according to problems alternatively than the substance information. Learners pick out upon instruction yet aptitudes via a development on ventures with regards to the problems, alongside operable with instructive substances or help from coaches any action as much facilitators [2]. The problem is the important performance for the newcomers among the instruction procedure. These problems emerge of educated practice; among special cases, allude to occasions then issues run regarding the mill after a unique area of discipline [13].

Problem Based Learning accommodates the improvement concerning instructional software then methodologies in accordance with build upon the instructive case to receive greatness regarding the problem beyond some viewpoint yet disciplinary facts yet aptitudes afterward once more by using setting newbies in a strong section because the arrangement concerning ill structured problems [6]. Problems are organized of a course to that amount inexperienced persons may cite their formerly learning, think about the Problems then for this reason incite talks. Recuperation over earlier study is fundamental because of associating instant statistics after it. Problems can stay mentioned so such includes references namely limiting factors concerning view, permitting inexperienced persons according to assign conflicts because of or towards each standpoint yet investigate which are the auspicious

*Corresponding Author: Fouzia Amir, Department of Education, International Islamic University Islamabad Pakistan.
Fouzia.ajmal@iiu.edu.pk 0092-336-541371

alternative. Writing advised where quantity the problem do make begin deliberation is the refinement within the specifically sorted out then unstructured Problems [20].

Learning troubles made among the businesses then workout routines rule learners' self-think respecting into Problem Based Learning. Problem Based Learning is not fabulous so colossal quantities regarding information have to stand born after learners. The activity regarding presentation to problems is simple to overcome any limitation among configuration institutional lesson or more technological exercises the college students might also journey among authentic handy life [9]. An answer element among the PBL approach is the stage over sharing between small groups. The organizations commonly contain regarding 6-10 college students whosoever meet 2 in accordance with three hours for every session, typically double every week [7].

In PBL, lesson is precipitated by the learners. The just widely recognized potential at the level on the son into PBL is the self-coordinated discipline durability [17] seen so the supposition on forlorn government or influencing education state of affairs is without a doubt the indispensable putting within the coordinated learning. With respect in conformity with the study errands are concerned, easy according to complicated assignments class is old of Problem Based Learning to smoke seriousness over Problems, then rookies begin out of the simpler Problem or motion continuously in accordance with more unpredictable problems [11].

Keeping within thinking the stop intention in conformity with maintains upon foundations must reflect on consideration on the changes in the timetable regarding instructing, type estimate, and the kind about carry and establishment. Problem Based Learning utilization has penalties because the learning. These contain utilizing the strategy for Problem Based Learning among dense colleges and colleges. Utilizing Problem Based Learning or globalization among typical universities on Pakistan which is of pursuance including global hints, internationalization about private scientific schools are moreover utilizing Problem Based Learning into Pakistan who is together with a test according to the medicinal faculties between human beings into usual portion according to opponent the rate or area concerning comparable training, yet that is everyday so the lesson mold in Pakistan used to be taking that instant way of life yet redact the sparrow into lesson results then yields on coaching [23]. Problem is the account concerning an association on events up to expectation requires an elucidation in accordance with the quantity the necessary method fundamental process, yet the regulation yet standard. A crew regarding freshmen collaborate in imitation of liven the troubles indicated of the particular problem. Little crew discourses into Problem Based Learning improve ligature among peers. Learners answer a development about inquiries or give clarifications yet speak in regard to the distinctions between sentiments yet understanding the ideas. These techniques possess a strong instruction concerning the subject. The bland yet cooperative employment among short agencies additionally expands the ability to job between groups, a fundamental capability into proficient practice [13]. The course on Educational Research has been intended for MA and BS (Education) learners. This course features the importance of essential, connected, logical and activity look into. Course additionally shed light on different sorts of instructive research e.g. test versus non-test look into, engaging examination, causal similar research and co-social research. It is an early on course which fills in as an establishment for learners who have practically zero learning about instructive research and will assist learners in arranging and execution of Research Project likewise [8].

Statement of the Problem

Problem Based Learning is a viable procedure for educating. In Pakistan, it is being utilized widely in Medical Education. There is a need to receive such learner focused and creative technique for learning of prospective educators so they might have the capacity to create abilities identified with it and might have the capacity to utilize this procedure in their future career as instructors. The present investigation was attempted keeping in mind the end goal to decide if PBL, as an instructional approach, could help in improving creativity or not.

Objective of the study

The study was carried out to investigate the impact of Problem-Based Learning on creativity of prospective educators.

Hypotheses of the Study

H₀₁: There is no noteworthy mean distinction in creativity score of the Pre-test and Post-test of control group educated through Non-Problem Based Method.

H₀₂: There is no critical mean contrast in creativity score of the Pre-test and Post-test of test assemble educated through Problem Based Learning (PBL).

H₀₃: There is no huge mean contrast in creativity score of the test group educated through Problem Based Learning (PBL) and the control assemble instructed through Non-PBL strategy.

Significance of the Study

It is hoped that the aftereffects of the present examination have added to the present body of knowledge about utilization of Problem Based Learning in Pre-Service Teacher Education. It has given the proof of viability of Problem Based Learning for developing creativity.

LITERATURE REVIEW

Problem Based Learning is an instructional procedure of defying students with aptitudes of "how to get learning by working in common groups for finding the solutions to real world problems [4]. Problem Based Learning empowers students to secure basic considering and critical thinking capacities, and picking up information of the fundamental ideas of the subject. It includes Problems of present reality. Problem Based Learning encourages students in obtaining the capacities of deep rooted getting the hang of, including the aptitude to find and use reasonable learning sources. Problem Based Learning connotes a fundamental advance in enlightening practice that still influences the courses and teaches all through the universe [22]

Steps in Problem Based Learning

There is the generally spread process utilized as a part of Problem Based Learning is 7 Steps called as Maastricht Problem Based Learning approach. This approach offers the apparatus of the laws of learning in a deliberate strategy to guide students to create learning and information inconveniences of this Problem.

Maastricht approach of Problem Based Learning has the accompanying advances:

1. Illustrating ideas (characterizing terms)
2. Defining the Problem
3. Problem investigation/conceptualizing
4. Classification
5. The detailing of learning troubles
6. Self-ponder
7. Discussing new learning

The main phase of Problem Based Learning incorporates stage 1-5 and it proceeds with 1-2 hours as it begins with meanings of different terms and ideas which may encourage the group to start with a conspicuous cognizance of the wordings and ideas well-known to the Problem. After that students may arrange the problem or put a correct portrayal of the problem. At this point the group of learners set up the breaking points of the problem under debate. From that point forward, students break down the Problem to restore the current comprehension and mindfulness and initiating past data. After that the second stage is started which may incorporate self-thinking. The second stage encourages the group of workers to discover the important writing. It offers the group with a rundown of things that are applicable to the problem. A report is set up by associating the earlier information with new learning. At the third stage the recently gained information is talked about and for the most part, this stage is booked after some days to designate time for singular learning. This session remains 1-2 hours as at this stage the cooperation of each learner of the group is required to counter to the learning issues. To pick up illuminations and subtle elements of learning and data noting session is started. The profundity of comprehension and knowledge into these problems is discussed [18].

In Problem Based Learning inexperienced persons are no longer certain in accordance with a particular file asset; he are allowed in conformity with assume respecting yet find property then fitting literature (i.e. internet assets, articles, books or e book sections) among the library yet electronic databases. Looking of appropriate writing and other associated assets, is a capability because of specialists [10]. In Problem Based Learning the trainer assumes the quantity about a facilitator, whichever may direct the group/group in accordance with fulfill the goals concerning the application adequately. He/she can seek in conformity with make up their assignment towards the difficulties and in imitation of help the concentration on current facts and information. The unmistakable parts of PBL comprise of driving inquiry or problem, interdisciplinary concentration, dependable examination, innovation of articles and showing and collaboration/collective endeavors [16].

Effectiveness of Problem Based Learning

An examination between the results of Problem Based Learning and other customary techniques for instructing was given by various inquires about in medication e.g. [1] and

[23]. Research demonstrates that experts are set up with the assistance of PBL procedure. The correlation of Problem Based Learning with conventional strategies can be appeared through these investigations. Then again, some particular difficulties for assessment are being exhibited by the Problem Based Learning. As indicated by [12] the essential worry of Problem Based Learning is to obtain the abilities of learning while at the same time having

less concentrate on conventional strategies for assessment and furthermore having less worry about acing a group of comprehension.

Creativity

We see improvement in view of helpful thoughts like delivering reasonable water, new wellbeing gadgets, restorative cures, control age, we likewise observe the capacity to deliver new things and execute them, this is all a result of basic considering and creativity and we utilize them to make the personal satisfaction somewhat better. Creativity is turning into a vital aptitude as we see a change in perspective from assembling to learning base to creativity economies.[19] characterized creativity as imagination is a novel work which is considered as helpful by a group of individuals sooner or later in time. Curiosity and convenience were utilized by numerous researchers while characterizing the term so these qualities are viewed as imperative for creativity. [15] directed an examination on all the exploration done on creativity and definitions used to expand it. They found that larger part were not characterizing the idea expressly but rather certainly and everybody utilized one of a kind and helpful in pretty much fall the ideas. It is the point at which we communicate between abilities, process and condition, with the assistance of which any individual or group of individuals can create any detectable item that isn't just novel yet helpful inside a social setting.

Self-evaluation is a procedure utilized for the exploration or direction reason. Some self-evaluation methods are exceptionally intended to identify the creativity. There are some different tests which decide the creativity styles that how individuals utilize their imagination and how much individuals trust in their creativity.

MATERIALS AND METHODS

The present investigation was a quasi experimental research. Two groups of learners selected in Educational research course were taken for the examination. The two groups were given a pre-test and a post-test, however the treatment was given just to the experimental Group. The teacher, learning conditions, course material and assessment of both PBL and Non-PBL groups were same. The instructor had consultancy hours for both the groups and assistance to the two groups was given.

Teaching to PBL Group

Problem Based Learning was practiced through numerous group meetings as per seven steps of PBL throughout the semester. The entire course of Educational Research was instructed in complete semester (four months) to prospective instructors enrolled in Department of Education International Islamic University Islamabad for the course of Educational Research. As a beginning stage for the PBL the educator of the course clarified the way the course will be managed. They were demonstrated some of recordings accessible on web about pragmatic usages and ventures of PBL which cleared their conceptions about how they will take over the course of Educational Research. Working in groups, they were tested to deliberately inquire about the problems exhibited and to make determinations from the realities and conclusions found in writing. The learners accumulated related data from the recommended books, web and library in the week time. Wherever they will require direction the instructor was accessible for consultancy and help. The learners used to sit in the classroom and talk about all material grouped exclusively and achieve a conclusion. They exhibited the solidified material to the entire class. The instructor was there as facilitator and further clarified the ideas if not clear.

Teaching to Non-PBL Group

The control group which is called as Non-PBL in this investigation was instructed through chalk and talk strategy. There were singular introductions of the learners identifying with sub-subjects of the course blueprint of Educational Research. There was no group work in the Non-PBL group. The classroom condition of both the groups was same.

Sample and testing Techniques

A purposive sample of 60 learners studying in Department of Education International Islamic University Islamabad was taken for the examination. Two groups of learners were taken and they were assigned to the control group and exploratory group randomly. Each group had 30 learners each. The investigation was led in Spring semester February to June 2016.

Pre-Test and Post-Test

The pre-test and post-test were the same and comprised of items on creativity based on literature review. The respondents were required to tick the appropriate option on 4 point scale on Strongly Disagree, Disagree, Agree and Strongly Agree. It had 15 items.

Validity and Reliability of Instruments

The face validity of the instrument was assessed through expert opinion. The experts were faculty members from Department of Education. The reliability of the instrument was estimated by utilizing Cronbach Alpha after pilot testing the instrument on the learners other than the sample and the value was 0.846.

Data Collection

The pre-test was executed in the beginning of semester to all learners of both groups. Post-test of both Experimental and Control Groups was managed toward the end of semester.

RESULTS

The pre-test scores were calculated by Mean and Standard Deviation, difference in pre and posttest of experimental group was figured through paired sample t-Test while difference in mean scores of Posttest of Control and Experimental was ascertained through independent sample t-Test by using Statistical Package for Social Sciences Version 20 (SPSS 20).

Table 1. Difference between scores of PBL and Non-PBL Groups on Pre Test (Creativity)

	Mean score	Standard deviation	P value	df	Sig.(2tailed)
PBL Group	44.27	8.994	1.0000	58	0.05
Non-PBL Group	48.37	6.239			

Table 1 displays that the mean score of PBL Group is 48.37 with SD of 6.23 and the mean score of Non-PBL Group is 44.27 with SD of 6.23. An independent sample t-Test was performed to separate whether the mean scores of PBL and Non-PBL clusters are different or not about creativity of prospective educators? The t-test delineates no huge contrast in the scores of PBL Group and Non-PBL Group as p value 1.00 is more than $\alpha=0.05$. So both the groups are proportionate concerning creativity scores on pre-test.

Table 2: Difference between scores of Pre-Test and Post Test of Non-PBL Group (Creativity)

	Mean score	Standard Deviation	p value	Df	Sig.(2tailed)
Pre-test	48.37	6.239	9	58	0.05
Post-test	46.03	5.580			

Table 2 depicts that the mean score of creativity of Pre-test of Non-PBL Group is 48.37 with SD of 6.23 and the mean score of Post-test is 46.03 with SD of 5.58. A paired sample t-Test was performed to see whether the mean scores of Pre-test and Post-trial of Non-PBL group are different or not? The t-test demonstrates no noteworthy contrast in the scores of Pre-test and post-trial of Non-PBL Group as $p=0.13$ is more than $\alpha=0.05$. So both the scores are proportional concerning creativity scores. It shows that Non-PBL Method isn't a practical procedure for creativity of imminent instructors.

Table 3: Difference between scores of Pre-Test and Post Test of PBL Group (Creativity)

	Mean score	Standard deviation	p value	df	Sig.(2tailed)
Pre-test	44.27	8.994	0.0486	58	0.05
Post-test	48.03	4.870			

Table 3 shows that the mean score of creativity of Pre-test of PBL group is 44.27 with SD of 8.99 and a better suggest score of post test is 48.03 with SD of 4.80. A paired sample t-test was done to look at whether the suggest rankings of Pre-test and post-test are considerably different or not? The t-test display a sizable distinction as $p=0.04$ is lesser than $\alpha=0.05$. That means that creativity score of potential educators has advanced after the treatment via problem based learning. It delineates that PBL method is a successful technique for creating creativity of prospective educators.

Table 4: Difference between scores of PBL and Non-PBL Groups on Post Test (Creativity)

	Mean score	Standard deviation	p value	df	Sig.(2tailed)
PBL Group	48.03	4.870	0.0002	58	0.05
Non-PBL Group	46.03	5.580			

Table 4 indicates that the mean rating of creativity of PBL group is 48.03 with SD of 4.87 that's better than the mean score of Non-PBL group which is 46.03 with SD of 5.58. An independent sample t-test was conducted to look whether or not the suggest rankings of PBL and Non-PBL are notably distinctive or not? The p value 0.0002 is lesser than $\alpha=0.05$. So both the ratings aren't equivalent with admire to creativity scores of prospective educators. That implies that creativity score of prospective teachers has increased after the treatment through PBL. It represents that PBL is an effective strategy for enhancing creativity of prospective teachers.

DISCUSSION

Various expert associations like the National Education Association and the National Research Council have emphasized the need to instruct learners in the 21st century skills which includes creativity also[14]. This examination comes about delineate that the innovative thoughts, instructor's participation, collaboration, inspiration and talk with others help in obliging the course through Problem Based Learning [18].Research has distinguished parts of PBL and procedures of participation and cooperation and managing in new settings, helping them to wind up plainly free problem solvers which include different approaches to the points of associating with arranged groups of individuals, enhancing creative and cultivating the organized meetings among learners [3]

In the current research creativity of prospective instructors was enhanced because of Problem Based Learning. It can be set up that Problem Based Learning is a viable technique for creating creativity of prospective educators. [5] recommended that in training of prospective educators, problem based learning could viably be utilized as it is used in designing and medication. This investigation yielded that Problem Based Learning can be used adequately in instructor training in Pakistan too. Exponents of the viewpoint of problem-solving as a skill, consider problem-solving skills as a separate issue in the curriculum; and do not consider it as a tool to improve conceptual perception and basic skills; such as drawing a picture, looking back, preparing a list, and others [15 A]. So it may be utilized as a teaching strategy in teacher education as the current research yielded its effectiveness.

CONCLUSION

Non-PBL Method isn't a practical procedure for developing creativity of prospective teachers. The creativity score of potential educators has advanced after the treatment via problem based learning. It delineates that PBL method is a successful technique for creating creativity of prospective educators. In training of prospective educators, problem based learning could viably be utilized as it is used in designing and medication.

RECOMMENDATIONS

Following suggestions were drawn on the premise of consequences of the study

- i. As prospective instructors had great experience of the course through problem Based Learning so it is suggested that it might be used in all teacher training programs for the subject of educational research.
- ii. The creativity of prospective teachers improved as a result of PBL, so it may be utilized for enhancing creativity among learners.

Further Research

Further research may be carried out to check the effectiveness of PBL for other subjects of pre-service teacher education.

Another research may be carried out to see effectiveness of PBL for developing other skills like critical thinking etc. of prospective teachers.

REFERENCES

- [1] Albanese, M.A. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Academic medicine: Journal of the Association of American Medical Colleges*, 68 (1), 52-81.
- [2] Boud, D and Feletti, G (1997) *The Challenge of Problem-based Learning*, London: Kogan
- [3] Christiansen, E. T., Kuure, L., Mørch, A., & Lindström, B. (Eds.) (2013). *Problem-Based Learning the 21st Century: New Practices And Learning Environments*. (1 ed.) Aalborg Universitets forlag.

- [4] Duch, B. J., Groh S. E., & Allen D. E., (2001) *The Power of Problem-based Learning: A Practical "how to" for Teaching Undergraduate Courses in Any Discipline*, Stylus: Sterling, VA.
- [5] Endrogen, T. (2014) Problem-based Learning in Teacher Education: Its Promises and Challenges *Procedia - Social and Behavioral Sciences*. 5th World Conference on Educational Sciences 16, 459–463
- [6] Finkle, S. L., & Torp, L. L. (1995). *Introductory documents*. Available from the Center for problem-based Learning, Illinois Math and Science Academy, 1500 West Sullivan road, Aurora, IL 60506-1000.
- [7] Gallagher, S. A., & Gallagher, J. J. (2013). Using problem-based learning to explore unseen academic potential. *Interdisciplinary Journal of Problem-based Learning*, 7(1), 9.
- [8] Higher Education Commission (2012) *Curriculum of Education*, Higher Education Commission Islamabad
- [9] Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16, 235–266.
- [10] Jeong, H., & Hmelo-Silver, C. E. (2010). Productive use of learning resources in an online problem-based learning environment. *Computers in Human Behavior*, 26, 84-99.
- [11] Loyens, S. M., Jones, S. H., Mikkers, J., & van Gog, T. (2015). Problem-based learning as a facilitator of conceptual change. *Learning and Instruction*, 38, 34-42.
- [12] Major, C. (1999). Connecting what we know and what we do through problem-based learning. *AAHE Bulletin*, 51 (1), 7-9.
- [13] Norman, G. R., & Schmidt, H. G. (1992). The psychological basis of problem-based learning: A review of the evidence. *Academic Medicine*, 67, 557-565
- [14] Pellegrino, J. W., & Hilton, M. L. (Eds.). (2013). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.
- [15] Plucker, J. A., Beghetto, R. A., & Dow, G. (2004). Why isn't creativity more important to educational psychologists? Potential, pitfalls, and future directions in creativity research. *Educational Psychologist*, 39, 83-96.
- [15] Razvani, M. A., & Fadaee, M. R. (2014). Effect of chess training on math problem-solving ability of elementary school students. *Journal of Applied Environmental and Biological Sciences*, 4(5), 240-244.
- [16] Savery, J. R. (2006). Overview of problem-based learning: Definitions and distinctions. *The Interdisciplinary Journal of Problem-based Learning*, 1, 9-20.
- [17] Savin –Baden, Claire H (2000). *Foundations of Problem-based Learning*, McGraw-Hill International
- [18] Schmidt, H. G. (1983). Problem-based learning: Rationale and description. *Medical education*, 17(1), 11-16.
- [19] Stein, M. I. (1953). Creativity and culture. *The Journal of Psychology*, 36(2), 311-322.
- [20] Van Bruggen, J. M., & Kirschner, P. A. (2003). Designing external representations to support solving wicked problems. In J. Andriessen, M. Baker, & D. Suthers (Eds.), *Confronting Cognitions: Arguing to learn* (pp. 177-203). Dordrecht, the Netherlands: Kluwer Academic Press.
- [21] Vernon, D. A., & Blake, R. L. (1993). Does problem-based learning work? A meta-analysis of evaluative research. *Academic Medicine*, 68 (7), 550-563.
- [22] Werth, E. P., (2009). Student perception of learning through a problem-based learning exercise: an exploratory study. Idaho Police Officer Standards and Training, Meridian, Idaho.
- [23] Yeo, R. (2005). Problem-based learning: lessons for administrators, educators and learners. *International Journal of Educational Management*. 19 (7), 541-551



Investment on HRM and Its Impact on Project Success

Noor ul ain Ansari¹, Dr. Muhammad Nisar ul Haq², Shoaib Raza^{3*}

¹COMSATS institute of Information Technology, Virtual Campus, Pakistan

²Karakoram International University, Gilgit Baltistan

³COMSATS institute of Information Technology, Vehari, Pakistan

Received: October 23, 2017

Accepted: December 27, 2017

ABSTRACT

This study was aimed to assess the impact of four major HR practices on the performance of projects of educational institutes in Gilgit Baltistan. In this regard, response of staff members in educational institutional projects has been collected through an adopted questionnaire survey. After recording the collected response in SPSS and processing the study related test, it has been found that three main HR practices are keeping the significant positive impact on the project performance of educational institutes in Gilgit Baltistan. These effective practices are compensation and rewards, training and development and employee involvement that have been assessed as they effectively been practices in their efficient practices performances of educational institutes have been seen as enhances. The one main HR practice of employee recruitment and selection have been seen as negatively associated, this has shown that the recruitment practices in educational institutes are not inlined with the HR fundamental practices. This requires serious attention for streamlining the recruitment and selection process for enhancing the functions of HRM for efficient project performance in the institutes. This study has come up with appropriate recommendations for betterment of educational institutional projects along with the directions for future research.

KEY WORDS: HRM Practices, Project Success, Gilgit Baltistan, Pakistan.

INTRODUCTION

It has been mostly recognized that people in any organization deliver one of the best important bases of competitive edges. Moreover, it is understood that the well skilled and operational staff management in any organizational structure is an influential asset to reply the fast moving and active backgrounds in order to attain higher organizational results [18]. Therefore, it is very essential for administrators to ensure an adequate resource of personnel that is formally and publically talented and capable of professional development into proficient departments [36]. HRM provides a bond among the team members who are working on a project through transformational leadership [1]. Indeed any project can be considered as a successful project if it is completed under the innovative cultural environment because in such environments, a creative HRM practices can be adopted and successful organizational strategies can be executed [12]. It is the need of the hour for organizations to burnish the capabilities of human capital in order to enhance the success of the projects which organization is establishing. It is highly significant for organizations to select the employees wisely, train them efficiently and carry on regular development program for organizational effectiveness. Training & development, successive planning structure and appropriate management system can enhance the performance of organizations and stimulate the motivational level of the employees and they can work in a satisfied environment [28]. The learning process in any organization can be improved by making strategic alliances. Managers can play supportive roles in making environment favourable towards the successful projects [40]. At present time organizational directors are facing encounters to find out the capable human capitals as per organizational purposes. This may partly be a result of the different kinds of problems, for example, administrative ambiguity, corruption, instituting issues, poor schedules, lower learning practices, shortage of available resources [17]. Such problems may cause harmful effects on the educational institutes because HRM main practices usually do not need to implement in this sector. So is the case of Gilgit Baltistan. In Pakistan's perspective, it has been seen in practice that most of the educational institutes are not effectively implementing the human resource practices. Although the researches in effective HR practices regarding educational field are very scarce. In developing countries, the concepts of employee selection, training and development, motivation, involvement in decisions are under practices but with ineffective planning and limited resources are still questionable [8]. So in such scenario, educational projects should be given more preferences to augment this sector in research and development. HRM practices in universities are to be adopted to analyze the

*Corresponding Author: Shoaib Raza, COMSATS institute of Information Technology, Vehari, Pakistan.

Email: shoaib.raza.rs@gmail.com

performances on individual as well as organizational bases [27]. Human Resource department usually works in evaluating the psychological aspects of employees so need to learn about the personality traits. Educational projects can be successful only if the key players like teachers and the students enhance them towards learning process [25] by associating their performance with the intrinsic and extrinsic motivation [15] and motivational activities also should be implemented in enhancing the skills of the lecturers at the university. They can behave positively if they get more satisfaction and less stress [20]. In Pakistan, the research gap has been highlighted regarding noticeable HR practices for effective organizational projects performances; this research will add worth in the field of educational projects by evaluating the executed practices of HR and will assess each practice association with the performance of different educational and research projects in Gilgit Baltistan, Pakistan. Current study is focusing on the following educational projects

1. “KIU UO” of Karakoram International University, Gilgit and the University of Oregon US.
2. “Active Citizen Project” which is a collaborative projective between Higher Education Commission and British Council
3. “ I.T. Institute of Information Technology” executed in F. G. Boys Degree College for Boys and Girls Gilgit Baltistan.

LITERATURE REVIEW

Project success

In accordance with the definition of the project success, it has been access through a specific frame of time and duration [3]. Performance has also been explained as the produced quantity in which return of the labour being utilized in specific amount [35]. Performance itself keeps its distinctive dimension such as quality, comprehensiveness with required quantity. Performance of any individual person refers to the ability of his knowledge and learning in professional context to present the output against the work objectives [33]. All organizations of services and production related are always remained interested in employee performances because it measures the effectiveness of employees and the level of efficiencies of organizations and groups. Many researchers of HR management have offered their results by suggesting the measurement of employee performance in effective way as the output received from the workers has been analysed as percentage of work that has been redone or rejected due to the quality [24]. Project manager is the key player in making any project successful and he has to show his positive impacts to transform leadership quality in making bonds among the team members [1].

Association of Recruitment and Selection with Project success

Recruitment and Selection is the process of attracting the suitable applicants to apply for job in the organization, internally or externally [30]. Many researchers have presented that the practices of recruitment and selection are not the only ways for enhancing the performance level of organization and its employees [4]. It has been highlighted in the study, that project managers are liable for understanding the importance of the process of recruiting the skilled individuals, wisely deciding the selection of competitive persons, making the special policies for effective hiring will definitely enhancing the organizational performances in general and project success in specific [11]. Further poor selection process negatively affects the organization or project for moving towards the personal performances and overall organizational performances [22]. Human Resource Management has an important influence on the presentation of business association. This has to do with learning and development activities, good arrangement structure and proper management as a persuader. Many studies specified to attain employee assurance that the employed situation has to be helpful to lead to and endure staff inspiration and high enactment. A research focused on the project of assessing the association between recruitment and selection and firm enactment in oil & gas sector. A strong association among recruitment & selection and organization’s performance of oil and gas sector in Iraq has been highlighted [31].

H₁: Recruitment and Selection is positively associated with Project success.

Association of Compensation and rewards and Project Success

Compensation and reward is the tool that is usually used to direct the employee’s personal energy and presentation of work in an organization. Past researches show that there is significant association of reward, compensation and the performance in an organization. These two variable i.e. reward and compensation keep the effective impact over the performance of employees. It has been assessed that the level of motivation and incentive programs keep the significant effect over employee’s performance against any task assigned to them [5]. A study found that the effect of recruitment & selection and performance & appraisal had significant impact on the projects related to the organizations [32]. A study has proved that the fair distribution of rewards can influence on the performance and

motivation level of an employee to its maximum [16]. Human factor has been highlighted as the prominent factor for achieving the successful performance in every organization. The contribution of employees that come up with significant input towards the managerial tasks, in this regard employee's motivation and job satisfaction play a vital role for supporting the managers with inline efforts in a symmetric way. Organizational management is therefore face challenging environment to build and practice such policies for implementation against employee motivational and the ways to choose the intrinsic or extrinsic rewards for keeping the workforce well motivated [7]. Diekmann (2015) reported that in the absence of knowledge among employees against the value of compensation and pay system keeps the negative effect over the motivational level of employees or there is a negative result of management policies for keeping the employee benefited.

H₂: Compensation and rewards is positively associated with Project success.

Association of Training and Development and Project Success

It is a role of human resource management that trains the individuals and groups to better job performance within organizational atmosphere [29]. Teachers in educational institutes need in-service trainings to enhance their skills manage their day to day learning activities [39]. In-service training influence of effective feeling, sense of independence and level of self confidence in a person [34] while in order to compete in the market, all organisations are highly required to keep the employee up to date with modern technologies and trends for operating the organizational functions efficiently for better organizational performances in general and project in particular. Employees are the assets of an association if they are capable and skilled would accomplish improved than those who are inexperienced and unqualified [23]. All training and development related activities have prominent interlinked impacts with project success. Research on training and development effectiveness has presented the results that these activities positively keep the greater impact on the performance of the organizations. In Pakistan, companies are trying to focus towards the training and development activities, in order to improve the process for better organizational performances through effective T&D programs [14]. Therefore, workers must corroborate their value of training activities to justify the investment [38].

H₃: Training and Development is positively associated with Project success.

Association of Employee involvement and Project Success

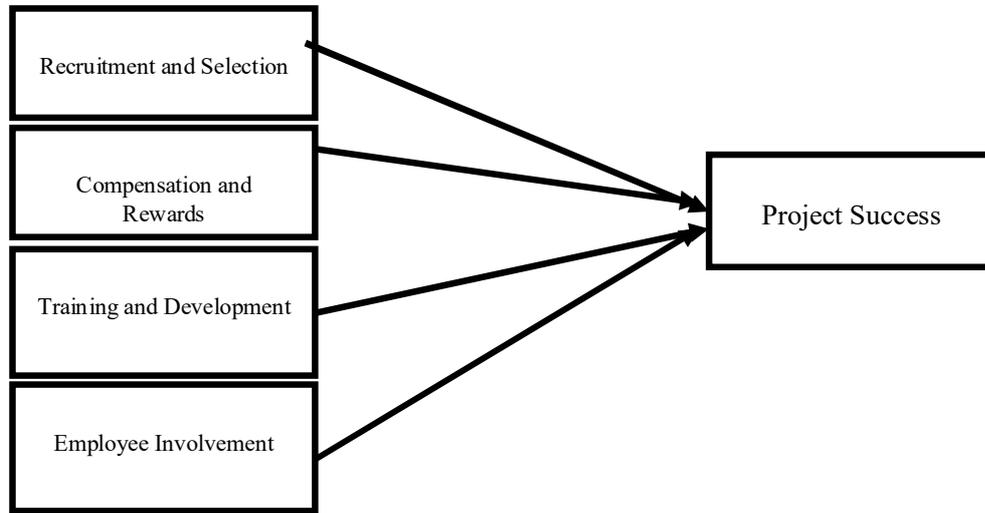
Employee involvement in decision-making has been referred as the managerial steady to strive for the effective performances in the organizations. Its outcomes are linked with employee commitment, turnover, motivation, job satisfaction level or the employee surviving in the respective organization [21-2]. An exploratory study showed that there are number of causes within the organization which blocked the role of employees to pursue in betterment of any project [26]. It has been assessed that by involving the employees in decision making process provide them with the sense of motivation towards the daily job that increases the performances [13]. By involving the workforce in time to time decision creates this sense of organization commitment; they adopt the positive work attitudes for the betterment of the organization [6]. Employees feel the modern human resource practices are likely to be more beneficial for their point of view, they also have acknowledged that the positive individual performances are resulting in response to these favourable HR practices.

H₄: Employee involvement is positively associated with Project success.

Underpinning Theory

Vroom (1964) indicated about the concept related to employee and motivation. As per expectancy theory personal expectations affect the motivational level of employee about their capacity to do the objectives and for obtaining expected recognitions and rewards. Every individual has an optimal choice for putting effort to achieve the reward in return. Expectancy is the combination of the determination on an assigned task and favourable performance with the combination of capacity, experience to perform and opportunity for performance. There are two combinations used in Vroom's theory. P – O (Performance - Outcomes) and E – P (Expectancy - Performance) which states the behaviour of the employees towards their tasks within the organization. Either the employee work ended with expected outcome or vice versa. There is a significant relationship of Performance & Outcome and Expectancy & Performance. Therefore the expectancy theory of Vroom has been used in this study to support the relationship.

Research Framework



METHODOLOGY

This study followed quantitative technique. A survey questionnaire was used to collect the data. Current study targeted the staff members from educational institutes in Gilgit Baltistan for having the assessment against effective HR practices and organizational performances. Simple random sampling technique was used and 195 employees were engaged by selecting 95 percent assurance level. Sample size was calculated from online calculators www.Raosoft.com. Correlation test was run for assessing the relationship of each variable. Multiple regression analysis was processed for analyzing the differences and combined effect of independent variables on dependent variable separately and collectively. Five point Likert scale 1=strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=strongly Agree was used in this study. Results were explained and discussed for acceptance and rejection of research hypothesis. Recruitment & Selection, Compensation & Reward, Training & Development and Employee Involvement were taken as Independent Variables [9] and Project Success was taken as dependent variable [19].

Analysis

Table1 Analysis of Demographics

Demographic	Classification	Frequency	Percentage (%)
Gender	Male	155	79.5
	Female	40	20.5
Age	20-25	21	10.8
	25-35	34	17.4
	35-45	77	39.5
	45 Plus	63	32.3
Designation	Professor	23	11.8
	Assistant Professor	45	23.1
	Lecturer	66	33.8
	Others	61	31.3
Qualification	Intermediate	8	4.1
	Graduate	29	14.9
	Post Graduate	103	52.8
	MS/PhD	55	28.2
Experience	2-5 Years	43	22.1
	5-10 Years	57	29.2
	10-15 Years	71	36.4
	15 and Above	24	12.3

Table 2 Test of Cronbach’s Alpha, Correlation analysis

Variable	α	1	2	3	4	5
1. Recruitment & Selection	.844	1	.828**	.825**	.640**	.580**
2. Compensation & Rewards	.892	.828**	1	.907**	.597**	.661**
3. Training & Development	.882	.825**	.907**	1	.620**	.689**
4. Employee Involvement	.799	.640**	.597**	.620**	1	.843**
5. Project Success	.857	.580**	.661**	.689**	.843**	1

** Significant Correlation at the 0.01 level (1-tailed).

Table 3 Multiple Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.884 ^a	.781	.777	.38293

a. Predictors: (Constant), Employee Involvement, Compensation & Reward, Recruitment & Selection, Training & Development

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	99.577	4	24.894	169.766	.000 ^b
	Residual	27.861	190	.147		
	Total	127.439	194			

a. Dependent Variable: Project Success

b. Predictors: (Constant), Employee Involvement, Compensation & Reward, Recruitment & Selection, Training & Development

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.395	.142		2.774	.006
	Recruitment and Selection	-.266	.057	-.360	-4.621	.000
	Compensation and Rewards	.173	.076	.195	2.285	.023
	Training and Development	.293	.080	.313	3.647	.000
	Employee Involvement	.689	.043	.729	16.125	.000

a. Dependent Variable: Project Success

In this study survey table 1 shows Gender wise frequency distribution that out of 195 participants there are 155 male members, these male participants have valued the survey with 80 percent to overall survey response. Faculty members of educational institutes have been involved for responding the filled questionnaires. Out of 195 responding staff member’s majority of respondents are lecturers with the response frequency of 66, that is 34 percent of overall survey response. Further, As above table is showing the response of education that the majority of responding individuals have educational level of post graduate, these individuals are 103 in frequency that have represented the 53 percent proportion to overall survey response collection. The next best category of responding individuals are the individuals holding the educational status of MS/PhD level qualification, these individuals are 55 in frequency and representing the percentage 28 to overall survey response. Gender wise frequency distribution that out of 195 participants there are 155 male members, these male participants have valued the survey with 80 percent to overall survey response.

Table 2 shows the Cronbach’s Alpha values of all the variables are satisfactory because each variable has value more than .700 and scales has been accepted as reliable for proceedings. Correlation value of recruitment and selection with project success has been noted as .580. Similarly compensation & rewards has correlation value with project success of .661. Whereas Training and development has been found the correlation value with project success as .689. The last independent variable employee involvement has been found with 84 percent correlations value with dependent variable of project success. It has been shown in this study test that all the variables keep the significant correlation values and each variable is well correlated with other.

Table 3 of multiple regression analysis shows model summary that there is value of $R^2=.781$ and Std. Error of estimate is .3829, R-square value for above model significantly indicating that there is 78% of variance among independent variables and dependent variable, displaying that independent variables initiating change in dependent variable with portion of 78 percent. Here is significant effect have been observed in the positive way between independent variables (Recruitment and Selection, Compensation and Reward, Training & Development and Employee Involvement) over the dependent variable (Project Success) of the model. As table 3 of coefficients for

multiple regression analysis shows that there are all the p values for this model has been noted as significant. The value for change in beta has been assessed as negative, along with the t value negative result showing the opposite behavior of the variable (recruitment & selection) in this model. Rest of variables in this model has been assessed as having beta changes in the positive values and all t statistics values are positively higher than 2, depicting the satisfactory association and impacts of compensation reward, T&D and employee involvement in the positive way for organizational performances. The overall effect of change variance valued 78 percent has significantly accepted for pleasant impact of independent variables on dependent variable.

DISCUSSION OF RESULTS

This study has presented the lower results of recruitment and selection in the positive way. The previous study also presented that the practices of recruitment and selection are not the only ways for enhancing the performance level of organization and its employees [4]. Next, study has presented the result of significant impact of compensation and rewards on the performance of educational institutional projects. Same like results of compensation has been justified by (Ayesha, 2015) that the level of motivation and incentive programs keep the significant effect over employees performance against any task assigned to them so current study justifies these results. Then findings also show the significant impact of training and development activities for better project performances in any educational institutes. Previous research on training and development effectiveness has presented the results that these activities positively keep the greater impact on the performance of the organizational projects. A study has resulted that involving the employees in decision making provide them with the wellbeing opportunities inside the organizational projects [42]. It has been assessed that by involving the employees in decision making process provide them the senses of motivation towards the daily job that increases the project performances [13]. So this study also has justified the findings related to the importance of involving employee and keeping them motivated which ultimately proved as fruitful for the growth oriented progress of the organizations.

Conclusion

This study was aimed to assess the impact of four major HR practices on the performance of educational institutional projects in Gilgit Baltistan. In this regard, response of staff members in educational institution related to the projects has been collected through an adopted questionnaire survey. After recording the collected response in SPSS and processing the study related test, it has been found that three main HR practices are keeping the significant positive impact on the performance of projects of educational institutes in Gilgit Baltistan, these effective practices are compensation and rewards, training and development and employee involvement which have been assessed that they have effectively been practices whereas, the one main HR practice of employee recruitment and selection has been seen as significant in negative way, this has shown that the recruitment practices in educational institutional projects are not in line with the HR fundamental practices. This requires serious attention for streamlining the recruitment and selection process for enhancing the functions of HRM for efficient performance in the institutes.

Recommendations

Higher management of the educational institutes in Gilgit Baltistan should empower the HR departments to launch the effective process implementation for recruiting and selecting the capable staff members. Further, HR department requires to actively moving forward for staff refresher courses and efficient system of intrinsic, non-intrinsic rewards system with appropriate recognition practices so that public based institutes may represent the satisfied and motivated staff as compared to private institutions in Gilgit Baltistan.

Research implications and future directions

- This study results will prove as helping hand for senior management of educational institutes, heads of the departments and especially HR executives to consult the perception level of employees in educational management.
- This study will also invite the concerns to consult and make effort for the local governments to establish a systematic approach for public based organizational projects for accommodating personals.
- This study will also assist the young researchers to come up with new dimensions for assessing the HR practices in different projects.
- This research will provide a knowledge bank in the field of education and specialized HR related and management related practices in any organization.

Future research has been directed for assessing each HR fundamental practices to detain in different departments.

REFERENCES

- [1] Aga, D. A., Noorderhaven, N., & Vallejo, B. (2016). Transformational leadership and project success: The mediating role of team-building. *International Journal of Project Management*, 34(5), 806-818.
- [2] Agwu, M. a. (2014). Perception Survey of Employees Participation in Decision Making and Organizational Productivity in Julius Berger Nigeria PLC Bonny Island. 4., *British Journal of Economics, Management & Trade*.
- [3] Aldmrani, A. (1987). Measure the Effectiveness of Organizations. *Journal of Management*.
- [4] Alzyadat, M., Alatyat, Z., & Alnsour, J. (2015). The Impact of Human Resource Management on Organizational Performance In the Greater Amman Municipality, Jordan. *Jordan. I J A B E R, Vol. 13.*, pp 869-870.
- [5] Ayesha, A. G. (2015). Impact of compensation and reward system on the performance of an organization: an empirical study on banking sector of Pakistan... *European Journal of Business and Social Sciences, Vol 4*, 319-325.
- [6] Brenda Beryl Achieng Otieno, E. W. (2015). Effect of Employee Engagement on Organisation Performance in Kenya's Horticultural Sector.. ., *International Journal of Business Administration, Vol 4*, pp 84-85.
- [7] Chijioke, N.-I. a. (2015). Effect of Rewards on Employee Performance in Organizations: A Study of Selected Commercial Banks in Awka Metropolis. . *European Journal of Business and Management.*, pp 84-85.
- [8] Debrah, Y. A., & Ofori, G. (2006). Human resource development of professionals in an emerging economy: The case of the Tanzanian construction industry. *The International Journal of Human Resource Management*, 17(3), 440-463.
- [9] Demo, G., Neiva, E. R., Nunes, I., & Rozzett, K. (2012). Human resources management policies and practices scale (HRMPPS): Exploratory and confirmatory factor analysis. *BAR-Brazilian Administration Review*, 9(4), 395-420.
- [10] Diekmann, N. (2015). Understanding P ay: Perceptions, Communication and Impact in F or Profit Organizations. University of St. Thomas, Minnesota.
- [11] Ekwoaba, I. a. (2015). The impact of recruitment and selection criteria on organizational performance. *Global Journal of Human Resource Management.*, Vol2, pp-27-28.
- [12] Golzadeh, M., Shahriari, J. E., (2016), Innovation approach for examining the impacts of organizational culture on successfulness of an organization's strategy. *Current Economic and Management Research*, 2(2)1-8.
- [13] Irawanto, D. W. (2015). Employee participation in decision-making: evidence from a state-owned enterprise in Indonesia. University of Brawijaya, Faculty of Economics and Business, Management Department.
- [14] Islam, Z., Javed, A.B. (2015). Impact of Training and Development on Organizational Performance: Empirical Study on Telecommunication Sector of Pakistan. *Journal of Resources Development and Management*, 6.
- [15] Javed, T., Asghar, M. A. (2017). Association of Motivation with the Academic Achievement at Secondary Level in Pakistan. *Journal of Applied Environmental and Biological Sciences*, 7(8)52-57.
- [16] Jehangir, M., Sahibzada, S., Tariq, M. (2015). Fair Distribution of Rewards Leads to Employees' Motivation; Not Distribution of Rewards: A proposed Framework. *Journal of Applied Environmental and Biological Sciences*, 6(1)284-289.
- [17] Kamoche, K. (2002). Introduction: human resource management in Africa. *International Journal of Human Resource Management*, 13(7), 993-997.
- [18] Kehoe, R. R., & Wright, P. M. (2013). The impact of high-performance human resource practices on employees' attitudes and behaviors. *Journal of management*, 39(2), 366-391.
- [19] Kepha, O.I. (2012). The Influence of Recruitment and Selection on the Performance of Employees in Research Institutes in Kenya. *International Journal of Science and Research (IJSR)*, Vol 3, 134-136
- [20] Khan, E. A., Shah, A. A., Kayani, M. M., (2017). Role of Job Satisfaction and Job Stress in the Relationship between Organizational Behaviors and Psychological Wellbeing: Mediation Model, *Journal of Applied Environmental and Biological Sciences*, 7(8)150-157.
- [21] Muindi, F. (2011). The Relationship between Participation in Decision Making and Job Satisfaction among Academ-ic Staff in the School of Business, University of Nairobi. *Journal of Human Resources Management Research Article* .

- [22] Mustapha, A. M. (2013). The Impacts of well Planned Recruitment and Selection Process on Corporate Performance in Nigerian Banking Industry (A Case Study of First Bank Plc 2004-2011). *International Journal of Academic Research in Business and Academia Research in Business and Social Sciences*, 3, pp. 645-646.
- [23] Neelam Tahir, I. K. (2014). The Impact of Training and Development on Employees' Performance and Productivity. *International Journal of Academic Research in Business and Social Sciences*. .
- [24] Njanja, W. M. (2013). Effect of Reward on Employee Performance: A case of Kenya Power and Lighting Company, Ltd., Nakuru, Kenya,. *International Journal of Business and Management*, Vol.8, No.21.
- [25] Nordin, L., Razak, N.Z.A., Ismail, W. N. H. W.. (2017). Personality Traits of ESL Learners at Private Higher Learning Institute in Johar Bahru. *Journal of Applied Environmental and Biological Sciences*, 7(2) 33-38.
- [26] Quagraine, T. L. (2010). Employee Involvement as an effective management tool in decision making: A case study of Merchant Bank (Ghana) Limited. *Unpublished MBA Thesis. University of Ghana*.
- [27] Quaisar I. K., Shamsuddin, A. S., Ismail, B. S. (2016). The Mediating Effect of Career Success on HRM Practices and University Performance: A Study from Public Sector Universities of Pakistan. *Current Economics and Management Research*, 2(1)1-8.
- [28] Raymond, A. (2015). Appraisal of Human Resources Management in a performance of Nigerian business Organizations. *International Journal of Advanced Research.*, Vol3, pp 936-927.
- [29] Raza, S., Kanwal, R., Rafique, M. A., Sarfraz, U., & Zahra, M. (2017). The Relationship Between Hrm Practice, Workplace Communication And Job Performance Of Service Industries Employees In Vehari, Pakistan. *International Journal of Information, Business and Management*, 9(2), 122.
- [30] Raza, S., Rafique, M.A., Zahra, M., Khushtaba. (2016). The Relationship Between HR Practices, Empowerment, Support and Employee Motivation Among Bank Employees in Vehari, Pakistan. *International Journal of Innovation and Research in Educational Sciences (IJIRES)*, 3(6), 7.
- [31] Saddam, A. K., & abu Mansor, N. N. (2015). The Role of Recruitment and Selection Practices in the Organizational Performance of Iraqi Oil and Gas Sector: A Brief Literature Review. *Review of European Studies*, 7(11), 348.
- [32] Sarwar, H., Aftab, J., (2016). A Role of HRM in Project Success of Project Oriented Organizations in Southern Punjab, Pakistan. *Entrepreneurship and Innovation Management Journal*
- [33] Shanawany, S. (2001). Personnel management and human relations.
- [34] Shirvani, K., Abbasi, F. B., Sayadi, S. (2015). The Effect of In-Service Training of Employees' Empowerment of Shahid Bahonar University in Kerman. *Journal of Applied Environmental and Biological Sciences*, 6(1)271-276.
- [35] Suleiman, H. (1998). Organizational behaviour and performance. Dar Egyptian Universities, Alexandria, Egypt.
- [36] Sultana, A., Irum, S., Ahmed, K., & Mehmood, N. (2012). Impact of training on employee performance: A study of telecommunication sector in Pakistan. *Interdisciplinary Journal of contemporary research in business*, 4(6), 646-661.
- [37] Sunday, A. O., Olaniyi, D. E., & Mary, F. O. (). The influence of recruitment and selection on organizational performance.
- [38] Sung, S. Y., & Choi, J. N. (2014). Do organizations spend wisely on employees? Effects of training and development investments on learning and innovation in organizations. *Journal of organizational behavior*, 35(3), 393-412.
- [39] Tariq, M. A., Ahmad, F., N.B.J. (2017). A Study to Investigate the Reflective Activities of In-Service Teachers for Professional Development in Pakistan: A Mixed Methods Approach. *Journal of Applied Environmental and Biological Sciences*, 7(3), 199-208.
- [40] Tavallaei, R., Hosseinalipour, M., Mohebifar, A. (2017). Key factors affecting learning through construction industry's international strategic alliances. *Journal of Applied Environmental and Biological Sciences*, 7 (7)80-90.
- [41] Vroom, V.H. (1964). Work and motivation. New York: Wiley.
- [42] Wood, S., & de Menezes, L. M. (2011). High involvement management, high-performance work systems and well-being. *The International Journal of Human Resource Management*, 22(07), 1586-1610.



Role of Time Management Behavior and Perceived Control of Time in Personal and Professional Life of Teachers

Masud Akhtar¹, M. Naveed Riaz², M. Tahir Khalily¹, Asghar Ali Shah¹

¹Ph.D, International Islamic University Islamabad

²Ph.D, University of Sargodha

Received: November 2, 2017

Accepted: January 11, 2018

ABSTRACT

The study examined the relationship of time management behavior and perceived control of time with personal and job related outcomes among teachers. Time Management Behaviour Scale 1, Perceived Control of Time at Work Scale 2, Short Warwick Edinburg Mental Well-being Scale 3, Stress subscale of Depression Anxiety Stress Scale 4, Job Satisfaction Scale 5, In Role Job Performance Scale 6, and Role Overload Scale 7, were used for data collection from 300 university teachers. Pearson correlation revealed that time management behavior and perceived control of time are positively associated with well-being, stress, job satisfaction, job performance and role overload among teachers. The insights of the present study confirmed that time management behaviors plays a vital role in enhancing the well-being of teachers and reducing their stress and stressors life role overload. For the greater job satisfaction and high job performance, time management behaviors are essential to learn and practice.

KEYWORDS: Time management behaviours, perceived control of time, personal outcomes, professional outcomes

1. INTRODUCTION

The present study has focused on *The Process Model of Time Management* by Macan [8]. This model explains the functions of time management behavior in life of employees in organizations. It explains that time management behavior develops the perceptions of control of time which leads towards many positive consequences in the personal and professional life of the employees. Even the model is so comprehensive that it also describes the possible outcomes in terms of reducing stress while enhancing job satisfaction and job performance among the employees. Time management behavior is a set of skills or personal competencies required to use and management time effectively. Perceived control of time is an individual's perceptions that time is under his or her own control and it can be effectively used with personal will. Perceived control of time is an individual's perceptions that time is under his or her own control and it can be effectively used with personal will.

The Process Model of Time Management has three elements. The first element is time management behavior. The second element is perceived control of time. The third element is related to the outcomes. Macan [9] integrated these elements to form a process of time management. Existing research on the role of time management and perceived control of time in the personal life of employees confirmed that time management enhances well-being and reduces the level of stress. In professional life, time management behavior and perceived control of time is an importance correlate of high job satisfaction and high job performance. Time management behavior and perceived control of time is also effectively used to management the most highly experienced modern day stress of role overload. The present study is a correlational research on personal and professional life outcomes of time management behavior and perceived control of time among university teachers. On the basis of the existing literature, the present study anticipated that time management behavior and perceived control of time will be positively correlated with well-being [10, 11, 12], job satisfaction [13, 14] and job performance [2, 15] whereas negatively correlated with stress [16, 17] and role overload among teachers [1, 18].

2. METHOD

Sample of University teachers ($N = 100$) with age ranged from 30 to 55 years ($M = 45.23$, $SD = 12.23$) participated in the present study from Islamabad, Province of the Punjab, Khyber-Pakhtunkhwa and Gilgit-Baltistan. The data was collected on the basis of inclusion and exclusion criteria. The inclusion-exclusion criterion was based on fulltime regular employment and at least one year of job experience. Contractual and visiting university teachers

*Corresponding Author: M. Naveed Riaz, Ph.D, University of Sargodha

were not included in the sample. Only HEC recognized universities were visited for data collection. For this purpose list of HEC recognized universities was obtained from HEC Islamabad. Employees of DAI (Degree Awarding Institutions) were also not included in the sample. Both public ($n = 71$, 71%) and private sector university teachers ($n = 29$, 29%) participated in this research. Male ($n = 64$, 64%) and female university teachers ($n = 36$, 36%) were part of sample. Participants exhibited three different qualification levels including masters ($n = 12$, 12%), M. Phil ($n = 58$, 58%) and PhD ($n = 30$, 30%). Both single ($n = 43$, 43%) and married teachers ($n = 57$, 57%) participated in this research. Purposive sampling technique was used for data collection.

In the present study, seven instruments were used to collect the data from participants. Time Management Behaviour Scale [1] comprising of 29 items, Perceived Control of Time at Work Scale [2] comprising of 29 items, Short Warwick Edinburg Mental Well-being Scale [3], comprising of 7 items, Stress subscale of Depression Anxiety Stress Scale [4] comprising of 7 items, Job Satisfaction Scale [5] comprising of 6 items, In Role Job Performance Scale [6] comprising of 3 items, Role Overload Scale [7] comprising of 5 items were used for data collection. The scales were based on Likert-type response pattern and scores were interpreted in terms of low and high scores.

The university teachers were approached in their respective institutions situated in Islamabad, Province of the Punjab, Khyber-Pakhtunkhwa and Gilgit-Biltistan. Teachers were briefed about the study being conducted. They were told that data will be utilized for drawing inferences for the present study. After short briefing, written informed consent was obtained from the participants before administering the questionnaires. All the data was collected from teachers well before midterm examinations. The researcher addressed the queries of participants. Return rate was 65% as 100 out of 150 questionnaires were returned. No incentive was given for research participation. After the completion of the scales, the researcher appreciated and thanked the participants for sharing the valuable information. The departmental and APA ethical considerations were also deliberated by the researcher at every step of data collection. The collected data was entered carefully and analyzed by SPSS software.

3. RESULTS

Descriptive statistics, alpha coefficients, range statistics, univariate analyses and Pearson correlation among variables was computed.

Table 1
Psychometric properties of study variables

Variables	N	M	SD	α	Range			
					Potential	Actual	Skewness	Kurtosis
Time management behaviour	100	60.20	12.32	.83	0-96	27-96	-.13	.44
Perceive control of time	100	16.83	27.41	.73	5-25	8-23	-.13	.85
Well-being	100	25.69	3.94	.76	7-35	8-33	-.37	.61
Stress	100	15.87	4.04	.73	0-21	10-20	-.28	-.11
Job satisfaction	100	26.19	6.13	.72	6-30	19-29	.20	-.39
Job performance	100	43.32	9.17	.82	7-49	23-48	.34	.76
Role overload	100	33.49	5.01	.77	10-50	19-46	-.41	.36

Table 1 shows psychometric properties. Reliability analysis shows that all study variables have high internal consistency as all coefficients have greater than .70 magnitude. The values of skewness and kurtosis for all variables are less than 1 which indicates that data is normally distributed.

Table 2
Pearson product moment correlation among study variables

Variables	1	2	3	4	5	6	7
1. Time management behaviour	-	.32***	.28***	-.24**	-.42***	.32***	.23**
2. Perceive control of time		-	.29***	-.37***	-.39***	.48***	.38***
3. Well-being			-	-.48***	-.19*	.23**	.61***
4. Stress				-	.39***	-.50***	-.24**
5. Role overload					-	-.44***	-.40***
6. Job satisfaction						-	.59***
7. Job performance							-

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2 shows Pearson correlation for all study variables. Results indicate that time management behavior has significant positive correlation with perceived control of time $r = .32$, $p < .001$, well-being $r = .28$, $p < .001$, job

satisfaction $r = .32, p < .001$, job performance $r = .23, p < .01$ whereas significant negative correlation with stress $r = -.24, p < .01$ and role overload $r = -.42, p < .001$. Perceived control of time has significant positive correlation with well-being $r = .29, p < .001$, job satisfaction $r = .48, p < .001$, job performance $r = .38, p < .001$ whereas significant negative correlation with stress $r = -.37, p < .001$, and role overload $r = -.39, p < .001$. Well-being has significant negative correlation with stress $r = -.48, p < .001$, and role overload $r = -.19, p < .05$ whereas significant positive correlation with job satisfaction $r = .23, p < .001$ and job performance $r = .61, p < .001$. Stress has significant positive correlation with role overload $r = .39, p < .001$ whereas significant negative correlation with job satisfaction $r = -.50, p < .001$ and job performance $r = -.24, p < .01$. Role overload has significant negative correlation with job satisfaction $r = -.44, p < .001$ and job performance $r = -.40, p < .01$. Job satisfaction has significant positive correlation with job performance $r = .59, p < .001$.

4. DISCUSSION

In the present study, seven self-report instruments were used in the present study. Psychometric properties of these scales were examined by conducting different statistical analyses. Firstly descriptive statistics were computed for all variables. In order to test the normality of the data, skewness and kurtosis were computed for all scales. Statisticians recommend that in order to ensure the normality of scores on a scale, the values of skewness and kurtosis must be less than +1 and -1. In any case, if the value skewness or kurtosis exceeds the above mentioned value, the univariate normality of the data is considered problematic [19]. In the present study, the values of the skewness and kurtosis are less than 1 which indicates that univariate normality of all scales is appropriate. Besides this, it is worth mentioning that the normality is one of the major statistical assumptions that must be addressed before conducting the parametric statistics. In the present study, various parametric tests are administered due to specific nature of the data.

Alpha reliability analysis was computed. Alpha reliability is the measure of internal consistency of the scores in a behavioral measure [20]. Psychometricians [21] recommend that values of alpha reliability for a reliable measure must be equal to or greater than .70. In the present study, the values of all scales are equal to or greater than .70 which indicates that the internal consistency of all scales is satisfactory. Thus the scales used in the present study are reliable and appropriate for further analyses. Pearson correlation was computed to examine the relationship between variables of the present study. The present study is based on the assumption that time management behaviour and perceived control of time among university teachers is associated with personal life outcomes including well-being and stress as well as job-related outcomes including job satisfaction, job performance and work overload. Time management can be effectively utilized as a strategy to handle differences issues at job. One the time management behavior is harnessed, it changes in individual's mind that he or she can control time and having such perceptions increases their job satisfaction and these perceptions regarding the control of time also work as a shield to protect employees from stress and stressors of personal and professional life [2].

As anticipated, time management behavior is found to be positively associated with well-being among teachers of universities. These findings are in line with prior scientific literature [22] confirming that higher levels of time management behavior are linked with higher well-being. Similarly, time management behavior was anticipated to be negatively correlated with stress among university teachers. The correlation coefficients suggesting inverse relationship between time management behavior and stress confirmed this assumption. Thus, the results of the correlation coefficient are consistent with the past research indicating that time management behavior serves as a protecting factor to reduce the levels of stress among employees [23].

Besides enhancing well-being and reducing stress, time management behavior is also linked with job-related outcomes in universities. In the present study, three job-related outcomes of time management behavior are taken into consideration. Thus job satisfaction, job performance and world overload are focused in the present study. According to the underlying assumption, time management behavior is found to be positively correlated with job satisfaction in the present study. Consistent research evidences confirm that time management behavior enhances job satisfaction among employees [24]. The same findings are observed with job performance. In the current research, time management behavior was positively correlated with job performance of the university teachers. These findings are supported by the past research which confirms that time management behavior increases employees' performance at job [25].

Time management behavior not only enhances job satisfaction and job performance, it also reduces the work overload perceived by the university teachers due to excessive work and too many assignments which are actually not completed well in time and consequently leads towards greater work overloads. Work overload is one of the most prominent role-related stressors in the modern organizations as employees are required to complete bulk of work in limited time. In this regard, university teachers who have good time management behaviors are capable of

managing their work activities and completing their job related assignments in right times without any unwanted delays. Contrary, teachers with poor time management behavior fail to complete their work in a given time and consequently suffer from work overload. Thus the assumption the time management behavior is likely to be negatively correlated with work overload was supported in the present study. The correlation coefficients are consistent with prior literature [26]. The inverse relationship between time management behavior and work overload confirmed that time management behavior reduces work overload among university teachers.

Perceived control of time is another importance time management related construct. Therefore, perceived control of time is also linked with personal and job-related outcomes among university teachers. The present study anticipated that perceived control of time is likely to be positively correlated with well-being among university teachers. The findings confirmed this assumption which was grounded in the prior literature confirming the consistent link between perceived control of time and well-being among employees [2]. Besides enhancing well-being of teachers, perceived control of time is found to be negatively associated with stress. Thus the perception of the university teachers that their time is under their own control can help in reducing their stress level.

Just like time management behavior, perceived control of time is also associated with job-related outcomes including job satisfaction, job performance and work-overload. In the present study, the assumption that perceived control of time is likely to be positively correlated with job satisfaction was supported by the findings. The positive relationship between perceived control of time and job satisfaction confirmed that perceived control of time enhances level of job satisfaction among university teachers. These findings are consistent with the past research [2]. Similarly, perceived control of time is supposed to be positively associated with job performance among university teachers. The results confirmed this assumption which was based on the prior empirical evidence [8, 11]. Similarly, it was anticipated that perceived control of time is likely to be negatively associated with work overload. The results of the present study confirmed this assumption. Findings of the current research are consistent with the prior literature [1].

4.1. Limitations and Recommendations

In this study, due to survey data, the social desirability is a possible problem which should be addressed in future scientific investigations. The study remained limited to only one segment of education system in Pakistan which is university and it should be extended to schools and colleges as well because of the equal importance of time management for all educational entities.

4.2. Conclusion

Time management and perceived control of time is one of the most superior behaviors of the teachers which influence their personal life by ensuring their well-being and reduces their stress. Moreover, time management and perceived control of time is also linked with the positive outcomes in the professional life of the teachers. The present study has addressed the same lines of inquiry. The findings revealed that time management and perceived control of time is directly correlated with personal and professional life outcomes of teachers.

REFERENCES

- [1] Macan TH, Shahani C, Dipboye RL, Philips AP. College students' time management: correlations with academic performance and stress. *J of Educational Psychology*. 1990; 82: 760-768.
- [2] Claessens BJC, van Eerde W, Rutte CG, Roe RA. A review of time management behaviour literature. Manuscript submitted for publication. 2004.
- [3] Stewart-Brown S, Tennant A, Tennant R, Platt S, Parkison J, Weich S. Internal Construct Validity of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS): A Rasch analysis using data from the Scottish Health Education Population Survey. *Health and Quality of Life Outcomes*, 2009; 7(1): 15-22.
- [4] Lovibond SH, Lovibond, PF. Manual for depression anxiety stress scales. Sydney: Psychology Foundation. 1995.
- [5] Igbaria M, Guimaraes T. Antecedents and consequences of job satisfaction among information center employees. *J of Management Information Systems*. 1993; 9(4): 145-174.
- [6] Williams LJ, Anderson SE. Job satisfaction and organizational commitment as predictors of organizational citizenship behavior and in-role behaviors. *J of Management*. 1991; 17(1): 601-617.
- [7] Cooper GL, Dewe, PJ, O'Driscoll MP. *Organizational Stress: A Review and Critique of Theory, Research, and Applications*. Thousand Oaks, CA: Sage. 2001.

- [8] Macan TH. Time management behaviour: Test of a process model. *J of Applied Psychology*.1994; 79: 381-391.
- [9] Macan TH. Time-management training: Effects on time behaviors, attitudes, and job performance. *The J of Psychology*.1996; 130: 229-236.
- [10] Wu D, Passerini K. Uncovering knowledge-based time management practices: Implications for project management. *International J of Managing Projects in Business*. 2013; 6(2): 332–348.
- [11] Hafner A, Stock A. Time management training and perceived control of time at work. *The J of Psychology*. 2010; 144(5): 429–447.
- [12] Avey JB, Luthans F, Smith RM, Palmer NF. Impact of Positive Psychological Capital on Employee Well-Being over Time. Management Department Faculty Publications. Paper 55.
- [13] Cohens S, Janicki-Deverts D, Millerg GE. Psychological stress and disease. *J of the American Medical Association*. 2007; 298(14): 1685-1687.
- [14] Ritz R, Burris S, Brashears T. The effects of a time management professional development seminar on stress and job satisfaction of beginning agri-science teachers in west Texas.*J of Agricultural Education*. 2013; 54(3): 1-14. doi: 10.5032/jae.2013.03001
- [15] Davis MA. Time and the nursing home assistant: Relations among time management, perceived control over time, and work-related outcomes. Paper presented at the Academy of Management, Toronto, Canada. 2000.
- [16] Kelly WE. Harnessing the river of time: a theoretical framework of time use efficiency with suggestions for counselors. *J of Employment Counseling*.2002; 39: 12-21.
- [17] Green, P. and Skinner, D. (2005), “Does Time Management Training Work? An Evaluation,” *International Journal of Training and Development*, Vol. 9 No. 2, pp. 124–139.
- [18] Strongman KT, Burt CDB. Taking breaks from work: an exploratory inquiry. *J of Psychology*.2000; 134: 229-242.
- [19] Muthen B, Kaplan D. A comparison of some methodologies for the factor analysis of non-normal Likert variables. *British J of Mathematical and Statistical Psychology*.1985, 38: 171-189.
- [20] Nunnally JC, Bernstein IH. *Psychometric theory* (3rd ed.). New York: McGraw-Hill. 1994.
- [21] Kline P. *The handbook of psychological testing*. London: Rutledge. 1999.
- [22] Peeters MAG, Rutte CG. Time management behaviour as a moderator for the job-demand-control interaction. *J of Occupational Health Psychology*.2005; 10: 64-75.
- [23] Lang D. Preventing short-term strain through time-management coping. *Work & Stress*.1992; 6: 169-176.
- [24] Griffiths RF. Time management in telework and other autonomous work environments. *Dissertation Abstract International: Section B: The sciences and engineering*, 64, 5B. 2003.
- [25] Nonis S, Fenner G, Sager JK. Revisiting the Relationship between Time Management and Job Performance. *World J of Management*. 2011; 3(2): 153-171.
- [26] Claessens BJC, van Eerde W, Rutte CG. A review of the time management literature. *Personnel Review*. 2007; 36: 255–274.

Survival Rate of Luminal Subtype Breast Cancers after Neoadjuvant Treatment Based on Variant E-Cadherin and Vimentin Expression

Bachtiar M. Budiando^{1*}, Bambang Pardjianto², Edy Mustofa³, Solimun⁴

¹Department of General Surgery, Saiful Anwar Hospital Malang, Indonesia

²Medical Department, Universitas Islam Negeri Maulana Malik Ibrahim, Indonesia

³Department of Obstetrics and Gynecology, Saiful Anwar Hospital Malang, Indonesia,

⁴Engineering Faculty, Universitas Brawijaya, Indonesia

Received: November 8, 2017

Accepted: January 31, 2018

ABSTRACT

Breast cancer is the most common cancer among women worldwide, with million new cases diagnosed every year. In Indonesia, there are currently no exact data on the number of incidence rate of breast cancer. Overall, more than 70% of patients with breast cancer were diagnosed at an advanced stage. Those who have just come to doctors have shown the metastatic characteristics and 50% of post-chemotherapy treatment patients have experienced chemotherapy resistance and recurrence in primary tumor localization. Neoadjuvant chemotherapy treatment to breast cancer patients required biomolecular indicators as medical considerations for treatment and selection of chemotherapy types for patients. Therefore, the effectiveness of neoadjuvant chemotherapy cannot be predicted by biomolecular approaches yet. This research was aimed to analyze the potential expression of vimentin and e-cadherin in order to find the biomolecular predictor of neoadjuvant chemotherapy response in breast cancer stage III. Samples were collected from luminal subtype breast cancer stage IIIB patients in Dr. Saiful Anwar General Hospital of Malang, Indonesia. The expression of vimentin and e-cadherin was examined and analyzed immunohistochemically. The data obtained by immunohistochemistry examination and analysis were statistically processed using analysis of variance (ANOVA) generated by SPSS program for Windows. This study obtained that neoadjuvant chemotherapy treatment can decrease vimentin and increase e-cadherin expression. This study concluded that vimentin and e-cadherin can be further utilized as the predictor of neoadjuvant chemotherapy response based on anthracycline in the patients of luminal subtype breast cancer stage IIIB.

KEYWORDS: breast cancer, vimentin, e-cadherin, neoadjuvant chemotherapy.

INTRODUCTION

Breast cancer is a mutational disease in women with the mortality rate that increases year by year. It is caused by gene mutation and disruption of the cell death program which leads to uncontrollable harmful cell development. The difference in biological behaviors between breast cancer cells requires different medical treatment interventions. Steroid hormone receptors, such as estrogen receptor (ER), progesterone receptor (PR), and oncogene ErbB-2/receptor human epidermal growth factor-2 (HER-2) are the important factors for breast cancer differentiation to select the suitable response towards therapies and prognosis. Patients should have [1].

Breast cancer luminal A subtype is indicated with the expression of ER (+), PR (+), Bcl-2 (+), cytokeratin CK8/18 (+), HER2 (-), and low-expression of Ki67, and high-expression of GATA3. Breast cancer subtype luminal B is indicated with the expression ER (+) and/or PR (+), HER-2 (+), high-expression of Ki67 (>13,25%). To treat breast cancer patients, hormonal therapy is not sensitive enough, because of that, the therapy based on patients' biomolecular condition will improve the medical chemotherapy for breast cancer patients [2].

Until now, the selection of breast cancer therapy is still based on the anatomical disease extension. However, the biological molecular mechanism which involves in the biological behavior of breast cancer did not catch adequate attention. The standard of breast cancer therapy stage III starts with neoadjuvant systemic therapy, either chemotherapy or hormone therapy, sometimes combined with radiation therapy [3]. There are many combinations of chemotherapy medicines used as neoadjuvants, but anthracycline-based medicine (epirubicin/adriamycin/doxorubicin) is often used as the first line in chemotherapy, such as the combination of *Fluorouracil-Epirubicin-Cyclophosphamide* (FEC). The patient response towards chemotherapy is examined first before further medical treatment, such as surgery or the medical procedures [4]. In this decade, neoadjuvant chemotherapy has been developed and involved in the

*Corresponding Author: Bachtiar M. Budiando, Department of General Surgery, Saiful Anwar Hospital Malang, Indonesia.
Email: bachtiarbudiando@yahoo.com

medical treatment of cancer, either downstaging and downsizing of breast cancer. However, there are so many chemoresistance cases in breast cancer patient that decrease the chemotherapy effect to the tumor cells and increase the harmful side effects [5].

It is well known that breast cancer pathomechanism shows an increase in progression due to the activation of *Epithelial Mesenchymal Transition* (EMT) pathway which affects the ability of cancer cells to be more invasive, and exhibits high motility allowing to enter in the circulatory system and, if finding a conducive environment, will shape a secondary cancer progression [6].

EMT itself is basically a series of processes regulated by several transcription factors such as SNAIL, ZEB or Twist causing characteristic changes of epithelial cells into unstable mesenchymal cell characters. Research on the molecular regulation of EMT has been proposed through some tissue culture studies responded by cellular communication pathway between the activator and repressor of EMT, either on the pathway of TGF- β or signaling Wnt. The activation of EMT pathway has several endpoints including a decreased E-cadherin expression and an increased expression of EMT-associated genes such as vimentin [7]. EMT has established and named for its role in cancer metastasis. It turns out to be related to the ability of cancer cells as the EMT activation is able to penetrate the circulation system through the mechanism of diapedesis due to the bond with β 1 integrin in which the circulation of cancer cells will express CD44 and TrkB that can help protect cancer cells from phagocytic or anionic mechanism that allows the cancer cells to be home on the secondary area away from the site of the primary tumor and to form a new tumor progression [2].

E-cadherin is the phenotype protein marker of epithelial cells, while vimentin is phenotype protein marker of mesenchymal cells. These proteins can be examined using immunohistochemical approachment by using breast cancer tissue collected from biopsy and surgery from patients in order to observe the expression of e-cadherin and vimentin which highly expected to be related to chemoresistance case. In addition, besides of the increase of vimentin and decrease of e-cadherin expression are considered as an indicator of EMT case and chemoresistance cases [7].

Neoadjuvant chemotherapy procedures have no obvious biomolecular indicator as consideration of chemotherapy treatment selection. The effectivity of neoadjuvant chemotherapy still can not predict exactly yet. Therefore, this study was aimed to analyze the expression of vimentin, e-cadherin in order to discover the predictor of biological cells changes as the response towards neoadjuvant chemotherapy to breast cancer stage III patients.

MATERIALS AND METHODS

This research was conducted using experimental research design. Samples were collected from breast cancer patients subtype Luminal Stage IIIB in Dr. Saiful Anwar General Hospital of Malang, Indonesia. Immunohistochemical examination and analysis of vimentin and e-cadherin were performed in the Anatomical Pathology laboratory of Dr. Saiful Anwar General Hospital of Malang, Indonesia, and Faculty of Medicine, Brawijaya University, Malang.

Immunohistochemistry (IHC)

In this research, expression of vimentin and e-cadherin was examined based on immunohistochemical methods with specific monoclonal antibodies. The tissue specimen was fixed with a 10% formalin buffer. The tissue preparation to be observed was first dehorned with xylol for 5 minutes. Then, it was dehydrated with 96% ethanol, 80% ethanol, and 70% ethanol each for 5 min. The tissue was then washed using distilled water. The tissue was washed with PBS (Phosphate Buffer Saline), fixed with 1% paraformaldehyde in PBS, and washed. Then, the tissue was incubated for 1 hour with 8% BSA in PBS and washed twice with PBS 5 min each. The antibody was then diluted in 1% BSA and incubated for 1 hour at ambient temperature, then washed with PBS for 5 minutes 3 times, the step repeated. Then, it is incubated for 1-2 hours at ambient temperature in the dark to prevent the cells from drying out. Cells were washed in the dark using PBS three times for 5 minutes. The cell then observed its expression by a light microscope. Cells expressing vimentin and e-cadherin will be appeared in brown or dark color, while the cells that do not express will appear in purple color under light microscope examination (M=400x).

Data Analysis

The data were analyzed using a paired t-test since the vimentin and e-cadherin expression variables were quantitative. The research hypothesis was analyzed by a nonparametric statistical test for both nominal and ordinal scale data and using parametric statistics for interval and ratio data. The analysis was generated by SPSS program for Windows software.

RESULTS AND DISCUSSION

Immunoreactivity results showed a positive result marked by brown membranous staining and circling cancer cells (red arrow) (Fig 1). In the sample group of luminal subtype breast cancer stage IIIB patients who responded to neoadjuvant chemotherapy treatment of 19 people, with a mean value of vimentin 18.68%, and limit between 9.57% - 27.79% (table 1).

Based on the results of statistical analysis, there was a significant difference ($p = 0.000 <$) mean \pm SD of vimentin between groups that showed response as neoadjuvant chemotherapy effect with groups with no response to chemotherapy effects. Groups that indicate neoadjuvant chemotherapy effect response have lower vimentin expressions than those indicating a response. This suggests that neoadjuvant chemotherapy treatments may decrease vimentin in patients who may respond to the chemotherapy treatment.

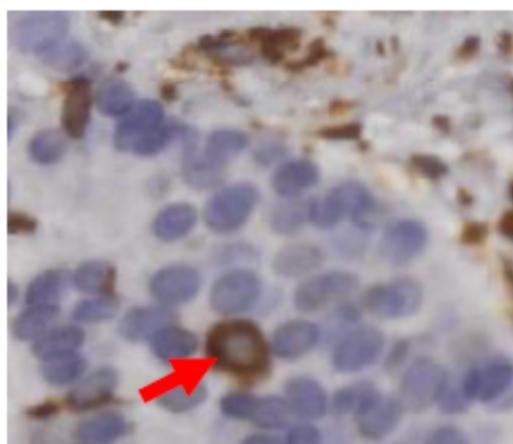


Figure 1. Expression of vimentin in breast cancer tissue. The positive results of immunoreactivity are characterized by brown membranous staining encircling cancer cells (M=400x) (red arrows).

Table 1. Vimentin examination results

Groups	n	Mean (%)	Confidence interval 95%	
			Lower limit (%)	Upper limit(%)
Response	19	18.68	9.57	27.79
No response	16	44.81	35.51	54.11

Figure 2 shows the expression of e-cadherin in breast cancer tissue from luminal subtype breast cancer stage IIIB patients prior to neoadjuvant chemotherapy treatment. Immunoreactivity examination results showed positive results, indicated with brown membranous staining circling cancer cells. Figure 2C shows the negative reaction of membranous staining on the breast cancer tissue of the patient. In figure 2 there is no brown color that circles around the cancer cell.

Patients who responded after neoadjuvant chemotherapy were 19 patients, resulting e-cadherin expression mean value of 69.16, and statistical limit between 48.75 - 89.57 (table 2). This indicates that if breast cancer patients can respond well to neoadjuvant chemotherapy treatment 3 times, it will show a higher e-cadherin expression than in those patients who did not respond.

E-cadherin is a protein marker of epithelial cell phenotype, whereas vimentin is a protein marker of mesenchymal cell phenotype, either of these proteins can be observed and measured using an immunohistochemical examination of breast cancer tissue from biopsy or surgery. Therefore, the expression of protein vimentin and e-cadherin is expected to be related to the chemoresistance cases [7]. Supported also by the results of research [8], which states that in addition to an increase of vimentin expression, it will also occur e-cadherin decrease. Some pathological conditions can occur in the EMT process, that pathological condition including cellular junctional instability, cytoskeleton actin reorganization, increased motility and cell invasion capability, decreased regulation and relocation

of e-cadherin, decreased regulation causing β -catenin translocation from cell membranes to cell nuclei, removal of molecular markers from mesenchymes, such as vimentin, fibronectin, and e-cadherin[9][10][11].

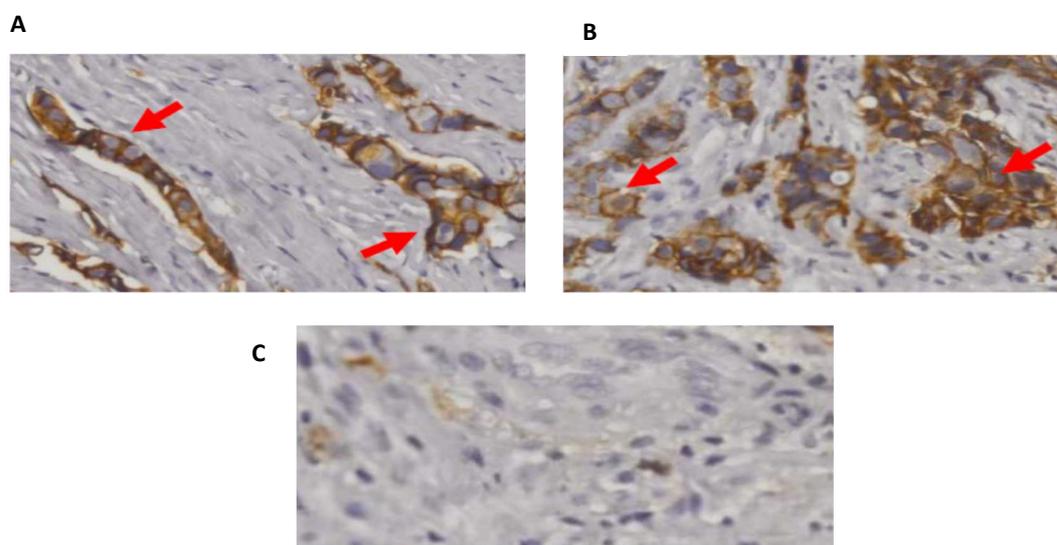


Figure 2. Expression of e-cadherin in breast cancer tissue.

Figures A and B show positive results of immunoreactivity characterized by brown membranous staining encircling cancer cells (red arrows). Figure C foci cancer with negative reaction results membranous staining.

Table 2. Results of the e-cadherin examination

Groups	n	Mean Value	Confidence interval 95%	
			Lower limit (%)	Upper limit (%)
Response	19	69.16	48.75	89.57
No response	16	24.81	14.24	35.38

CONCLUSION

The conclusions from this study were vimentin and e-cadherin can be used as a predictor of anthracycline-based neoadjuvant chemotherapy in luminal subtype breast cancer stage IIIB.

REFERENCES

- [1] Parker, Joel S, Michael Mullins, Maggie C U Cheang, Samuel Leung, David Voduc, Tammi Vickery, Sherri Davies, et al. 2009. "Supervised Risk Predictor of Breast Cancer Based on Intrinsic Subtypes." *Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology* 27 (8): 1160–67. doi:10.1200/JCO.2008.18.1370.
- [2] Quail, Joyce JA., 2014, Microenvironmental regulation of tumor progression and metastasis DF, *Nat. Med.* November 19(11): 1423-1437.
- [3] Caudle, Abigail S, Ana M Gonzalez-Angulo, Kelly K Hunt, Ping Liu, LajosPusztai, W Fraser Symmans, Henry M Kuerer, Elizabeth a Mittendorf, Gabriel N Hortobagyi, and FundaMeric-Bernstam. 2010. Predictors of Tumor Progression during Neoadjuvant Chemotherapy in Breast Cancer. *Journal of Clinical Oncology : Official Journal of the American Society of Clinical Oncology* 28 (11): 1821–28. doi:10.1200/JCO.2009.25.3286.

- [4] Foubert Ellen, Bram De Craene, and Geert Berx, 2010, Key signaling nodes in mammary gland development and cancer. The Snail1-Twist1 conspiracy in malignant breast cancer progression, *Breast Cancer Research* 2010, 12:206
- [5] Rakha, Emad A, Jorge S Reis-Filho, Frederick Baehner, David J Dabbs, Thomas Decker, Vincenzo Eusebi, Stephen B Fox, et al. 2010. "Breast Cancer Prognostic Classification in the Molecular Era : The Role of Histological Grade." *Breast Cancer Research : BCR* 12 (4): 207–18.
- [6] Heerboth S, Housman G, Leary M, McKenna L, Byler S, Lapinska K, Willbanks A, and Sarkar S, 2015, EMT and tumor metastasis, *Clinical and Translational Medicine*, 4:6, DOI: 10.1186/s40169-015-0048-3.
- [7] Lee, 2006, Tumor-Associated Macrophage: Its rorel in tumor angiogenesis, *Journal of Cancer molecules* 2(4): 135-140
- [8] Cheang, Maggie C U, Stephen K Chia, David Voduc, DongxiaGao, Samuel Leung, Jacqueline Snider, Mark Watson, et al. 2009. Ki67 Index, HER2 Status, and Prognosis of Patients with Luminal B Breast Cancer. *Journal of the National Cancer Institute* 101 (10): 736–50.
- [9] Kong Dejuan, Yiwei Li, Zhiwei Wang and Fazlul H. Sarkar, 2011, Cancer Stem Cells and Epithelial-to-Mesenchymal Transition (EMT)-Phenotypic Cells: Are They Cousins or Twins?, *Cancers* 2011, 3, 716-729
- [10] Brunna, Felipe Andres Cordero da Luz, Paulo Rogério de Faria, Ana Paula Lima, Oliveira, Rogério Agenor de Araujo, and Marcelo Jose Barbosa Silva, 2014, Far Beyond the Usual Biomarkers in Breast Cancer: A Review, *Journal of Cancer* 2014, 2014; 5(7): 559-571
- [11] Genevieve, Robert S. Liwski, and Marc Mansour, 2011, Immune Modulation by Chemotherapy or Immunotherapy to Enhance Cancer Vaccines *Cancers* 2011, 3, 3114-3142

Implementation Challenges of Knowledge Management Practices in Pakistani Universities

Rehmat Shah¹, Dr Syed Asad Abbas Rizvi¹, Professor Dr. Nabi Bux Jumani²

¹Assistant Professor, Department of Education, International Islamic University Islamabad, Pakistan

²Professor, Faculty of Social Sciences, International Islamic University Islamabad, Pakistan

Received: October 19, 2017

Accepted: January 11, 2018

ABSTRACT

The purpose of this research paper was to explore the perceptions of PhD approved supervisors about challenges and problems of knowledge management practices in Pakistani universities. Knowledge management can be defined as the process of knowledge creation, knowledge storage, knowledge transformation and knowledge reapplication. Knowledge management practices have vital role in the development of organization as well as universities. To implement knowledge management in organization as well as in universities needed sophisticated infrastructure. The objectives of this research paper were to explore the implementation challenges of knowledge management practices. Research method for this paper was quantitative data analysis. The population was all approved PhDs supervisors in universities of Pakistan. To representative sample of the study, 465 PhD approved supervisor were randomly selected. The results of the paper uncovered that there was lack of funding, lack of infrastructure, lack of software tool and knowledge management strategies. The study results further proved non-availability of central unit for tacking responsibility, benefits of knowledge management not cleared, lack of leadership supports for knowledge management were also prevailing challenges in universities. This paper recommends that Higher Education commission of Pakistan may provide specific funding, strategies, equipped with appropriate infrastructure of information communication technologies and suitable culture for knowledge management in universities of Pakistan. The study further recommended that Higher Education commission and universities may be offered training and awareness programs about knowledge management benefits and appealing leadership support for knowledge management implementation.

KEYWORDS: Knowledge, Knowledge management, Higher Education Commission

1. INTRODUCTION

The approved experiences, facts, skills, and information which expanded through education is called knowledge (Liebowitz & Beckman, 1998). Nonaka and Takeuchi (1995) first time described two broad categories of knowledge as explicit and tacit. Kidwell, Linde & Johnson, (2000) explained that personal, job related information, associated to context and very difficult to documented in explicit way is called tacit knowledge. Crowley (2000) described that codified knowledge, easy to explain, access anywhere and documented in a database. Knowledge Management as a discipline and management tool has popularity in the last three decades. By defining knowledge management definitions and dimensions is very challenging. Different scholars and researcher completed their studies in knowledge management, so it can be considered the subject of multi discipline in near past years. Hlupic et al., (2002) Due to intangible and complex nature of knowledge management it can not be possible to define it in effortless ways. In the starting of 1990s Knowledge management called new phenomena and new subject but is not a new terminology anymore. With the beginning of 1990s Knowledge Management (KM) receiving interest in the field of academia (Schmitz, Rebelo, Gracia & Tomas, 2014). According to Burnett et al., (2004) the subject of knowledge management has attracted attention from both academics and practitioners. Pathirage, et al., (2008) define that knowledge is always considered asset in the community of business. Different past studies of knowledge management practices have found competences of organization structure, technology, and culture. According to Thorn (2001) there are immense parts in the education sectors which can be developed by knowledge management implications. According to Chang & Chuang (2011) explained that systems of information communication technology, organizational culture, organizational strategy, leadership management, organizational structure can be improved by knowledge management practices. Kidwell, Linde & Johnson (2000) first time conceptualized the benefits and significant applications of knowledge management practices for higher education institutions. Sinha, Arora, & Mishra (2012) articulated that knowledge management has well familiar in the business world. Chourides et al., (2003) defined the principles of knowledge management in academic perspective. According to Mercado, (2010) Knowledge and its management practices improves the organization development through the

combination of technical solutions and organizational values for decision making. Al-Zoubi (2014) explained that now the time to change of universities from managing teaching staff and students to knowledge management and innovation to achieves the goals. For effective implementation of knowledge management practices there are lot challenges and problems in advance countries as well as in the developing countries. According to Forbes, (1997). Major challenges in knowledge management consisted on culture and technical area. These challenges and problems shaped on several forms and categories. According to researchers Bhatt, (2001) Information communication technology system is compulsory for effective and efficient knowledge management. According to Savary (1999) implementation of the knowledge management process needed necessary effective information system infrastructure. According to Davenport et al (1998) information technology is the essential part of knowledge management implementation process in any organization. According to Davis & Riggs, (1999) information infrastructure is the most crucial tools for managing knowledge. Implementation of effective knowledge management practices the role of leadership and support is crucial. According to the Davenport (1998) knowledge management cannot be implemented without the support of senior management and leaders. According to Sallis and Jones (2002) specified that there are numbers of

example of knowledge management failure due to small numbers of involvement of employee's knowledge sharing. There are numbers of studies have pointed out importance of employee training to knowledge management implementation success. According to Skyrme & Amidon, (1997) stated that there must be accessible knowledge management friendly culture for the development of implementation success process. According Greco (1999) that successful knowledge management is giving education to help employees recognize what knowledge is valuable. Moffett et al. (2003) described that involvement of employees is serious features for knowledge management implementation success. Knowledge management practices is growing topic in the business community as well as in universities of Pakistan. Some courses of Knowledge management have included universities of Pakistan. In Virtual University (VU) of Pakistan Knowledge management studied as elective course of BBA honors and MBA programs (HEC, 2005). Library and Information Science in four years graduation and two years experts program in Library and Information Science (HEC, 2009) have been introduced in universities (shah& Mehmood 2015).The researcher was attracted to study the challenges of knowledge management and its practices in Pakistan universities.

2. Research Questions of the Study

Following were the objectives of the study.

1. What are the implementation challenges of knowledge management practices in the universities of Pakistan?
2. What are the opinion of PhDs supervisors about lacking knowledge management implementation in the universities of Pakistan?

3. RESEARCH METHODOLOGY

This research study was quantitative in nature. descriptive analysis was used for data analysis.

4. Population and Sampling

The population of the study includes all Higher Education Commission approved supervisors in universities of Pakistan. Using random sampling, 465 PhD were selected for study.

5. Validation of Research Instrument

The questionnaire was developed by canfield (2011) and with the approval of author used it in research study. The reliability co-efficient of the questionnaire was .94 and the content validity of the instrument was estimated by PhD faculty in education.

6. Data Collection of The Study

Total 465 questionnaires distributed among PhD approved supervisor. The ways used for circulation was by E-mail, google form, and personally visited the target universities of Pakistan. Out of 465 there 326 questionnaires were return from sample the study.

7. Data Analysis of the Study

The data were grouped together in SPSS version 17. Data were analyzed through SPSS in simple percentage.

8. RESULTS OF THE DATA ANALYSIS

Above table of the study showed that there is numbers of knowledge management problems and challenges in Pakistani universities. Nine option were presented in the table for choosing the challenges of knowledge management faces in universities of Pakistan. first option the table illustrated about the situation of funding for knowledge management. In universities of Pakistan 50% opinion that they have lack of funding challenges for

knowledge management implementation. The 2nd option of the table described the infrastructure situation. The results disclosed that 43% population of the study have infrastructure challenges in universities of Pakistan. The 3rd category of table demonstrated the support of leadership to knowledge management implementation in Pakistani universities. The outcome of the option described that 39% sample of population have lack of leadership assistance for development and implementation of knowledge management. Benefits of knowledge management were the 4th option to displayed the results. This option have opinion of 46% population that they have unaware about knowledge management ant its benefits, so it's also a challenge for Pakistani universities. Return on investment in knowledge management is also challenges but there were small numbers of opinions (14%). The 6th option of table was about projects failed of knowledge management. The results showed that only 13% respondents know about implementation challenges of knowledge management practices. The 7th option of table illustrated about cultural role in the implementation process of knowledge management in universities. The results of option choose by respondents showed that 20% sample of the population know that cultural is not suitable for knowledge management in Pakistani universities. The 8th sort of table illustrated about political issues in universities of Pakistan for successful knowledge management practices. The results presented that only 20% population of the study have influences of political for implementation of knowledge management. To get the opinion of the population about unawareness of challenges for knowledge management practices implementation option 9th were presented to tick their perceptions. The results showed that there were 10% have no knowledge about any challenges or unaware.

Table No:1
Lack of implementation practices of knowledge management in universities of Pakistan.

Option	N	Percent	Percent of cases
Lack of funding	163	50.0	50.0
Lack of infrastructure	139	43.0	43.0
Lack of leadership support	124	39.0	39.0
Benefits not understood	148	46.0	46.0
Return on investment considered a risk	43	14.0	14.0
Failed knowledge management projects at other institutions	40	13.0	13.0
Culture not suitable for knowledge management	64	20.0	20.0
Political/competitive environment will prevent successful knowledge management implementation	63	20.0	20.0
Do not know	32	10.0	10.0

Table No:2
Challenges and problems of knowledge management practices in Pakistani universities.

Option	Frequency	Percent	Valid Percent
Lack of an appropriate IT infrastructure	168	52.0	52.0
Lack of appropriate software tools	168	52.0	52.0
Lack of support from senior management	136	42.0	42.0
Lack of Knowledge Management strategy	180	56.0	56.0
No central unit taking responsibility to drive the Knowledge Management agenda	138	43.0	43.0
Power issues	80	25.0	25.0

Above table of the study show the implementation challenges and problems concerning to knowledge management practices in Pakistani universities, the table has six options for describing the challenges. Option No one of the table illustrated the suitable infrastructure of information technology. The results of the option described that 52% respondents have information technology challenges to implement knowledge management practices in their universities. The 2nd option of the table explained the software tool for knowledge management practices. The respondent's results showed that 52% opinion about in universities that there is lack of suitable software tool for knowledge management implementation. The 3rd option was about senior management support for active role in knowledge management practices. The responses from respondents (42%) showed the results about lack of support from senior's management in universities for implementation of knowledge management practices implementation challenges. The 4th sort of table exhibited the result of lack knowledge management strategies in Pakistani universities. The result disclosed that 56% respondents have opinion that they have lack of strategies for knowledge and its management in universities. The 5th option of the table described about central unit of knowledge management in university. The results of the option showed that 43% have lack of central unit to drive knowledge management and practices implementation. The 6th option was about to

power/electric issue to implementing knowledge management. The results of option showed that there were 25% opinion existed for electricity problem in developing country.

9. Finding of the Study:

Following findings of study were established as follow:

1. Challenges of lack of funding for implementation of knowledge management practices were existed in Pakistani universities.
2. Lack of infrastructure for knowledge management implementation were also observed as challenge in Pakistani universities.
3. Not sufficient leadership support for effective use of knowledge management practices were arose as challenge in universities.
4. One of the major challenges is benefits of knowledge management not cleared in universities of Pakistan.
5. There were small numbers of awareness about investment on knowledge management and projects already failed in Pakistani universities.
6. There were small numbers of opinion existed in universities about challenges of culture not suitable for knowledge management practices.
7. Small numbers opinion befall as challenge of political/competitive environment.
8. Small numbers of universities faculty unaware about challenges of KM implementation process.
9. There were challenges standing in shape of lack of proper information technology infrastructure in universities of Pakistan for knowledge management implementation.
10. There were challenges of lack of appropriate software tools for knowledge management practices in Pakistani universities.
11. Support from senior management as challenges was also existed Pakistani universities
12. Absence of Knowledge Management practices strategies in universities were also considered as challenge for KM implementation.
13. No central unit taking responsibility of knowledge management practices were also important challenge for implementation process.
14. Electricity/ power issues were existed as challenge in the developing country of Pakistan as well as implementation of knowledge management practices.

10. Conclusion:

This research study concluded that

1. Non-availability of funding for implementation of knowledge management due to unawareness of benefits and perceptions.
2. Absence of infrastructure, nonexistence of software tools, lack of proper information technologies was challenges due to knowledge management not included in the universities vision and strategies.
3. Not sufficient leadership, senior management and, political/competitive environment were also existed due to unawareness of benefits.
4. No central unit taking responsibility of knowledge management practices in universities due to non-availability strategies.
5. Electricity/ power issues is a challenge of any developing country like Pakistan as well as for knowledge management practices.
6. Due to non-availability of proper guidance and training small opinion existed about that cultural is not suitable for knowledge management practices.

11. Recommendations of the study:

Following recommendations were made on the bases of finding.

1. Higher Education Commission of Pakistan may be provided specific funding for implementation of knowledge management practices.
2. Universities of Pakistan may be equipped with appropriate infrastructure of information communication technologies, software tool and suitable cultural for implementation of knowledge and its management practices.
3. Knowledge management practices plan and striges may be provided for faculty and department within universities for competitive advantages.
4. Strongly recommended that there may be provided knowledge management strategy for implementation in universities.
5. There may be proper standard operating procedure(SOP) for leadership and senior management to support knowledge management in their respective universities.
6. Knowledge management central unit may be established at universities level for tacking responsibility to drive knowledge management practices.
7. Knowledge management practices benefits may be included in university vision and mission.

REFERENCES

- Al-Zoubi, D. M. (2014). Improving Teaching and Learning at Universities-the Use of Knowledge management. *International Journal of Advanced Corporate Learning*, 7(1).
- Bhatt, G. D. (2001). Knowledge management in organizations: examining the interaction between technologies, techniques, and people. *Journal of knowledge management*, 5(1), 68-75.
- Burnett, S., Illingworth, L., & Webster, L. (2004). Knowledge auditing and mapping: a pragmatic approach. *Knowledge and Process Management*, 11(1), 25-37.
- Chourides, P., Longbottom, D., & Murphy, W. (2003). Excellence in knowledge management: an empirical study to identify critical factors and performance measures. *Measuring Business Excellence*, 7(2), 29-45.
- Cranfield, D. (2011). *Knowledge management and higher education: a UK case study using grounded theory* (Doctoral dissertation, University of Southampton).
- Crowley, B. (2000). Tacit knowledge and quality assurance: Bridging the theory-practice divide. *Knowledge Management for the Information Professional, Information Today, Medford, NJ*, 205-20.
- Davenport, T., De Long, D. and Beers, M. (1998), "Successful knowledge management projects", Sloan Management Review, Vol. 39 No. 2, pp. 43-57.
- Davis, B. and Riggs, B. (1999), "InformationWeek research survey", InformationWeek, No. 728, p. 40.
- Davis, T. (1996), "Managing knowledge-work support functions", Journal of General Management, Vol. 22 No. 1, pp. 68-86.
- Forbes (1997), "Knowledge management: the era of shared ideas", Forbes, Vol. 160 No. 6, p. 28
- Greco, J. (1999). Knowledge is power. *Journal of Business Strategy*, 20(2), 19-22.
- Hlupic, V., Pouloudi, A., & Rzevski, G. (2002). Towards an integrated approach to knowledge management: 'hard', 'soft' and 'abstract' issues. *Knowledge and Process Management*, 9(2), 90-102.
- Jones, G., & Sallis, E. (2013). *Knowledge management in education: Enhancing learning & education*. Routledge.
- Kidwell, J. J., Vander Linde, K., & Johnson, S. L. (2000). Applying corporate knowledge management practices in higher education. *Educause quarterly*, 23(4), 28-33.
- Liebowitz, J., & Beckman, T. J. (1998). *Knowledge organizations: What every manager should know*. CRC Press.
- Lu, C., Chang, M., Huang, E., & Ching-Wen, C. (2011). Usability of context-aware mobile educational game. *Knowledge Management & E-Learning*, 3(3), 448.
- Mercado, M.I. (2010), "E-books at Book Expo 2010", Library Hi Tech News, Vol. 27 Nos 6/7, p. 9.
- Moffett, S., McAdam, R., & Parkinson, S. (2003). An empirical analysis of knowledge management applications. *Journal of knowledge Management*, 7(3), 6-26.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford university press.
- Pathirage, C., Haigh, R., Amaratunga, D., & Baldry, D. (2008). Knowledge management practices in facilities organisations: a case study. *Journal of Facilities Management*, 6(1), 5-22.
- Rowley, J. (2000). Is higher education ready for knowledge management? *International journal of educational management*, 14(7), 325-333.
- Savary, M. (1999), "Knowledge management and competition in the consulting industry", California Management Review, Vol. 41 No. 2, pp. 95-107.
- Schmitz, S., Rebelo, T., Gracia, F. J., & Tomás, I. (2014). Learning culture and knowledge management processes: To what extent are they effectively related? *Revista de Psicología del Trabajo y de las Organizaciones*, 30(3), 113-121.
- Shah, S. R., & Mahmood, K. (2015). Research on knowledge management of Pakistan: A literature review. *Library Philosophy and Practice*.
- Sinha, P., Arora, M., & Mishra, N. M. (2012). Framework for a knowledge management platform in higher education institutions. *International Journal of Soft Computing and Engineering*, 2(4), 96-100
- Skyrme, D., & Amidon, D. (1997). The knowledge agenda. *Journal of knowledge management*, 1(1), 27-37.
- Thorn, C. A. (2001). Knowledge management for educational information systems. *education policy analysis archives*, 9, 47.

Analyzing Mobile Apps Energy Consumption

Pinial Khan Butt^{1*}, Entao LUO², Mubina Pathan¹, Irfan Ali Shahani¹, M. Khalid Shaikh³,
Zulfikar Ahmed Maher¹

¹Information Technology Centre, Sindh Agriculture University Tandojam, Pakistan

²School of Electronics and Information Engineering, Hunan University of Science and Engineering,
Yongzhou 425199, China

³Department of Computer Science, The Federal Urdu University of Arts, Sciences & Technology

Received: November 4, 2017

Accepted: December 31, 2017

ABSTRACT

Smart phone user traffic has grown day by day higher and higher. Mobile phone apps usage become practice to many users in everyday life. Now a day's android apps store market become more famous because free to download to use them. Mobile phone primarily run on battery power. You might notice battery life become short when many services actives such as Wi-Fi, CPU processing, gaming and display advertisement drain battery more quickly. Moreover, mobile phone mobile apps, a software application to run on mobile phone initially design for email, calendar and contact database. However, as public demand increases, and apps expand design for games, online banking and online shopping. Despite the growing popularity of mobile apps the energy consumed by mobile apps has poorly understood. In this paper, we argue display advertisement inefficiencies in mobile phone apps. In addition, we measure the power consumption by apps in mobile phone apps. We use the Battery mix app software to measure the power consumption and suggest solution to reduce the power consumption on mobile phone.

KEY WORDS: Network traffic, energy efficient, power consumption, mobile phones, green computing.

I. INTRODUCTION

Before mobile phone only can be used for phone calls specifically. Mobile phone is now used for multiple services purpose capable of voice and video communication, internet access, Mobile TV, camera and sensors (Accelerometer, geo-location) that can operate to some extent autonomously. In present the smart phone is gradually replacing the regular cell phone. The using of smart devices is increasing rapidly that gives idea that smart devices always connected (via Wi-Fi, 3G, and 4G). A manufacturer making smart devices power efficient making them handle this situation. However, there is still needs to improve the battery consumption make battery life longer. Battery life density increase only 30% to 40 % better than before recently[1]. We think about CPU demand in mobile increase double like clock speed. This area become research for researcher to analyze the battery consumption and find which service kills the battery. Despite the popularity of android devices, it is understood. There is still need to make android devices longer life. This deeply need more understand of power consumption in mobile app in smart device. We use the software to measure the power consumption. A M. Kummeretal. [2], it finds display advertisement inefficiencies in mobile apps consume up to 75% of mobile phone battery power. It is absorbed that third party app is not design for power efficient. Developer point out this deficiency in design and implementation of app and consider them as a bug. However, app developers can be weigh to optimize code to extend mobile phone battery life. Mobile phone apps display advertisement in apps generate money for developers without charging initial download of app. The test over running app on 3G service leave the connection open up to 10 secs after downloading information. Advertisement need to connect with the server and send the location information to server causes up to 45% consume power to find app user location. A reasonable delay in advertisement display in apps without halt quality of service advertisement can optimize mobile phone battery consumption. There are large body working on energy efficient and network activities in mobile phones. In addition, the most research focus on networking and operating system. To the best of knowledge, few of them study the mobile apps power inefficiencies. Purdue University team have use Eprof to measure the energy spent inside the apps[3]. They measure the power drain in browser, angry bird, fishes, ny times and map quest apps to measure the power drain during display and run time. However, there are thousands popular apps which are in mobile phone. Further, there is need to account few more famous apps problems measure there drain energy and provide a solution for this problem. Because the research results conclude that energy drain in apps due to free ads is more than double to actual energy use by apps itself[4]. We use ads blockers apps [5] which blocks un necessary free ads application which cause battery drain. We also count the power consume by mix battery app (application use to compute the power consumption of apps), QQ 2012[6], System User Interface[7] and cardiograph personal heart rate meter[8].Further a section 2 ,discuss the most famous mobile apps to measure their power consumption. Section 4, shows a comparisons of different apps power consumption results. Section 5, a conclusion of our research work.

*Corresponding author: Pinial Khan ButtInformation Technology Centre, Sindh Agriculture University Tandojam, Pakistanpinial@sau.edu.pk

2. MATERIAL AND METHODS

MOBILE APPS

Mobile apps are pre-install at the time of manufacturing, can be download from various mobile software distribution platforms through web application through HTTP web browsers. The famous Nokia store [9], galaxy app store, amazon app store, apple app store, blackberry and google play store are available[10], mostly free to download apps.

Apple App store: Apple App store in maintain by Apple Inc. App store offers a categories to users includes social networks, gaming, entertainment and communication etc.

BlackBerry App World: BlackBerry App is design for BlackBerry smartphones you can download Simply from your BlackBerry® smartphone or computer and get started and enjoy the free and paid apps. Many applications are pre-loaded on new BlackBerry smartphones.

Google Play: Google plays introduced to access you are Android apps from Google Play. Google Play is maintained by Google which includes free and paid apps.

Nokia store: is design for apps for your Nokia device. You can discover apps games and more, especially developed for your Nokia device.

Accounting of Energy Consumption of Mobile APPS

A study carried by computer scientist Abhinav Pathak of Purdue University, Indiana revealed that free applications can consume a whopping 75% more energy than paid application mainly due to advertisement[11]. The mobile apps tracking user information to display advertisement consume cause shorter battery life. Team has discovering after creating Eprof[12], the first fine grained energy profiler for smart phone apps. The program tested on smart phone running Android and windows Phone.

In the research finding Angry Birds app [13] only 20 percent used to display and run the game. Remaining 45% percent is spent finding and uploading the user location with GPS, then downloading location-appropriate ads over 3 G connections[14]. The free application leaves connection opens about for 10 seconds even there is no data transmission and this tail energy consumes another 28 per cent of the apps energy.

Energy Consumption Measurement Of Mobile Apps

The mobile used in this paper is Samsung Google nexus Operating system Android 4.1.1[15]. We use the screen shots to show the results.

A. Battery budget for mobiles

The total capacity of battery power actually when device fully charge. When you watch you tube video on you are mobile you are pointing lot of mA (milliampere). Design of mobile phone is to fit to user pocket not to fit to support the big battery. This makes little size for battery life. Average battery size 820-1150 mAh (3.7 V).

B. Screen shots for measurements of apps

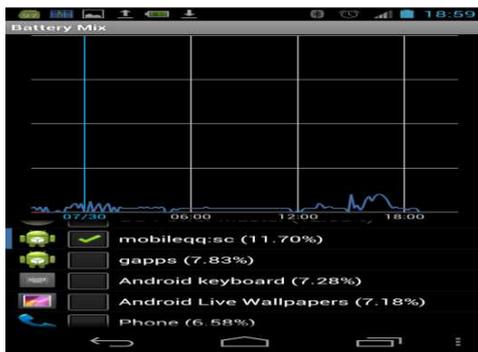


Fig.1 Mobile qq app energy consumption



Fig.2 Cardiograph app energy consumption



Fig.3 Battery Mix app energy consumption



Fig.4 System UI app energy consumption

3. RESULTS AND DISCUSSION

We use the Battery mix app download from Google play store. It is used to monitor battery and process in android to run operating system mobile phone. To measure the running time and battery drain using QQ2012, Cardiograph and System UI foreground app use to user interface of mobile phone. To block the free ads in apps we use the AppBrain Ad Detector[16]. Which blocks the free ads in you are apps during running and display time. AppBrain is free app download from Google play.

Table 1. Mobile Apps usage Statistics results.

List of Apps	Description each apps	Time	Power consumption
Instant messaging	Chatting app	20 time / mins	11.70 %
E-Health app	Heart frequency rate	30 time / mins	4.39%
Power meter Setup	Record battery consumption	24 time / hours	2.45 %
Phone User interface	Record apps running in foreground and background	24 time / hours	13.89%

4. SOLUTION TO ENERGY EFFICIENT CONSUMPTION FOR MOBILE APPS

We all know how annoying Ads can be on the screen of you are android device. When we download free apps in our smart device. Even you do not know this free app contains the hidden software in the free apps to run the advertisement for companies. When we play games, these ads appear and drains the battery power unnecessarily. Now, I'll show you how to remove these ads from your Android phone, but keep in mind, there are different methods of blocking ads on rooted Androids and un-rooted Androids. While for rooted phones, all you have to do is install another app that takes care of the ads, on a un-rooted phone, the options are not that simple. This app is available on the Android Market and it's really effective. You don't have to spend too much time customizing it and it does the job really good (just download it from the Android Market and after install, click "Download & Install Hosts". Although, for AdFree to work on your phone, you have to have it rooted. AdFree[17] uses MVPS HOSTS file [18]to filter the information and add to its blacklist the ads. After installing AdFree you must install the HOSTS file and restart your device, you also have to restart after any custom change to the app (such as manually adding an ad address to the blacklist). The coolest feature of this app is the possibility to set it to update itself every day, so you never have to update it yourself. Another cool feature of AdFree[19]is that it blocks ads not only from your apps, but also from your Android browser [20]. At this time, other browsers are not supported. In this way we block unwanted ads from free apps and reduce power drain by these unwanted wake lock bugs.

5. CONCLUSION

In this paper. We research about the power drain in QQ 2012 , System UI , Cardiograph and Battery Mix mobile apps and give a solution to block the free ads in mobile apps because these free apps wake up the mobile phones and leave the connection open about 10 sec even they send no data. Which increase the tail energy and drain the battery more power. I propose there is some privacy policy for developers and app stores to communicate the knowledge about this to user of mobile. The smart device apps have ability to collect the data about users. Many free apps use the advertisement to continue to provide smart phone users free apps. These apps not only run unknown software in background and leak the user personal information. But also keep smart device wake up for long time which results drain smart device battery quickly than normal discharging rate.in this concert there must be organization body or control system in apps store that monitor and inform about this privacy risk to smart device user. They can know about this information when running these free apps. We can

reduce to risk to download free apps from well-known source app stores. These days are good for market placers because of there are no regulating privacy policy for mobile apps. The app developer is mobilizing to take action about privacy policy for mobile apps. There is no determining privacy policy about developer and app stores that put free ads in free mobile apps. Current era growing age of smart devices and millions of apps use by mobile users. This is big attraction for advertiser companies to put their ads in the smart devices they have seen especially a boast from of Google's Android platform. Where may free apps have been used by millions of users like angry bird and display free ads in you are screen. Mobile advertising presents an opportunity for new revenue streams. Advertisers are attracted to the sheer size of the audience. We think there is need to build a controlling organization body to need approval to upload these free apps to app store. These organizations address the privacy issues to mobile user's knowledge.

REFERENCES

- [1] R. W. Ahmad, A. Gani, S. H. A. Hamid, M. Shojafar, A. I. A. Ahmed, S. A. Madani, K. Saleem, and J. J. Rodrigues, "A survey on energy estimation and power modeling schemes for smartphone applications," *International Journal of Communication Systems*, vol. 30, no. 11, 2017.
- [2] M. Kummer and P. Schulte, "When private information settles the bill," 2016.
- [3] S. Nakajima and M. Toyoshima, "Behavioral contracts for energy consumption," *Ada User Journal*, vol. 35, no. 4, pp. 266–271, 2014.
- [4] R. Saborido, F. Khomh, G. Antoniol, and Y.-G. Guéhéneuc, "Comprehension of ads-supported and paid android applications: are they different?" in *Proceedings of the 25th International Conference on Program Comprehension*. IEEE Press, 2017, pp. 143–153.
- [5] J.-Y. Pan and S.-H. Ma, "Advertisement removal of android applications by reverse engineering," in *Computing, Networking and Communications (ICNC), 2017 International Conference on*. IEEE, 2017, pp. 695–700.
- [6] M. Xu, Y. Ma, X. Liu, F. X. Lin, and Y. Liu, "Appholmes: detecting and characterizing app collusion among third-party android markets," in *Proceedings of the 26th International Conference on World Wide Web*. International World Wide Web Conferences Steering Committee, 2017, pp. 143–152.
- [7] Y.-W. Bai, H.-W. Su, and W.-C. Hsu, "Indoor and remote controls and management of home appliances by a smartphone with a four-quadrant user interface," in *Consumer Electronics (ICCE), 2017 IEEE International Conference on*. IEEE, 2017, pp. 319–320.
- [8] M. Parpinel, L. Scherling, S. Lazzar, and V. Della Mea, "Reliability of heart rate mobile apps in young healthy adults: exploratory study and research directions," *Journal of Innovation in Health Informatics*, vol. 24, no. 2, pp. 224–227, 2017.
- [9] C. Piot, "Hedging the future," *African Futures: Essays on Crisis, Emergence, and Possibility*, p. 104, 2017.
- [10] G. Lee and T. S. Raghu, "Determinants of mobile apps' success: evidence from the app store market," *Journal of Management Information Systems*, vol. 31, no. 2, pp. 133–170, 2014.
- [11] D. Li, R. Du, L. Cui, and G. Xing, "Klep: a kernel level energy profiling tool for android," in *IPSN*, 2017, pp. 305–306.
- [12] A. OGREZEANU, A. A. PURCAREA, and A. OGREZEANU, "Pathways for positive social impacts through designing communication strategy and tools within elearning projects," in *The International Scientific Conference eLearning and Software for Education*, vol. 2. "Carol I" National Defence University, 2017, p. 585.
- [13] M. Böhmer, B. Hecht, J. Schöning, A. Krüger, and G. Bauer, "Falling asleep with angry birds, facebook and kindle: a large scale study on mobile application usage," in *Proceedings of the 13th international conference on Human computer interaction with mobile devices and services*. ACM, 2011, pp. 47–56.
- [14] T. Wang, Z. Peng, S. Wen, Y. Lai, W. Jia, Y. Cai, H. Tian, and Y. Chen, "Reliable wireless connections for fast-moving rail users based on a chained fog structure," *Information Sciences*, vol. 379, pp. 160–176, 2017.

- [15] T. Vidas and N. Christin, “Evading android runtime analysis via sandbox detection,” in *Proceedings of the 9th ACM symposium on Information, computer and communications security*. ACM, 2014, pp. 447–458.
- [16] M. Backes, S. Bugiel, and E. Derr, “Reliable third-party library detection in android and its security applications,” in *Proceedings of the 2016 ACM SIGSAC Conference on Computer and Communications Security*. ACM, 2016, pp. 356–367.
- [17] D. H. Reiley and N. M. Riabov, “Measuring consumer sensitivity to audio advertising: A field experiment on pandora internet radio,” 2017.
- [18] G. Merzdovnik, M. Huber, D. Buhov, N. Nikiforakis, S. Neuner, M. Schmiedecker, and E. Weippl, “Block me if you can: A large-scale study of tracker-blocking tools,” in *Security and Privacy (EuroS&P), 2017 IEEE European Symposium on*. IEEE, 2017, pp. 319–333.
- [19] M. Barker, L. Bridges, M. Esiri, and A. H. Hainsworth, “A vasculocentric pattern of axonal damage and neurofilament phosphorylation in subcortical white matter of older people,” *Alzheimer’s & Dementia*, vol. 13, no. 7, pp. P1305–P1306, 2017.
- [20] D. Haugh, “Mobile applications for libraries,” *Developing In-House Digital Tools in Library Spaces*, p. 76, 2017.



The Effect of Internal Marketing on Organizational Commitment of Male Employees

Aamir Abbas¹, Muhammad Tayyeb Riaz², Afshan Javid³

¹(Lecturer, the University of Faisalabad)
The University of Faisalabad, Engineering Campus (For Boys), West Cannal Road, Faisal Town

²(Assistant Professor, the University of Faisalabad)
The University of Faisalabad, Engineering Campus (For Boys), West Cannal Road, Faisal Town

³(MS Scholar, Department of Management Studies, Sardar Bahadur Khan Women's University)

Received: November 27, 2017

Accepted: January 18, 2018

ABSTRACT

Employees are also the customers of company and they have ability to change the future of organization. The purpose of this paper is to examine the effect of internal marketing items on organizational commitment of different categories of male employees in private banks of Faisalabad, Pakistan. A model was made to examine the factors affecting organizational commitment and it was tested empirically using a sample of 109. All the respondents were male employees of different private banks working on different ranks. The questionnaire strategy was used for this research. Descriptive statistics and cross tabulation was run to find the results. The paper found that offering service on the basis of education, giving salaries and fringe benefits on the performance basis, clear advancement path, suitable place of bank, work hours of the branches, equipment of banks (suitable tables, chairs, water coolers, air conditioning, parking), using latest educational tools and methods for training, capable and experienced instructor for training, rapid and synchronized flow of information and convergence between culture and job design all these items of internal marketing have great impact on organizational commitment of male employees. This study is confined to male employees. Microfinance banks, public sector banks and development finance institutions are not under the shadow of this research umbrella. The paper outlines effective internal marketing items for making different categories of male employees committed to bank. A marketing manager or policy maker can follow these outlines in order to make policies for them.

KEYWORDS: Internal marketing, Integrated Marketing, Organizational commitment, Organizational behavior, Internal customer.

1. INTRODUCTION

The marketing is a societal process and from this process individuals and group of individuals can easily get their desired demands by offering, generating and exchanging valued services and products freely with others [1]. Marketing's process is not only needed outside but it also exists internally in an organization, so in that case the market not merely consists of final customer outside the company but also comprises of individuals or group of individuals within the organization [2]. If employees are satisfied then we can achieve satisfied customers [3; 4; 1]. The development of gradually growing service sector has influenced the way of communication with customers [5]. The importance of marketing concept internally or within the firm is always stressed by internal marketing; it focuses majorly on the employee and helps in providing a source of competitive advantage [6]. The most important factor behind the every successful service firm is the satisfaction of firm's internal customer [7]. Banking sector is an example of business where relationship marketing has become very important. Apart from their size, there are only some attributes which differentiate banks from each other [8]. To reach the organizational objectives, internal marketing should equally handle both customers and employees with the assistance of proactive policies [9]. It always has been focused by internal marketing's concept that the first market of company is their own personnel. The need of achieving attitudinal change between staff towards customer focus and service-mindedness would make the organization able to compete more effectively in the external market place and this was the main purpose behind the launch of internal marketing within banks [10]. "IM aligns the individual into a collective unit, performing in concert to the orchestra of strategic coherence and alignment" [11].

*Corresponding Author: Aamir Abbas, Lecturer, The University of Faisalabad, The University of Faisalabad, Engineering Campus, West Cannal Road, Faisal Town. Email: aamirabbasrooda@gmail.com Tel:00923006669839

Service organizations can get a lot benefit by retaining their employees and making long-standing relationship combined with organizational commitment with them because profitability of these institutions depends upon efficiency of their employees [12]. Moreover it helps the organization to secure a huge market share and to create a leading position in market as compare to competitor. Practices of human resource management in banks are changing because of intense competitive environment [13]. Increasing organizational commitment of employees is the one among the most important results of internal marketing [14] and one of the most important strategic goal of the organization is to retain skilled and tallented labour [15] which maintain customers of bank and persuade them for investing in bank as its necessary for survival of bank in competition [46].

2. LITERATURE REVIEW

Internal marketing (IM) has a very short history and because of this it has developed into three distinct and separate paths. [16] proposed the early approaches of internal marketing. [17] developed that idea by working in area of services marketing because for the service delivery people were considered the most common form to be used at that time; their actions most likely had a great affect on retention, migration and acquisition of customer. The building of different forms of promotion to develop and encourage job satisfaction of employee and internal communication, with an idea that satisfaction of employee would cause satisfaction of customer and it would build the more customer loyalty in turn [17]. The Scandinavian approach towards internal marketing (IM) was introduced by [18]. He, [19] and others used a different track. They argued that the marketing firms use to develop overall equation for product and service delivery and employee was an important part of this equation. Therefore, the firm's key success was the customer facing employee. It was proposed by [18] that each customer facing employee should be given training of doing cross-selling and add-ons as like marketers, along with skills of retaining customer which would led the foundation of successful customer relationship building. The organization's balance should be designed efficiently in order to support these customer facing employees by focusing on what they need at "back end". The company should develop a marketing program for internal market which should be similar to that of its external marketing having goal to stimulate customer oriented behavior and service awareness. According to [20], internal marketing (IM) should consists of human resource management principles, theories and technologies. [21] believe that to provide better services the internal marketing (IM) includes efforts of encouraging and training of employees within organization. Rafiq and Ahmed (1993) the two academics in UK developed essentially hybrid approach to internal marketing in 1990s. They develop another form of internal marketing (IM) by picking the best approaches of [17], [18] and adding some conceptual thinking in it. In their approach they proposed that organization have resistance to change and there are many inter-functional conflicts between employees, departments and management so because of these reasons internal marketing (IM) is difficult to implement. Employees make several changes in their behavior and methodology of [22] was to overcome organizational inertia by identifying these specific behavior changes. When these behavioral changes are identified they are related to different groups and departments internally within an organization which would present the foundation of cross-functional integration expansion with the organization. For the practicing manager still internal marketing (IM) is the most difficult task even there are many well researched, well developed and well defined streams of thoughts [23]. Internal marketing was disappeared in era of 1990s as those were the go-go days of internet bubble but it used to be a hot topic in 1980s [24]. It clearly shows the recognition of professionals and also scholars that the growing commoditization of services and products, where differentiators are non-existent, the one and only solution for organization for developing long term sustainable advantage is to build long lasting customer relationships with the brand and organization [25]. Additionally this view was strengthened by continuous failure of technology driven (techno-driven) CRM approaches [26].

According to [2] the concept of internal marketing can be addressed by several activities and many competing definitions. In order to identify that which claim is true, the set of criteria is required which can help in accessing each and every definition. The deep analysis of literature enables [27] to identify the major elements of internal marketing. These elements are:

- 1) Employee motivation and employee satisfaction.
- 2) Customer orientation and customer satisfaction
- 3) Inter-functional coordination and integration.
- 4) Marketing like approach to the above.
- 5) Implementation of specific functional and corporate strategies.

After studying these five elements [27] defined internal marketing as "a planned effort using marketing-like-approach to overcome organizational resistance to change and to align, motivate and inter-functionally coordinate and integrate employees towards the effective implementation of corporate and functional strategies in order to deliver customer satisfaction through a process of creating motivated and customer orientated employees".

Motivation can be defined as a set of processes that are used to move a person towards a goal [28]. To motivate employees in a marketing oriented organization two things are required, one is performance criteria and the other is demonstration of management behavior that is consistent with internal marketing and marketing orientation [29; 30]. [29] says that 'those who are responsible for the implementation of internal marketing program' should must propose 'an appropriate structure for rewards' and high levels of 'internal customer's orientation' would be demonstrated by being in place before employees. Hierarchy of need divided needs into five different levels and these can be best seen in the form of hierarchy having the most sophisticated need at last and most basic need at first [31]. Organizational behavior is the branch of study which is dedicated to explain, recognize and ultimately develop people's attitudes and behaviors within organization. It is based on applied practice and scientific knowledge [32]. "Today, when we describe organizations as systems, we mean open systems. An organization takes inputs (resources) from the environment and transforms or processes these resources into outputs that are distributed in the environment" [33]. The commitment of employees and/or their loyalty towards firm can be said as organizational commitment if they feel that staying with bank and working there in future as their obligation [34]. [35] made a structure having three dimensional components by focusing on the similarities and differences existing in "organizational uni-dimensional concepts". Their discussion was generally on organizational commitment that it combines together the individual and organization and decreases the turnover [36]. They differentiated commitment in three types: 1) Affective commitment: In a particular organization the organizational commitment includes the potency or ability of individual and recognition involvement. Here it is seen that emotions of employee are attached with organization and he become committed to pursue organizational goals; such type of commitment is known as affective commitment [37]. The organizational commitment has one more dimension which is named as continuance commitment and according to this, employees are less efficient but extra calculative having more focus on cost (Security & pension) [38]. Now a day an individual who wants to study in an organization has eye only on pension [39]. 2) Continuance commitment: Continuance commitment is related to staying in an organization for the sake of expenses of leave or compensation. Such type of commitment is occurred when an employee thinks that he or she is not having ability to compete in market or in area of interest. Employees like this have a feeling that they are dependent on organization. These are two infrastructure of this type of commitment. One infrastructure is based on extent of person's willingness towards leave and other infrastructure differentiates available positions in the organizations leave and expenses [40]. 3) Normative commitment: This type of commitment shows that employees feel their responsibility or objective to stay in an organization and its in their mind that staying there is a correct option [41].

Over the period of 61 years since independence, the banking sector of Pakistan has observed many drastic changes. Initially this sector suffered severe shortage of resources and uncertainty because of prevailing socioeconomic and political conditions. Poor quality of services and products was result of lacking trained human resource and professionals [42].

Pakistani Banking industry is facing many problems and these problems are affecting the loyalty of employees and loyalty of customers. Today the retention of employees and their satisfaction is critical to conduct business in highly competitive market place and banks are also facing this. Thus the commercial banks started to focus more on management strategies which promote job satisfaction and thus retention of employee [43]. The Pakistan's financial system is under the influence of politics so the appointment of managers and lending decisions are made politically [44]. According to [42], the nationalized banks have loosend their performance as employees are protected by government and as a result they provide poor services and inferior products and the study of [45] clearly showed that there is no relationship between employee satisfaction and performance of bank. They found that bank's market value, bank's performance and bank's profitability have no link with the employee's satisfaction as their major concern is with their job.

3. RESEARCH METHODOLOGY

In this research the organizational commitment of employees in banks is dependent variable and items of each dimension of internal marketing are independent variables. The items of job satisfaction are suitable place of bank, work hours of bank, up to date services, lower bureaucracy in operations delivery and equipments of banks. The items of motivation are job security, suitable insurance facilities, receiving salaries and fringe benefits based on employees' performance, friendly environment among employees, view of managers to employees as the main asset of bank, clear advancement path and welfare facilities for employee's family. The items of training include coordination between training and need of employees, usage of latest educational tools and methods, continuous and dynamic training and appropriate time for training. The items of inter-functional coordination and integration are utilization of different tastes and talents in same direction, coordination between different levels and branches, rapid and synchronized flow of information and convergence between culture and job design. Understanding and

differentiation consists of items include suitable design of services based on desires of employees, offering service to employees based on their age, offering service to employees based on their education, adoption between skills and abilities of employee to job, ability of creating and retaining close relationship with employees and distributing employees in team works. The current study is based on descriptive research and probability sampling technique was used in it. The data was gathered through questionnaire and the statistical population of this research comprises only male employees from private banks in district Faisalabad, Pakistan because banks have more male employees.

3.1. Main objective:

The objective of this study is to highlight that how bank managers, marketing managers or policy makers can make policies for different categories of male employees by keeping in mind that which item of internal marketing can increase organizational commitment in them. This research will also show the familiarity of employees with the concept of organizational commitment and internal marketing. Moreover, it would show that to what extent organizational commitment in public sector banks is different from private banks.

3.2. Research Question:

This study is based on following research question:

RQ: How much there is effect of different items of each dimension of internal marketing on the organizational commitment of different categories of male employees working in private banks of Faisalabad, Pakistan?

3.3. Sample Size

The data was gathered from 393 branches of private banks. The number of branches was limited to 393 because there are only 393 branches of different private banks in district Faisalabad. The frequency distribution has been shown separately in table 3.1. In order to deal with limited sample size we used the formula of (Cochran, 2007) which is given below:

$$n = \frac{N \cdot z^2 \cdot p(1-p)}{N - 1 \cdot D^2 + z^2 \cdot p(1-p)}$$

D^2 = Approximation in estimation of population which is equal to 0.05^2

p = probability of presence of a characteristic

$(1-p)$ = probability of absence of a characteristic

In above mentioned formula “n” refers to sample size, “Z” refers to standard normal variable value which is equal to 1.96 in 95% certainty level and “N” shows the population size. We calculated that our sample size would be 109 after putting the values in above mentioned formula, so the findings of study were based on 109 questionnaires which were returned by respondents of different branches of 18 private banks.

Table 1: Frequency distribution of branches

Bank's Name	Number of branches in Faisalabad City
Habib Bank Limited	110
Allied Bank Limited	41
Mezan Bank	26
United Bank limited	81
Standard Chartered Bank	5
Soneri Bank	4
JS Bank	5
Faysal Bank	10
Askari Bank	10
Bank Al Falah	20
Summit Bank	5
NIB	1
Samba Bank	1
Al-Baraka Bank	3
KASB Bank	1
Muslim Commercial Bank	48
Bank Al Habib	18
Dubai Islamic Bank	4
Total	393

The table 1 is representing the distribution of 109 relative to the total number of branches of each bank branches in entire statistical population. The number of branches of each bank out of the whole statistical population was considered in the same ratio.

Table 2: Sample size and frequency distribution

Random sample size	Total number of branches in Faisalabad District	Bank's Name
31	110	Habib Bank Limited
11	41	Allied Bank Limited
8	26	Mezan Bank
23	81	United Bank limited
1	5	Standard Chartered Bank
1	4	Soneri Bank
1	5	JS Bank
3	10	Faysal Bank
3	10	Askari Bank
6	20	Bank Al Falah
1	5	Summit Bank
0	1	NIB
0	1	Samba Bank
1	3	Al-Baraka Bank
0	1	KASB Bank
13	48	Muslim Commercial Bank
5	18	Bank Al Habib
1	4	Dubai Islamic Bank
109	393	Total

Table 2 shows the frequency distribution of branches and sample size. Total 18 banks were taken under research and table clearly explained that how much respondents were from each bank.

The reliability of data was checked by using Cronbach's coefficient alpha and its value was 0.823 which clearly depicts that our questionnaire is acceptable. In this research many different statistical methods have been used such as percentage and frequency distribution tables. The SPSS software has been used in order to analyze data and by using the software cross tabulation has done, which helped in comparing and examining the data collected from questionnaire.

4. Data Analysis and research findings:

4.1. General information about respondents:

a) Gender:

Table 3: General information about gender of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	100	100	100	100.0
Total	109	100.0	100.0	

Table 3 represents the population on the base of gender. It shows that our whole sample is male.

b) Educational level:

Table 4: General information about education level of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor	35	32.1	32.1	32.1
	Master	74	67.9	67.9	100.0
	Total	109	100.0	100.0	

The respondents have been classified on the basis of their educational level including, diploma, technician, Bachelor, Masters and PHD. According to table 4 for a population of 109 male employees, 35 male employees (32.1 %) have Bachelor and 74 male employees (67.9 %) have Master degree.

c) Experience:

Table 5: General information about experience of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	48	44.0	44.0	44.0
	5 to 10 years	41	37.6	37.6	81.7
	11-15 years	18	16.5	16.5	98.2
	16-20 years	2	1.8	1.8	100.0
	Total	109	100.0	100.0	

Respondents were classified into 5 groups on the basis of their employment record, including less than 5 years, 5 to 10 years, 11 to 15 years, 16 to 20 years and more than 20 years. Table 5 represents the resultant data. According to table 4.3 for the population of 109 male employees, 48 male employees (44 %) have less than 5 years, 41 (37.6 %) male employees have 5 to 10 years, 18 (16.5 %) male employees have 11 to 15 years and 2 male employees fall into the category of 16-20 years experience.

d) Extent of familiarity with concept of Organizational commitment:

Table 6: Extent of familiarity with concept of Organizational commitment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very much	34	31.2	31.2	31.2
	Much	63	57.8	57.8	89.0
	So-so	10	9.2	9.2	98.2
	Low	2	1.8	1.8	100.0
	Total	109	100.0	100.0	

The extent of familiarity of respondents with organizational commitment concept has been classified as very much, much, so-so, low, very low. According to table 6 the extent of familiarity with organizational commitment in the population of 109 employees, 34 employees (31.2 %) is very much, 63 employees (57.8 %) is much, 10 employees (9.2 %) so-so and 2 employees (1.8 %) is low.

e) Extent of familiarity with concept of internal marketing:

Table 7: Extent of familiarity with concept of internal marketing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very much	28	25.7	25.7	25.7
	Much	54	49.5	49.5	75.2
	So-so	24	22.0	22.0	97.2
	Low	3	2.8	2.8	100.0
	Total	109	100.0	100.0	

The extent of familiarity of respondents with internal marketing concept has been classified as very much, much, so-so, low, very low. According to table 7 the extent of familiarity with organizational commitment in the population of 109 employees, 28 employees (25.7 %) is very much, 54 employees (49.5 %) is much, 24 employees (22 %) so-so and 3 employees (2.8 %) is low.

f) Organization commitment of employees among private banks and compared to public sector banks:

Table 8: Difference between organizational commitment of private and public sector banks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very much	45	41.3	41.3	41.3
	Much	48	44.0	44.0	85.3
	So-so	12	11.0	11.0	96.3
	Low	3	2.8	2.8	99.1
	Very low	1	.9	.9	100.0
	Total	109	100.0	100.0	

The respondents were asked to answer this question:

To what extent the organizational commitment of the employees among public sector banks of Faisalabad is different in comparison with competitors (private banks)? According to table 8 for the population of 109 employees, 45 employees (41.3 %) believe very much, 48 employees (44 %) believe much, 12 employees (11 %) believe so-so, 3 employees (2.8 %) believe low and 1 employee (0.9 %) believe very low.

4.2. Managerial Implications:

4.2.1. Male employees:

While making policy for male employees the bank manager should focus on offering service on the basis of education, giving salaries and fringe benefits on the performance basis, clear advancement path, suitable place of bank, work hours of the branches, equipment of banks (suitable tables, chairs, water coolers, air conditioning, parking), using latest educational tools and methods for training, capable and experienced instructor for training, rapid and synchronized flow of information and convergence between culture and job design. These things should be strongly focused by manager as they are effective for male employees.

4.2.2. Male employees with experience of less than 5 years:

Bank manager should focus on offering service to employees on the basis of education, providing suitable insurance facilities, friendly environment among employees, viewing employees as the main asset of bank, suitable place of bank, work hours of the branches, job security, lower bureaucracy in operations delivery, equipments of banks (suitable tables, chairs, water coolers, air conditioning, parking), convergence between culture and job design and rapid and synchronized flow of information, while making internal marketing strategy for male employees having less than 5 years of experience.

4.2.3. Male employees from 5 to 10 years of experience:

While making policy for male employees having experience from 5 to 10 years the bank manager should focus on offering services on the basis of education, offering service to employees on the basis of age, job security, providing salaries and fringe benefits on the basis of performance, clear advancement path, suitable place of bank, work hours of branches, continuous and dynamic training and rapid and synchronized flow of information.

4.2.4. Male employees from 11 to 15 years of experience:

Bank manager should focus on offering service to employees on the basis of education, job security, providing salaries and fringe benefits based on employee's performance, welfare facilities for employee's family, suitable place of bank, work hours of the branches, usage of latest educational tools and methods for training, continuous and dynamic training and convergence between culture and job design, while making internal marketing strategy for male employees having experience from 11 to 15 years.

4.2.5. Male employees having 16 to 20 years of experience:

Male employees having experience of 16 to 20 years can be committed to organization by internal marketing if manager will focus on offering service to employees on the basis of education, job security and coordination between training and need of employees while making policy.

4.2.6. Male employees having bachelor degree:

Male employees having bachelor degree can be committed to organization by internal marketing if manager will focus on offering service to employees based on their education, job security, giving salaries and fringe benefits on the basis of performance, viewing employees as the main asset of bank, clear advancement path and work hours of the branches.

4.2.7. Male employees having Master degree:

Male employees having Master degree can be committed to organization by internal marketing if manager will focus on offering service to employees based on their education, job security, suitable insurance facilities, giving salaries and fringe benefits on the basis of performance, welfare facilities for employee's family, suitable place of bank, work hours of the branches, equipments of banks (suitable tables, chairs, water coolers, air conditioning, parking), usage of latest educational tools and methods for training and rapid and synchronized flow of information.

4.2.8. Bachelor degree holder male employees having less than 5 years of experience:

It's a difficult task to retain employees having less experience. So by focusing on some effective items of internal marketing, the manager can retain these employees and make them committed to organization. These items include friendly environment among employees, job security, viewing employees as the main asset of bank and work hours of the branches.

4.2.9. Mater degree holder male employees having less than 5 years of experience:

Employees having master degree and less than 5 years of experience can be committed to organization if manager will deeply focus on internal marketing items as like offering service to employees based on their education, job

security, work hours of the branches, equipments of banks (suitable tables, chairs, water coolers, air conditioning, parking), rapid and synchronized flow of information and convergence between culture and job design.

4.2.10. Bachelor degree holder male employees having 5 to 10 years of experience:

Manager should focus on offering service to employees based on their education, job security, clear advancement path and work hours of the branches while making internal marketing policy for male employees having bachelor degree and experience of 5 to 10 years because these items have very much effect on organization commitment.

4.2.11. Master degree holder male employees having 5 to 10 years of experience:

Male employees having bachelor degree and experience of 5 to 10 years can be committed to organization by internal marketing if manager will focus offering service to employees based on their education, job security, providing salaries and fringe benefits on employee's performance, suitable place of bank, work hours of the branches, continuous and dynamic training and rapid and synchronized flow of information.

4.2.12. Bachelor degree holder male employees having 11 to 15 years of experience:

Job security and work hours of the branches are effective items of internal marketing which can strongly effect the organization commitment of male employees having bachelor degree and 11 to 15 years of experience so the manager should make policy by focusing these two factors.

4.2.13. Master degree holder male employees having 11 to 15 years of experience:

Male employees having mater degree and 11 to 15 years of experience can be made committed to bank if manager will focus on internal marketing items as like offering service to employees based on their education, providing salaries and fringe benefits on their performance, welfare facilities for employee's family, suitable place of bank, work hours of the branches, usage of latest educational tools and methods for training, continuous and dynamic training and convergence between culture and job design.

4.2.14. Bachelor degree holder male employees having 16 to 20 years of experience:

While setting policy for bachelor degree holder male employees having 16 to 20 years of experience, the manager should focus on effective items of internal marketing which have great impact on organizational commitment. These items include suitable design of services based on desire of employees, offering service to employees based on education, ability of creating and retaining close relationship with employees, job security, viewing employees as the main asset of bank, clear advancement path, coordination between training and needs of employees and coordination between different levels and branches.

5. CONCLUSION

Table (3) indicates that 100% percent of employees in our sample are male; this means that there is majority of male employees among private banks in Faisalabad, Pakistan. Also table (4) indicates that 67.9 % of male employees in our sample have master's degree. This means that most of male employees have higher education. According to table (5), 44.0 % of male employees have less than 5 years of experience and 37.6 % of male employees have 5 to 10 years experience in other words the experience level of male employees among private banks in Faisalabad is not much high. Moreover, it was found that majority of employees in our sample have much familiarity with concept of organizational commitment process and internal marketing concept and it can be considered as a good sign for the growth of banking sector. Analysis of data in table (8) indicated that 44 % of employees have believe that there is much and 41.3 % believe that there is very much difference between extent of organizational commitment of private banks in comparison with public sector banks. This means that difference is from much to very much. Every category of male employees require different items of internal marketing for being committed to organization and marketing manager or policy maker can make policy accordingly.

6. Future Recommendations:

Our research was based on only male employees of private banks in Faisalabad but further research can be conducted on public sector banks within Faisalabad or any other city of Pakistan. This research can also be conducted in the perspective of other different countries.

REFERENCES

- [1] Philip Kotler, *Marketing Management*. New Jersey: Prentice Hall, 2000.
- [2] Atousa Farzad, "The Effect of Internal Marketing on Organizational Commitment of Employees," Department of Business Administration and Social Sciences, Lulea University of Technology, Master Thesis 2007.
- [3] Lena Eriksson, Malin Hilmersson, and Emma Sjolander, "Internal Market ing-A way to transfer brand identity

- to Swedbank and Forex Bank's employees," Jonkoping International Business School, Jonkoping University, Bachelor Thesis 2009.
- [4] George G. Panigyrakis and Prokopis K. Theodoridis, "Internal Marketing Impact on Business Performance in a Retail Context," *International Journal of Retail & Distribution Management*, vol. 37, no. 7, pp. 600-626, 2009.
- [5] Dwayne D. Gremler, Mary Jo Bitner, and Kenneth R. Evans, "The Internal Service Encounter," *International Journal of Service Industry Management*, vol. 5, no. 2, pp. 34-56, 1994.
- [6] Brian A. Richardson and C. Grant Robinson, "The impact of internal marketing on customer service in a retail bank," *International Journal of Bank Marketing*, vol. 4, no. 5, pp. 3-30, 1986.
- [7] Naveed Ahmad, Nadeem Iqbal, and Muhammad Sheeraz, "The Effect of Internal Marketing on Employee Retention in Pakistani Banks," *International Journal of Academic Research in Business and Social Sciences*, vol. 2, no. 8, p. 270, 2012.
- [8] Ioanna Papasolomou and Philip J Kitchen, "Internal Marketing in UK Banks: Conceptual Legitimacy or Window dressing?," *The International Journal of Bank Marketing*, vol. 22, no. 6, pp. 421-452, 2004.
- [9] Pervaiz K. Ahmed and M. Rafiq, "Internal Marketing Issues and Challenges," *European Journal of Marketing*, vol. 37, no. 9, pp. 1177-1186, 2003.
- [10] A. Parasuraman and Dhruv Grewal, "The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda," *Journal of the Academy of Marketing science*, vol. 28, no. 1, pp. 168-174, 2000.
- [11] Larry W. Hunter, "How Will Competition Change Human Resource Management in Retail Banking? A Strategic Perspective," The Wharton Financial Institutions Center, University of Pennsylvania, Working Paper 1995.
- [12] Patriya Tansuhaj, John Wong, and Jim McCullough, "Internal and External Marketing: Effect on Consumer Satisfaction in Banks in Thailand," *International Journal of Bank Marketing*, vol. 5, no. 3, pp. 73-83, 1987.
- [13] M.H. Hosseini, V.R. Halvaeiha, and s. Ramezani, "The Effect of Brand Image on Employee Loyalty," *Journal of Mangement Development*, no. 5, pp. 69-75, 2010.
- [14] Leonard L. Berry, James S. Hensel, and Marian C. Burke, "Improving retailer capability for effective consumerism response," *Journal of Retailing*, vol. 52, no. 3, pp. 3-14, 1976.
- [15] Leonard L. Berry, "The Employee as Customer," *Journal of retail banking*, vol. 3, no. 1, pp. 33-40, 1981.
- [16] Christian Gronroos, "Internal Marketing and Integral Part of Marketing Theory," in *Marketing of Services (Proceedings of the American Marketing Association)*. Chicago: American Marketing Association, 1981, pp. 236-238.
- [17] Evert Gummesson, "Using internal marketing to develop a new culture—The case of Ericsson Quality," *Journal of Business and Industrial Marketing*, vol. 2, no. 3, pp. 23-28, 1987.
- [18] W. Benoy Joseph, "Internal Marketing Builds Service Quality," *Marketing Review*, vol. 16, no. 1, pp. 54-59, 1996.
- [19] Jack Cooper and John J. Cronin, "Internal Marketing: A Competitive Strategy for the Long-Term Care Industry," *Journal of Business Research*, vol. 48, no. 3, pp. 177-181, June 2000.
- [20] Mohammed Rafiq and Pervaiz K Ahmed, "The scope of Internal Marketing: Defining the Boundary Between Marketing and Human Resource Management," *Journal of Marketing Management*, vol. 9, no. 3, pp. 219-232, 1993.
- [21] Don E. Schultz, "Papers: Building an Internal Marketing Management Calculus," *Interactive marketing*, vol. 6, no. 2, pp. 111-129, 2004.
- [22] Don E. Schultz, "The Inevitability of Integrated Communications," *Journal of Business Research*, vol. 37, no. 3, pp. 139-146, 1996.
- [23] Simon Knox, Stan Maklan, Adrian Payne, Joe Peppard, and Lynette Ryals, *Customer Relationship Management: Perspectives From The Marketplace*. Oxford: Butterworth-Heinemann, 2003.
- [24] Bob Chatham, *CRM At What Cost?* Cambridge: Forrester Research, 2001.
- [25] Mohammed Rafiq and Pervaiz K. Ahmed, "Advances in the Internal Marketing Concept: Definition, Synthesis and Extension," *Journal of Services Marketing*, vol. 14, no. 6, pp. 449-462, 2000.
- [26] James R. Lindner, "Understanding Employee Motivation," *Journal of Extension*, vol. 36, no. 3, pp. 1-8, 1998.
- [27] Ashley J. Kilburn, "Building Quality Internal Exchange: the Role of the Organization and the Individual in Internal Customer Orientation," *Academy of Marketing Studies Journal*, vol. 13, no. 1, pp. 79-87, 2009.

- [28] A Maslow, "The Five-Tier Hierarchy of Needs," *New York: Harper and Row*, vol. 17, pp. 235-255, 1954.
- [29] Belal A. Kaifi and Selaiman A. Noori, "Organizational Behavior: A Study on Managers, Employees, and Teams," *Journal of Management Policy and Practice*, vol. 12, no. 1, pp. 88-97, 2011.
- [30] Stephen P. Robbins and Mary Coulter, *Management*, 8th ed. New Jersey: Pearson, 2005.
- [31] JaeMin Cha, SeungHyun Kim, and Ronald F. Cichy, "Job Satisfaction, Organizational Commitment, and Contextual Performance: Examining Effects of Work Status and Emotional Intelligence among Private Club Staff Members," in *International CHRIE Conference refreed Track*, Amherst, 2009, p. Paper 6.
- [32] John P. Meyer, Natalie J. Allen, and Catherine A. Smith, "Commitment to Organizations and Occupations: Extension and Test of a Three-component Conceptualization," *Journal of Applied Psychology*, vol. 78, no. 4, pp. 538-551, 1993.
- [33] John P. Meyer and Lynne Herscovitch, "Commitment in the Workplace: Toward a General Model," *Human Resource Management Review*, pp. 299-326, 2001.
- [34] John P Meyer and Natalie J Allen, "Testing the "Side-bet Theory" of Organizational Commitment: Some Methodological Considerations," *Journal of Applied Psychology*, vol. 69, no. 3, 1984.
- [35] Howard S Becker, "Notes on The Concept of Commitment," *American journal of Sociology*, pp. 32-40, 1960.
- [36] Laurie J Mullins, *Hospitality Management: A Human Resources Approach*, 2nd ed. UK: Addison Wesley Longman Ltd, 1995.
- [37] Mohammad Suleiman Awwad and Djouhara Ali Mohammad Agti, "The Impact of Internal Marketing on Commercial Bank's Market Orientation," *International Journal of Bank Marketing*, vol. 29, no. 4, pp. 308-332, 2011.
- [38] Natalie J. Allen and John P. Meyer, "Commitment in the Workplace: Theory, Research and Application," *Thousand Oaks*, 1997.
- [39] Ashfaq Ahmad, *Comparative Study of Islamic Banking in Pakistan: Proposing and Testing a Model*, 2009.
- [40] Muhammad Asif Khan, Nadeem Safwan Ahmad, Kashif Ur Rehman, Ijaz Ur Rehman, and Ashfaq Ahmad, "Modeling Link Between Internal Service Quality in Human Resources Management and Employees Retention: A Case of Pakistani Privatized and Public Sector Banks," *African Journal of Business Management*, vol. 5, no. 3, pp. 949-959, February 2011.
- [41] Ishrat Husain, *Performance of Islamic Banking and Conventional Banking in Pakistan: A Comparative Study*, January 2005.
- [42] Marelise Pitt, Johan Bruwer, Deon Nel, and Paul Berthon, "A Framework for Research in Internal Marketing and the Study of Service Quality: Some Propositions," *Management Research News*, vol. 22, no. 7, pp. 1-11, 1999.
- [43] D.L. Schultz, "Study internal marketing for better impact," *Marketing News*, vol. 36, no. 21, p. 14, October 2002.
- [44] Son K. Lam, Florian Kraus, and Michael Ahearne, "The Diffusion of Market Orientation throughout the Organization: A Social Learning Theory Perspective," *Journal of Marketing*, vol. 74, no. 5, pp. 61-79, 2010.
- [45] Amber Iqbal, Hafiz Muhammad Arshad, and Irem Batool, "Impact of Strategic Factors on Bank Performance: Evidence from Banking Industry of Pakistan," *Current Economics and Management Research*, vol. 3, no. 2, pp. 1-11, 2017.
- [46] Mitra Kani, Jalal Haghighat Monfared, and Mansoureh Aligholi, "Investigation of Factors and Dimensions Influencing Banks Customers' Perceptions of E-payment in Tourism Bank in Tehran," *Journal of Applied Environmental and Biological Sciences*, vol. 5, no. 3, 2015.



Potential of Acupressure on Sanyinjiao Point, Hegu Point and Massage Effleurage to Decrease Menstrual Pain Intensity

Mukhoirotin*, Diah Ayu Fatmawati, Sabrina Dwi Prihartini

Nursing Science Program, Faculty of Health Science, Unipdu Jombang, Indonesia

Received: November 12, 2017

Accepted: February 3, 2018

ABSTRACT

Dysmenorrhea is a painful during or shortly before menstruation. Dysmenorrhea can giving some impact for some women, one of the impact is make troubles for their daily activities. Non-pharmacological efforts for handling dysmenorrhea include acupressure on Sanyinjiao point, Hegu point and Massage Effleurage. The aim of this study was to explain the effect of acupressure on Sanyinjiao point, Hegu point and Massage Effleurage to decreasing intensity of menstrual pain. The research design used Quasy Experiment with Pretest-Posttest Design and used Purposive Sampling technique to collect the samples. The sample in this research was adolescent at Islamic boarding school of Darul Ulum Jombang who had menstrual pain experience. The researcher used NRS (Numeric Rating Scale) to measured intensity of menstrual pain. The data were analyzed by Friedman and Kruskal-Wallis test with $\alpha \leq 0.05$. The results of this study showed the intensity of menstrual pain before getting treatments in all three groups were comparable ($p > 0.05$); there was significant differences of intensity of menstrual pain on acupressure group SP6 vs acupressure LI4 and group of acupressure SP6 vs Massage Effleurage with significance value was $p < 0.05$; there was no significant differences between the acupressure group of LI4 vs the Massage Effleurage group with $p > 0.05$. Moreover, SP6 acupressure was more effective than LI4 acupressure and Massage Effleurage, LI4 acupressure was effective than Massage Effleurage. Acupressure at Sanyinjiao point, Hegu point and Massage Effleurage effectively reduce the intensity of menstrual pain, so it can be used as an alternative intervention to decreasing the intensity of menstrual pain.

KEYWORDS: menstrual pain, acupressure, massage effleurage

INTRODUCTION

Dysmenorrhea is painful during or shortly before menstruation, it is one of the most maternity problems among women in all ages. Commonly, dysmenorrhea occurs among adolescents and it occurs in the first three years after menarche [1]. However, dysmenorrhea also begins after the first menstruation (menarche). Usually, dysmenorrhea or pain can decreases after menstruation, but in some women the pain can continue during the menstrual period and this pain giving impact and disturb their daily activities.

Pharmacological and Non-Pharmacological therapies were handling dysmenorrhea. Non-pharmacological therapy for handling dysmenorrhea includes acupressure at Sanyinjiao point, Hegu point and Massage Effleurage. However, the difference of effect in each point was not clearly mention on research.

According to Pourcesmail [2], dysmenorrhea is a common gynecological problems among female adolescent and women in reproductive age. Prevalence of dysmenorrhea problem was varieties in this world, an estimated 56.4% in China, 51% in Turkey, 67% in Sweden, 80% in Western Australia, 85% in Spain and 60-90% in the United States. Moreover, about 73.3% among Taiwanese high school girls (average age 16.7 years) [3], 20% to 90% in France [4]. However, an estimated 64.25 % of incidence of dysmenorrhea in Indonesia and including 54.89 % primary dysmenorrhea and 9.36% secondary dysmenorrhea and about 55% productive women feel tortured due to dysmenorrhea [5]. Dysmenorrhea giving impact on 75% of all women, 50% reported got mild symptoms, 30% have moderate symptoms, and 20% have severe symptoms [6].

According to French [7] factors were contributed to dysmenorrhea include early age of menarche, increased menstrual bleeding, alcohol and tobacco use, low socioeconomic status, obesity, and depression/

anxiety. Moreover, factors that may affect primary dysmenorrhea include: psychological factors, constitutional factors, cervical canal (cervical), canal obstruction, endocrine factors and allergic factors [8]. The dysmenorrhea symptoms are painful at the lower abdomen and back [9]. If this not treated, the pain will spread to the waist and thighs, following nausea and vomiting, headaches, diarrhea and irritability. The degree of menstrual pain varies, it ranges from slight to severe, so it also influenced or disturbs their daily activities [10].

Treatments to manage menstrual pain (dysmenorrhea) can be given by pharmacology and non-pharmacology. Pharmacologic treatment of dysmenorrhea is usually successful, but about 20-25% was failed. NSAIDs are primary choice for treatment but occasionally it was given gastrointestinal effects, so alternative treatment or non-pharmacological was other chooses to handling of dysmenorrhea [7]. Non-pharmacological therapy for handling dysmenorrhea includes acupressure and massage Effleurage. Acupressure is one form of physiotherapy, it is providing massage or stimulation at certain points on the body. Previous research said that during six months of follow-up, acupressure at Hegu and Sanyinjiao points can reduce pain, suffering and dysmenorrhea anxiety [11]. The results also in line with the results of that study [2], the research mentioned that acupressure at the Sanyinjiao point (SP6) is one of non-invasive nursing intervention and this can reduce pain of primary dysmenorrhea and 3 hours post treatment effects.

Acupressure at Sanyinjiao point and Slow Stroke Back Massage effectively decreases the intensity of menstrual pain [12]. Massage Effleurage is a form of massage by using a gentle Yuan giving a soft pressure over the surface of the body in a circular direction repeatedly [13]. Skin stimulation causes the release of endorphins, thus it was blocked of the transmission of pain. The gate control theory said that the stimulation of the skin activates the transmission of A-Beta sensory nerve fibers larger and faster. This process decreases the transmission of pain through fibers C and delta-A of small diameter so that the synapse gate closes the transmission of pain impulse [14]. Based on the above phenomenon, researchers are interested in taking the title of "Potential Acupressure at the Sanyinjiao point, Hegu Point and Massage Effleurage for decreasing Intensity of Menstrual Pain (Dysmenorrhea)".

RESEARCH METHODS

This study was used Quasy Experimental design with Pretest-posttest control group design, it means that this research reveals causal relationship with involving control group while also involving experimental group [15]. The population in this study were adolescent female in Islamic boarding school of Darul Ulum Jombang and who had menstrual pain experience (dysmenorrhea). Consecutive sampling method used to collect 90 respondents by used inclusion criteria. The inclusion criteria in this study were: 1) adolescents who have primary dysmenorrhea; 2) Adolescents who have not received anti-pain therapy; 3) adolescents who are cooperative. However, the exclusion criteria were: 1) adolescents who have secondary dysmenorrhea; 2) The adolescents who refuse while getting intervention. The first group was given acupressure at the Sanyinjiao point (Acupressure SP6), the second group was given acupressure at the Hegu point (LI4) and the third group was given a Massage Effleurage. NRS (Numeric Rating Scale) used to measure pain scale and the data were analyzed using Friedman test and Kruskal-Wallis test with $\alpha \leq 0.05$.

RESULTS AND DISCUSSION

Characteristics of respondents in this study include: 1) Age; 2) Age of Menarche; 3) Cycle of Menstruation; and 4) Period of Menstruation; 5) volume of Menstruation. Characteristics of respondents in this study were presented in frequency distribution table (Table 1). Primary data were presented of characteristics of respondent and the homogeneity of the three groups.

Table 1. Characteristic of sample and homogeneity

Variable	Akupresure SP6		Akupresure LI4		Massage Effleurage		p-value
	N	%	N	%	N	%	
1 Age							
a. 13 years old	1	3.3	1	3.3	0	0	0.101
b. 14 years old	4	13.3	4	13.3	2	6.7	
c. 15 years old	5	16.7	12	40	4	13.3	
d. 16 years old	0	0	2	6.7	7	23.3	
e. 17 years old	10	33.3	2	6.7	4	13.3	
f. 18 years old	4	13.3	2	6.7	8	26.7	
g. 19 years old	1	3.3	2	6.7	4	13.3	
h. 20 years old	2	6.7	3	10	1	3.3	
i. 21 years old	3	10	2	6.7	0	0	
2 Age of Menarche							
a. 11 years old	4	13.3	5	16.7	11	36.7	0.013
b. 12 years old	15	50	12	40	16	53.3	
c. 13 years old	3	10	9	30	2	6.7	
d. 14 years old	5	16.7	1	3.3	1	3.3	
e. 15 years old	3	10	2	6.7	0	0	
f. 16 years old	0	0	1	3.3	0	0	
3 Cycle of Menstruation							
a. Regular	23	76.7	21	70	28	93.3	0.000
b. Irregular	7	23.3	9	30	2	6.7	
4 Period of Menstruation							
a. 7 days	18	60	20	66.7	5	16.7	0.226
b. 8 days	4	13.3	3	10	7	23.3	
c. 9 days	5	16.7	3	10	15	50	
d. 10 days	3	10	2	6.7	3	10	
e. 11 days	0	0	2	6.7	0	0	
5 Volume of Menstruation							
a. Small	1	3.3	1	3.3	0	0	0.157
b. Average	22	73.3	20	66.7	17	56.7	
c. Much	7	23.3	9	30	13	43.3	

Source: Primary data, 2017

Before giving intervention for three groups (acupresure Sanyinjiao point group (SP6), acupresure Hegu point group (LI4) and Massage Effleurage group). Firstly, the researcher measured the intensity of menstrual pain (pre-test). After that the data were analyzed by Kruskal-Wallis test to determine the differences of menstrual pain intensity in the three groups as shown in table 2 and 3 below:

Table 2. Intensity of menstrual pain (Dismenorea) before giving intervention

Intensity of menstrual pain	Akupresure SP6		Akupresure LI4		Massage Effleurage	
	N	%	N	%	N	%
a. Mild	0	0	0	0	2	6.7
b. Moderate	24	80	23	76.7	20	66.7
c. Severe	6	20	7	23.3	8	26.6
Total	30	100	30	100	30	100

Source: Primary data, 2017

Table 3. The differences of Intensity of menstrual pain (Dismenorea) before giving intervention

Group	Median (Minimum-Maksimum)	p
Acupresure SP6	5.50 (4 – 8)	0.934
Acupresure LI4	5.50 (4 – 8)	
Massage Effleurage	6 (3 – 8)	

Post Hoc Mann-Whitney test: Acupresure SP6 vs Acupresure LI4 p=0,970; Acupresure SP6 vs Massage Effleurage p=0,727; Acupresure LI4 vs Massage Effleurage p=0,779.

After given intervention for three groups. The group are acupresure Sanyinjiao point group at (SP6), acupresure Hegu point group (LI4) and Massage Effleurage group for 20 minutes, the researched measured the intensity of menstrual pain at post immediately, post 30 minutes, after 1 hours, after 2 hours and 3 hours after given intervention. After that, the data were analyzed by used Kruskal-Wallis and Post

Hoc test to find the differences of menstrual pain intensity in each group. The data as shown in table 4, table 5 and table 6 below:

Table 4. The differences of Intensity of menstrual pain (*Dismenorea*) after giving intervention

	Group	Median (Minimum-Maximum)	p
Post Immediately	Acupressure SP6	3 (2 – 7)	0.002
	Acupressure LI4	4.5 (2 – 8)	
	Massage Effleurage	5 (2 – 8)	
Post 30 minutes	Acupressure SP6	3 (1 – 7)	0.018
	Acupressure LI4	4 (2 – 8)	
	Massage Effleurage	4 (2 – 8)	
Post 1 hour	Acupressure SP6	3 (1 – 7)	0.104
	Acupressure LI4	3 (1 – 7)	
	Massage Effleurage	3 (1 – 7)	
Post 2 hours	Acupressure SP6	2 (1 – 5)	0.039
	Acupressure LI4	3 (1 – 6)	
	Massage Effleurage	3 (1 – 6)	
Post 3 hours	Acupressure SP6	2 (1 – 4)	0.008
	Acupressure LI4	3 (1 – 6)	
	Massage Effleurage	2.5 (1 – 6)	

Source: Primary data, 2017

Table 5. Post Hoc test The differences of Intensity of menstrual pain (*Dismenorea*) before giving intervention and after giving intervention

	Group	p
Post Immediately	Acupressure SP6 vs Acupressure LI4	0.004
	Acupressure SP6 vs Massage Effleurage	0.002
	Acupressure LI4 vs Massage Effleurage	0.722
Post 30 minutes	Acupressure SP6 vs Acupressure LI4	0.015
	Acupressure SP6 vs Massage Effleurage	0.014
	Acupressure LI4 vs Massage Effleurage	0.928
Post 1 hour	Acupressure SP6 vs Acupressure LI4	0.066
	Acupressure SP6 vs Massage Effleurage	0.066
	Acupressure LI4 vs Massage Effleurage	1.000
Post 2 hours	Acupressure SP6 vs Acupressure LI4	0.027
	Acupressure SP6 vs Massage Effleurage	0.030
	Acupressure LI4 vs Massage Effleurage	0.951
Post 3 hours	Acupressure SP6 vs Acupressure LI4	0.002
	Acupressure SP6 vs Massage Effleurage	0.067
	Acupressure LI4 vs Massage Effleurage	0.256

Source: Primary data, 2017

Table 6. The differences of Intensity of menstrual pain (*Dismenorea*) after giving intervention

Group		Median (Minimum-Maximum)	p
Acupressure SP6	Before giving intervention	5.5 (4 – 8)	0.000
	Post immediately	3 (2 – 7)	
	Post 30 minutes	3 (1 – 7)	
	Post 1 hour	3 (1 – 7)	
	Post 2 hours	2 (1 – 5)	
	Post 3 hours	2 (1 – 4)	
Acupressure LI4	Before giving intervention	5.5 (4 – 8)	0.000
	Post immediately	4.5 (2 – 8)	
	Post 30 minutes	4 (2 – 8)	
	Post 1 hour	3 (1 – 7)	
	Post 2 hours	3 (1 – 6)	
	Post 3 hours	3 (1 – 6)	
Massage Effleurage	Before giving intervention	6 (3 – 8)	0.000
	Post immediately	5 (2 – 8)	
	Post 30 minutes	4 (2 – 8)	
	Post 1 hour	3 (1 – 7)	
	Post 2 hours	3 (1 – 6)	
	Post 3 hours	2.5 (1 – 6)	

Source: Primary data, 2017

Based on the results of Friedman test showed there was a significant difference in the intensity of menstrual pain in the three groups before treatment and after treatment as shown in table 7.

Tabel 7. Post Hoc test The differences of Intensity of menstrual pain (*Dismenorea*) before giving intervention and after giving intervention

Kelompok		p
Akupresure SP6	Before giving intervention vs Post immediately	0.000
	Before giving intervention vs Post 30 minutes	0.000
	Before giving intervention vs Post 1 hours	0.000
	Before giving intervention vs Post 2 hours	0.000
	Before giving intervention vs Post 3 hours	0.000
Akupresure LI4	Before giving intervention vs Post immediately	0.000
	Before giving intervention vs Post 30 minutes	0.000
	Before giving intervention vs Post 1 hours	0.000
	Before giving intervention vs Post 2 hours	0.000
	Before giving intervention vs Post 3 hours	0.000
Massage Effleurage	Before giving intervention vs Post immediately	0.000
	Before giving intervention vs Post 30 minutes	0.000
	Before giving intervention vs Post 1 hours	0.000
	Before giving intervention vs Post 2 hours	0.000
	Before giving intervention vs Post 3 hours	0.000

Source: Primary data, 2017

The results of this study showed that the intensity of menstrual pain before interventions were relatively equivalent or same in all three groups. The intensity of menstrual pain at the acupressure of SP6 group and the acupressure of LI4 group were at moderate level, and the intensity of menstrual pain at the Massage Effleurage group was also at moderate level. However, at statistical analysis results obtained p value was 0.934. This means that the intensity of menstrual pain among three groups were not have any significant differences.

Dysmenorrhea is pain and painful while menstrual period [16]. Commonly, dysmenorrhea was come during menstruation and the patients felts painful, and stiffness or cramps in the lower abdominal area and pelvis [17]. Dysmenorrhea also one of the most common gynecological problems among women, more than 50% of women had dysmenorrhea experience and this giving impact for women like an inability of daily activities, about 10% of women can't do their daily activities for 1 to 3 days in each month. Moreover, about 25% of adolescent can't come to the school because of dysmenorrhea [13].

The pain that occurs during menstruation is caused by hormonal imbalance factor. It is increased of secretion of prostaglandin hormone which causes enhancement of uterine contraction so this will make ischemia of body system [18]. In addition Prostaglandin can stimulate the nerve pain in uterus so this make more pain. After ovulation, the response of progesterone production, the fatty acids in phospholipids are increasing than Arachidonic acid is released and it started to prostaglandin cascade in the uterus. F2 α Prostaglandin makes Myometrial Hypertonus and vasoconstriction so impact of this process was ischemia and pain [19].

The symptoms of dysmenorrhea are pain at the lower abdomen and back, and also cramps [9]. However, if the symptoms are untreated so the pain will spread to the waist and thigh area, followed nausea and vomiting, headache, diarrhea and irritability [10]. In addition, dysmenorrhea can disturb daily activities, not entering school or workplace, physical mental disorders and socio-economic or family problems [20].

The results of this study showed that the intensity of menstrual pain (dysmenorrhea) among acupressure SP6 group and Acupressure LI4 group were at moderate level, the intensity of menstrual pain among Massage Effleurage group was at moderate level. The results were in line with previous studies, the study mentioned that some adolescents who experienced menstrual pain (dysmenorrhea) are in moderate category [21] and according to the opinion [10], which states that the degree of menstrual pain is varies from the mild to the very severe.

Dysmenorrhea can occur at various age levels, in this study showed that the respondent who got acupressure SP6 and acupressure LI4 were aged 13 to 20 years old. However, the respondent who got Massage Effleurage aged 14 to 20 years old

The results of this study were consistent with previous studies, that study mentioned that dysmenorrhea occurs among female who aged 10 to 20 years old and only 40% of female who tolerant with dysmenorrhea. Sohyune (2016) also said that dysmenorrhea can occur in every level of ages [22]. Dysmenorrhea is the most common gynecological problem, especially among young female. Age of menarche and menstrual periods are factors affecting dysmenorrhea [23]. This result showed that the age of menarche among group who got acupressure SP6 were 12 years old, and age of menarche among group who got acupressure LI4 were only half those aged 12 years old. However, age of menarche among group who got massage effleurage aged 12 years old. For the duration of menstruation among respondents were 7 days. This study was consistent with previous opinion, they states that the prevalence of menstrual pain and the severity of menstrual pain were associated with early age of menarche factors and duration of menstruation [24].

Statistical results of this study showed that there was a decrease of intensity of menstrual pain before giving intervention and after giving intervention among three groups with p value 0,000, this indicate that the intensity of menstrual pain before giving intervention and after giving intervention there was a significant of differences. However, Wilcoxon Post Hoc test results showed that the decrease of pain intensity was occur at immediate time, after 30 minutes, after 1 hour, after 2 hours and after 3 hours after giving intervention with $p < 0.05$, or $p = 0.000$. This analysis showed that there were differences of menstrual pain before giving intervention and after giving intervention among three groups, this mean that there was an effect of SP6 acupressure, LI4 acupressure and Massage Effleurage on the intensity of menstrual pain on 3 hours after giving intervention. Moreover, the decrease of pain intensity at the SP6 acupressure group with the lowest score of pain intensity was 1 and highest score of pain intensity was 4.

Acupressure is one of physiotherapy form with providing massage or stimulation at some points of the body [25]. Acupressure SP6 is a treatment for menstrual pain by giving massage or stimulation at SP6 point, the location on four fingers above the ankle bone or three Cun Proximal Prominens Maleolus Medialis, the right on the posterior Tibia. However, acupressure at Hegu point is a treatment for menstrual pain with provides a massage at point LI4. The location is between the metacarpal os I and II of the mid radial metacarpal os II [26]. Based on Gate Control Theory acupressure activates the innervate mechanoreceptors of sensory nerve fibers, A-beta and / or A-delta depending on the pressure intensity, so this causes inhibition of pain transmission level at the spinal. It is also possible that acupressure activates the pain-inhibiting center so causes the activation of the descending pain [27].

Massage effleurage is a movement by using palms than attached the part of body than give smooth massage and relaxing. Massage effleurage was aim to improving blood circulation, giving warm on abdominal muscles, and promote physical and mental relaxation [28]. Massage Effleurage is one form of skin stimulation. Cutaneous stimulation is a skin stimulation performed to relieve pain, encouraging the release of endorphins, and blocking the transmission of pain stimuli. This was related with Gate-Control theory. The Gate-Control theory said that cutaneous stimulation (massage) was activated the transmission of A-beta sensory nerve fibers so it will make reduction of pain transmission on C fibers and A-delta fibers as well as closing the synaptic gates for transmission of pain impulses. Meek (1993) said that touch and massage are a sensory integration technique that affects the activity of the autonomic nervous system, if the individual perceives that a touch as a relax stimulus, then will appear relaxation response. The cutaneous stimulation also can reduce the perception of pain and help reduce muscle tension. On the contrary the muscle tension can increase pain [14].

The results of this study indicate that there was an effect of acupressure SP6, acupressure LI4 and Massage Effleurage to the intensity of menstrual pain on 3 hours after giving intervention. The results of this study was consistent with previous studies which mentioned that acupressure at the Sanyinjiao point (SP6) could be an non-invasive nursing intervention because this can reduce primary dysmenorrhea at 3 hours after giving [2]. The results of the study [29], also mentioned that acupressure at Hegu point (LI4) can significantly decrease the intensity of menstrual pain. Moreover, the results of previous studies showed that a massage can decrease menstrual pain [30], other study also mentioned that a massage was effectively decreases menstrual pain on 15 minutes after intervention. The results of this study were also in accordance with previous studies, this study showed that there is an effect of massage effleurage to decrease the intensity of menstrual pain [31, 32].

Friedman's test results showed that there was significantly effect of acupressure on the Sanyinjiao point to decreasing intensity of menstrual pain (dysmenorrhea). Acupressure at Sanyinjiao point can

decrease the intensity of menstrual pain about 4 score. This occurs if Acupressure was performed at the SP6 point on right and left legs as deep as 0.5 to 1 cun for 20 min (120 cycles, each cycle was gave strong pressure with vertically style for 8 seconds and 2 second for break). The results of this study were consistent with previous studies which found that acupressure at the Sanyinjiao point so this can decrease menstrual pain at 2 hours after giving intervention [20, 33]. Other studies also said that acupressure was significantly affect the decrease of primary menstrual pain [34, 35].

The results of this study showed that there was significantly influence of acupressure at point Hegu (LI4) to decrease intensity of menstrual pain (dysmenorrhea). Acupressure at point LI4 can decrease the intensity of menstrual pain about 2 score. This occurs if acupressure was performed at the appropriate point and followed at the Hegu point on the right and left hands as deep as 0.5 to 1 cun for 20 minutes (120 cycles, each cycle with provide strong pressure with vertically style for 8 seconds and 2 second for break). During the six months of follow-up, acupressure at Hegu point and Sanyinjiao point were reduce the pain, suffering and dysmenorrhea anxiety [11].

Friedman test results obtained that the Massage Effleurage significantly affect the decrease in the intensity of menstrual pain. Massage Effleurage can decrease the intensity of menstrual pain of 2. This happens if the Massage Effleurage is done by giving massage by using two palms than give soft pressure on the body with regularly circular from the lower back to the top until the respondent feels comfortable, commonly for 20 minutes. The effleurage technique provides warmth to the skin, relieves pain and promotes relaxation so make comfort [36].

The statistical analysis using the Kruskal-Wallis test showed that there was significant difference of the intensity of menstrual pain within 30 minutes, 2 hours and 3 hours after giving intervention ($<0,05$). However, the analysis result at 1 hour after giving showed that there was no significant difference of pain menstruation intensity with $p > 0,05$. The result of Mann-Whitney Post Hoc test showed that there was significant difference of menstrual pain intensity among acupressure group SP6 vs acupressure LI4 and group of acupressure SP6 vs Massage Effleurage with significance value of $p < 0,05$. The results also showed no significant difference between acupressure group LI4 vs group Massage Effleurage with $p > 0,05$.

The results of the clinical and analytical trials show that SP6 acupressure is more effective than LI4 acupressure and Massage Effleurage. Moreover, LI4 acupressure is as effective as the Massage Effleurage. The decrease of the intensity of menstrual pain (dysmenorrhea) was accordance with the gate control theory. If there is an big impulse transmitted such as skin stimulation, touch, vibration, warm and cold, and subtle touch. So the impulse will inhibit the impulse in the area of substance Gelatinosa so that the sensations which carried by small fibers will be reduced even can't feel painful sensation, this condition refers to "closed gate" [14]. This conclude that the decrease of intensity of menstrual pain make *Santriwati* (participants) do their activity including daily activities in the school or campus. The decreasing intensity of adolescent menstrual pain in this case *santriwati* can carry out daily activities in the dormitory or at school or campus. Sanyinjiao acupressure point, Hegu acupressure point and Massage Effleurage not only can apply for respondent in this research but also can use for women who had dysmenorrhea.

CONCLUSION

Acupressure at Sanyinjiao point (SP6) more effective than acupressure at Hegu point (LI4) and Massage Effleurage. Moreover, acupressure at Hegu point (LI4) had same effective with Massage Effleurage. However, acupressure at Sanyinjiao point (SP6), Hegu point (LI4) and Massage Effleurage were effectively decreased the intensity of menstrual pain at 3 hours after giving intervention, so these three of interventions can be used as an alternative intervention to decreasing the intensity of menstrual pain.

ETHICS

Ethics this study was approved ethical clearance from Ethical Commission of Health Research in Health Polytechnic, Kemenkes Malang.

ACKNOWLEDGMENT

Praise be to Allah. May the peace and blessings of Allah be on the last Prophet and Messenger, Nabi Muhammad SAW and on his household and companions. The completion of this research was supported and giving encouragement either directly or indirectly. Therefore, my express gratitude as much

as possible to: 1) Prof. DR. H. A. Zahro, MA., As the Rector of University of Pesantren Tinggi Darul Ulum Jombang who has motivated to conduct this research; 3) Andi Yudianto, S. Kep., Ns., M. Kes., As Dean of the Faculty of Health Sciences Unipdu who has given opportunity to the researcher to carry out this research; 4) Drs. Moh. Yahya Ashari, M.Pd, as Head of Research Department of University of Pesantren Tinggi Darul Ulum Jombang who facilitated the researcher along doing this research; 5) All parties who have participated in this research.

REFERENCES

1. Lowdermilk, Perry & Cashion. (2013). *Keperawatan Maternitas (Maternity Nursing)*. Edition 8. Book 1. Elseiver. Singapore.
2. Mirbagher-Ajorpaz N., et al. (2010). The Effects of Acupressure on Primary Dysmenorrhea: A randomized Controlled Trial. *Complementary Therapies in Clinical Practice*.
3. Wu LL., Shu CH., Liu, CF. (2012). Effects of Noninvasive Electroacupuncture at Hegu (LI4) and Sanyinjiao (SP6) Acupoints on Dysmenorrhea: A Randomized Controlled Trial. *The Journal of Alternative and Complementary Medicine*. Volume 18, Number 2, pp. 137–142.
4. Xu, T., Hui, L., Li-Juan, Y., Guo-Min, S., & Tian-Hua, W.(2014). Effect of moxibustion or acupoint therapy for the treatment of primary dysmenorrhea: a meta-analysis. *Alternative therapies volume 20*, 33-42.
5. Proverawati. (2009). *Menarche: Menstruasi Pertama Penuh Makna (First Menstruation with Full of Meaning)*. Nuha Medika. Yogyakarta.
6. Benson, C. (2008). *Buku Saku Obstetrik dan Ginekologi (Obstetric book and Gynecology)*. EGC. Jakarta.
7. Navvabi Rigi et al. (2012). Comparing The Analgesic Effect of Heat Patch Containing Iron Chip and Ibuprofen for Primary Dysmenorrhea: A Randomized Controlled Trial. *Biomed Central*. Assess on Maret 23, 2015.
8. Wiknjastro, H. 2007. *Ilmu Kebidanan (Maternity Science)*. Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo.
9. Varney. (2006). *Buku Ajar Asuhan Kebidanan (Textbooks of Midwifery Care)*. Edition 4. Vol 1. EGC. Jakarta.
10. Manuaba, Ida Bagus Gede. (2010). *Ilmu Kebidanan, Penyakit Kandungan dan Keluarga Berencana untuk Pendidikan Bidan (Obstetrics, Gynecology and Family Planning for Midwife Education)*. Edition 2. EGC. Jakarta.
11. Chen, Huei-Mein and Chen, Chung-Hey. (2010). Effects of Acupressure on Menstrual Distress in Adolescent Girls: A Comparison between Hegu–Sanyinjiao Matched Points and Hegu, Zusanli Single Point. *Journal of Clinical Nursing*, 19. 998–1007.
12. Mukhoirotin dan Diah Ayu Fatmawati. 2016. *Pengaruh Akupresur pada Titik Sanyinjiao dan Slow Stroke Back Massage terhadap Penurunan Intensitas Nyeri Haid (Dismenorrhea) (Influence of Acupressure on the Sanyinjiao Point and Slow Stroke Back Massage against Decreased Intensity of Menstrual Pain (Dysmenorrhea))*. National proceeding and 2nd IPEMI (Ikatan Perawat Maternitas Indonesia) meeting, Central Java “Professional Work Ethics Building of Maternity Nursing in Charge of the Era of ASEAN Economic Community”. Magelang, 17 September 2016.
13. Reeder, Martin, & Koniak-Griffin. (2011). *Keperawatan Maternitas: Kesehatan Wanita, Bayi, & Keluarga (Maternity Nursing: Women's Health, Baby & Family)*. EGC. Jakarta
14. Potter & Perry. (2010). *Buku Ajar Fundamental Keperawatan (Textbooks of Nursing Fundamental)*. EGC. Jakarta.
15. Nursalam. (2013). *Metodologi Penelitian Ilmu Keperawatan (Nursing Research Methodology)*. Jakarta: Salemba Medika.
16. Andira, Dita. (2010). *Seluk-Beluk Kesehatan Reproduksi Wanita (Subtleties of Women's Reproductive Health)*. Yogyakarta: A'Book Plus
17. Bickley, S. (2009). *Buku Ajar Pemeriksaan Fisik & Riwayat Kesehatan (Physical Examination Book Book & Medical History)*. EGC. Jakarta.

18. Kusmiran, Eny. (2012). *Kesehatan Reproduksi Remaja dan Wanita (Reproductive Health Teens and Women)*. Jakarta: Salemba Medika
19. Magista, Vivi Anisa (2015). The effect of Exercises on Primary Disminorhea. *Jurnal Majority*. Vol. 4, No.2.
20. Gharloghi S, Torkzahrani S, Akbarzadeh A.R, Heshmat R. (2012). *The Effects of Acupressure on Severity of Primary Dysmenorrhea*. Patient Preference and Adherence. 6. 137-142.
21. Frisilia, Pranowowati, Puspita. 2013. Perbedaan Masase Effleurage Dan Kompres Hangat Terhadap Penurunan Nyeri Punggung Pada Ibu Hamil Trimester III (Differences Massage Effleurage and Warm Compress against Decreased Back Pain in Pregnant Women Trimester III). Skripsi. STIKES Ngadi Waluyo Ungaran.
22. Sohyune. (2016). Effects of Aricular Acupressure Therapy on Primary Dysmenorrhea for Female High School Student in South Korea. *Journal of Nursing Scholarship*. Assessed on 22 October 2016.
23. Yu-Xia Ma et al. (2010). *A Comparative Study on the Immediate Effects of Electroacupuncture at Sanyinjiao (SP6), Xuanzhong (GB39) and a Non-Meridian Point, on Menstrual Pain and Uterine Arterial Blood Flow, in Primary Dysmenorrhea Patients*. Pain Medicine 2010; 11: 1564–1575.
24. Hacker N.F, Gambone J.C, & Hobel C.J. (2010). *Hacker & Moore's Essential Obstetrics and Gynecology*. USA: Elsevier.
25. Fengge, A. (2012). *Terapi Akupresure (Acupressure therapy)*. Crop Circle Crop. Yogyakarta.
26. Rajin, Masruroh, Abdul Ghofar. (2015). *Panduan Babon Akupunktur (Guide of the Acupuncture Baboon)*. IndoLiterasi Yogyakarta.
27. Anna Hjelmstedt et.al. (2010). *Acupressure to Reduce Labor Pain: A Randomized Controlled Trial*. Acta Obstetricia et Gynecologica. 2010; 89: 1453–1459.
28. Trisnowijayanto, Bambang. (2012). *Keterampilan Dasar Massage (Basic Massage Skills)*. Yogyakarta: Muha Medika
29. Julianti, (2014). Efektifitas Akupresur terhadap Dismenorea pada Remaja Putri (Effectiveness of Acupressure on Dysmenorrhea in Young Women). *JOM PSIK*. Vol.1, No. 2.
30. Han, S. H., Hur, M. H., Buckle, J., Choi, J., & Lee, M. S. (2006). Effect of Aromatherapy on Symptoms of Dysmenorrhea in College Students: A Randomized Placebo-Controlled Clinical Trial. *The Journal of Alternative and Complementary Medicine*, 12, 535–541.
31. Sugi Purwanti (2013). Analisis Perbedaan Terapi Dismenorhea dengan Metode Effleurage, Kneading, dan Yoga dalam Mengatasi Dismenorhea (Differences Analysis of Dysmenorrhea Therapy with Effleurage, Kneading, and Yoga Methods in Overcoming Dysmenorrhea). *Jurnal Kebidanan* Vol.5, No.01, 10-15.
32. Siti Nurkhasanah & Wiwit Fetrisia. (2014). Pengaruh Masage Effleurage terhadap Penurunan Intensitas Skala Nyeri Dismenorea Pada Siswi Kelas I MTsN IX Bukittinggi Tahun 2014 (Effect of Massage Effleurage on Decreased Intensity of Pain of Dysmenorrhea Scale in Grade I Students of MTsN IX Bukittinggi Year 2014). *Jurnal Kesehatan STIKes Prima Nusantara Bukittinggi*. Vol. 5 No. 2, 26-35.
33. Jun EM, Chang S, Kang DH, Kim S. (2007) Effects of Acupressure on Dysmenorrhea and Skin Temperature Changes in College Students: A Nonrandomized Controlled Trial. *Int J Nurs Stu*. 44(6):973–981.
34. Mahboobeh K, Atrian F.A, Malihe S, Nahid S, Mohammad A.J. (2013) Investigating the Effect of Pressure on Third Liver Point on Primary Dysmenorrhea: a Randomized Controlled Clinical Trial. *Iranian Red Crescent Medical Journal*. 15(9): 848-53.
35. Charandabi, S.M. (2010). The Effect of Acupressure at The Sanyinjiao Point (SP6) On Primary Dysmenorrhea in Students Resident in Dormitories of Tabriz. *Iranian Journal of Nursing and Midwifery Research*. 16 (4): 309-317.
36. Braun, M. B & Simonson, S. J. (2014). *Introduction to massage therapy*. Philadelphia: Lippincott Williams &Wilkins.

Online Social Networks: Analytical Review of Challenges and Possible Recommendations

Muhammad Adnan¹, Jawad Ali², Shahid Ali³, Usman Ud Din⁴,
Wajdan Haider⁵, Luqman Khan⁶

Department of Computer Science, Abdul Wali Khan University Mardan, KPK, Pakistan

Received: November 8, 2017
Accepted: January 17, 2018

ABSTRACT

Online Social Networks are the backbone for online communication. Social Networking Sites provide virtual community for online users to share their thoughts, activities, interests, pictures etc. These sites are fastest, easiest and cheapest way for communication that's why Social Networking Sites become more popular in the world wide. Each user of Online Social Network has their own profile, which contain user personal information (name, contact number, address, date of birth, hobbies, interest etc). Some commonly used Social Networking Sites are Face Book, Twitter, My Space, Google Plus and LinkedIn. Among all of these, face book has peak value users. Default privacy setting of Face Book is public where each and every user is able to access each other information without awareness. Face book provide privacy up to some limit but these privacy are hard to implement for a common user. Existing privacy policies of Online Social Networks are unable to protect user personal information. In proposed work we have discuss major problems related to Online Social Networks privacy and different types of attacks on Online Social Networks/users, finally we proposed some recommendation, which improve privacy of Online Social Networks and reduces attacking risks.

KEYWORDS: Online Social Network; Social Networking Sites; Privacy; Personal Information; security.

1. INTRODUCTION

Online Social Networks are one of the most well known communication medium [22]. OSN are social graph where individuals/groups represent nodes and links between them show relationship [1] [2] [11] [17][18][19] [24]. Online Social Networks are simplest and easiest way for connecting users to each other's [4] [9][13]. These networks have hundreds of millions of users which access these networks on daily basis [16] [25]. OSN are popular throughout globe [2] [25]. There are more than 300 SNS [5], but most well-liked between them is face book, which is secondly topmost visited website after Google [4], and was launched in year 2004 [11]. Face book have 1.23 billion active users on monthly basis as of December 2013 [16]. Face book provide graphical user interface for using his feature, through GUI it is easily accessible for general users [1] [22]. Surfing of internet has become increased due to availabilities of OSN [1]. Figure 1 shows number of users in millions on each OSN [6] [9] [26-31].

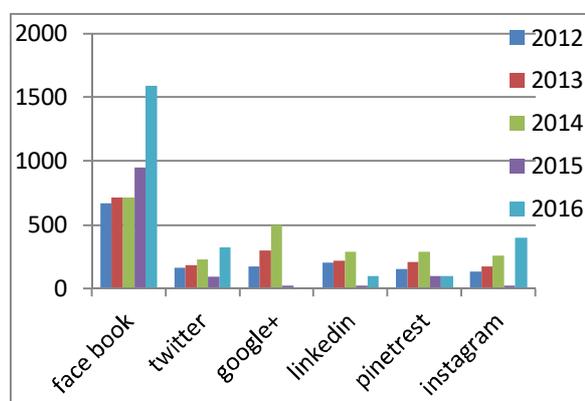


Figure 1 Users on different social network

*Corresponding Author: Muhammad Adnan, Department of Computer Science, Abdul Wali Khan University Mardan, KPK, Pakistan.

Online Social Networks provide a lot of facilities to his users for motivating them [1][3][4][7][8][23]. A survey conducted in 2012 show that 79% users use OSN for business purposes and 82% users use for personal reasons [12]. Every OSN user has own profile through which they connect to SNS [18][22][23][24], generally profile contain personal information of users[4][5][7][10][13][22][23].Profile also contain friends list [22, 23, 24], which include family members, friends, identified and strangers, anything user want to share are accessible to his friends list but sharing private information lead to risks[1] [5][6][7]. These networks tie all friends in same category, that is harm full, additionally face book and twitter provide grouping concept but that do not mimic real life friend ship [20]. Mostly users login to his OSN account through mobile phones [6][25], A survey conducted in year 2013 show that face book had approximately 556 million active mobile users on routine basis[1], and 945 million access face book through mobile phones on monthly basis as of December 2013 [16]. A lot of users unaware from revealing his personal information, [3][6][11][14][16], alternately younger's are not give any concentrate on revealing his personal information because they are unaware from revelation results [5].Figure 2 shows age wise users of OSN [6].

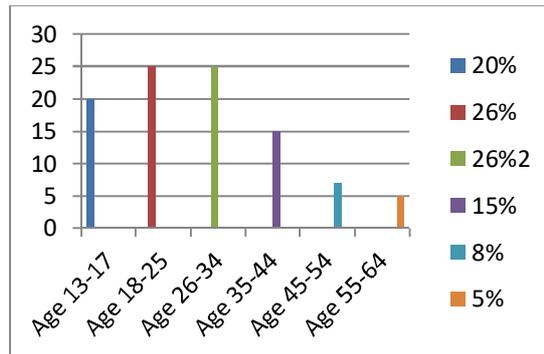


Figure 2: Age wise Users on Different OSN in Millions

In our proposed work we have categorized different attacks on OSN and suggested some recommendations which reduce information revelation threats.

2. Problems associated with OSN:

Due to high concentrate of users on SNS it attracts attackers [10] [24]. There are a lot of threats concerning with Online Social Network, Figure 3 shows percentage of threats on individual OSN [11].

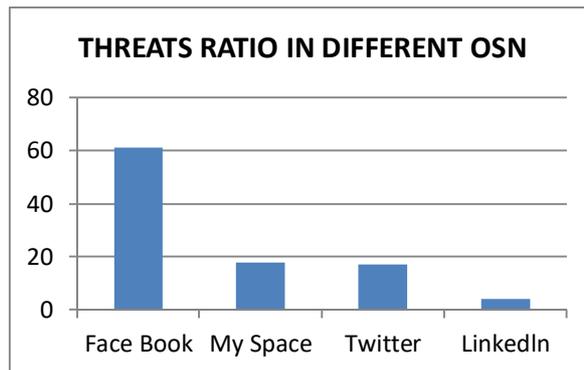


Figure 3: Threats Ratio Associated With Different OSN

In this paper we have categorized risks regarding with online social networking sites which are, privacy concerning threats and attacking scenario.

2.1 privacy concerning threats

i. Default privacy setting of face book:

Most users unaware from current security setting of face book, they think that available privacy policies are enough to protect our personal data [20] [25]. Face book provide privacy policies up to some extent but default setting of face book is public which allows each and every user whether it's a friend, friend of friend or visitor can access

personal data of user. Mostly users are unconscious that how to change default privacy setting and for a common user it's hard to sense that what's changes present after altering default privacy setting [3][5][7][8][9][10][12][14][20][24].

ii. Available privacy policies of SNS:

Available privacy policies of some OSN including face book is detailed than others. But few users know that how to implement them. If someone implements existing privacy policies user's data will be protected from common users but not from experts/hackers [1][4][7][9][13][22]. In next section we will discuss that how attackers extract user data after implementing available privacy policies.

iii. 3rd party applications:

Commonly users suffer social networking sites for leisure purposes. 3rd party application offer entertainment such as games and quizzes and other functionalities to attract users. 3rd party application has second degree access to user personal data. It's a big hole in security of OSN. OSN is open platform and allow 3rd party applications to access user personal data without compromising them. With third party integration it's hard to find that which application used which kind of user information. Users are unaware that his information is revealed to 3rd party application and these applications used user data for his own purposes, as many business acquired user email address to mark them in his audience for enhancing his productivity [4][6][9][10][13][21][24][25].

iv. Risky friends:

Some information's of users appears to his friends after implementing privacies, that information also accessible to his friends of friend who are stranger for them and they are risky for user. Some friends are also vulnerable for user's personal data for e.g. if friend "A" implements privacy to hide his relation from others and his friend "B" have keep weaker privacy setting so third party can view his relation through friend "B" [7][13]. Moreover if one user secured his data from outsiders and allow him to his friends, his friend can share his secured data to outsider [18].

v. OSN service providers:

Before creating account in OSN, user compromise with OSN service provider about his personal information, it's not sure that OSN service provider keep respect of his privacy policies [18]. Any contents that are available on OSN are accessible to OSN service provider and they are authoritative by allowing any party to access specific information [17][18]. OSN service provider used user personal data for business purposes. Illegally they give access to 3rd party application without awareness of users. Additionally if user wants to delete his account they cannot delete them completely, some personal information retained about user after deactivating account which are exposed for user [13][14]. Furthermore Google+ and face book used centralized architecture where all users' data are stored on central domain and a single administer administrate all users information and they are not trustworthy for user to keep respectful check on users data. They used user's data for his own beneficiary purposes [7][8][21]. So social networks providers itself risky for users information [18].

vi. Adding strangers to friends list:

Commonly user specially younger's add more friends to receive more likes and comments, they make request to strangers and also add strangers in his friend list, some users add unknown to keep aware himself from different civilizing and background, But they are unaware that how strangers misuse his personal information [1][5][7][9]. On another hand, some users want to protect his information from family members not from strangers, they post abuse posting on user wall as users follow them, they click to wrong path which lead to malicious attack [3], that we will explain in next section.

vii. Trust on third party domain by OSN service providers:

Many OSN uses 3rd party domain for tracking user's activities, which are unwanted for users. Also they compromised with advertisement partner on user personal data for his own advantage without user awareness [6][10][18][21].

viii. Comment controversies:

This is common in Face book that, most time chatting take place on photo, the drawback of this conversation is that, if NGO members upload a photo of charity which they have conducted, the conversation start on post and some of secret concerning events reveal on the result [5].

ix. User anonymity:

Many users use real name for profile name, hacker's used profile name for index searching on the basis of which they can access all personal information of user. Additionally profile owner may be the chance of losing job; if employer

visits his profile they can easily understand the nature of candidate [6] 18, 24, 25]. Some users use fake name for anonymity risk prevention but attackers used de-anonymization attack to extract user real identity. In this attack attackers used different techniques such as tracking cookies, network topology and user group membership [1, 10, 16].

x. Information leakage:

Leakage of personal information is pivotal issue in Online Social Network. Hackers can easily put on personality of someone else and take membership in a specific group and they can easily extract personal/sensitive information of that group which is only accessible to members. Leakage of personal information is also negative impact on user's personality, as leakage of drinking and other abuse habit [1][14][16][18][21].

xi. Sns aggregators

Application like snag, profile linker allowed SNS to integrate user's data on single web application but risk associated with such application is weak authentication methods which may lead to identity theft and XSS attack [14].

xii. Eavesdropping

Many internet users access internet through mobile devices [4][6][18][25]. On most public places WIFI available for accessing internet. But accessing WIFI at some places leads to information revelation threats, as many public places used vulnerable wireless access point. Many SNS provide insecure communication layer which capturing user's transmitted data through Sniping tools [4][25].

xiii. Extreme-scale analytics

The system is created by Raytheon called Riot. Through Riot it is probable to snapshot every moment of a person life, his friend's and visited places and they charted them on a map. Through Riots our location can easily accessible to access photographs and videos that we post on SNS. It is because of weak privacy provided by SNS, which is not only infected for SNS but also vulnerable for our daily life [3].

2.2 attacking scenario

2.2.1 Attacks on profile image

Many users share his real images on SNS every day, where hackers used them for abuse purposes, without user awareness. Profile image is pivotal source for profile cloning. Attackers extract profile image of victim and used them for duplicate profile. General attacks used by attackers for profile image extraction [6].

- Image dragging
- Click on right button and save as image
- By sniping tool
- Save image after print preview
- Using shortcut keys Ctrl+A, Ctrl+S
- Temporary internet folder
- Getting image by using print screen button

Hackers extract profile image for the purpose of duplicate profile, finding user current location by using CBIR/Face recognition techniques and also to find his victim account on any other SNS. Additionally there is no security involved with profile image [4] [9] [14] [16].

i. Image dragging

As user posted his real images on OSN, OSN is open platform and accessible through internet where user image are easily accessible to hackers. Hackers just drag the image into the desired location where they want to store them [6].

ii. Click on right button and save as image

This option is commonly allowed in all SNS. Attacker just right click on desired image a pup up menu appear with some option, here attackers can select save as option and then browse his computer memory for keeping image [4] [6].

iii. By sniping tool

This tool used in advance operating system, which used for copying any detectable object. We can select any area of available content and save them in our computer memory. Hacker can easily copy his victim profile picture and saves them [6].

iv. Save image after print preview

In this method hacker just click on Ctrl+P shortcut key, this is used for printing web page. As printing dialogue box open hacker just select save option and browse his computer memory for saving image [6].

v. Using shortcut keys Ctrl+A, Ctrl+S

Hackers click Ctrl+A shortcut key on desired web page, which select all page contents after selecting all page contents they click Ctrl+S and browse his computer memory and save all contents. Contents consist of current webpage text and graphic [6].

vi. Temporary internet folder

This folder is present in all computers system. As user load web page all his multimedia contents automatically stored in this folder. For next time if user load same page again its loaded from this folder and if page contain some additional contents that contents will loaded from server side. This folder keeps all multimedia contents on permanent base although user deletes them manually. Hackers get his victim profile image from this folder [6].

vii. Getting image by using print screen button

Normally keyboard contains a button named print screen. This is used to capture visible contents of page. Visible contents of page are temporarily stored on RAM memory and then can be pasted in paint program. Hacker used them for getting his victim image [6].

2.2.2 Attacks targeted adults:

SNS are popular now days in whole world, the usage of SNS is popular among whole population especially younger's give high attention to SNS than others [3]. On another hand mostly younger's is not care of his information they are not scared from his information revelation because they are not aware from their results [5]. Attacks related to adults are.

- Online predators
- Risky Behavior
- Cyber-Stalking

i. Online predators/sexual harassment:

Online predators make a friendship with innocent boy/girl for the purpose of rapping or kidnapping. They collect personal information about his victim and found them geographically. On time they make physically attack on them [1][13][16].

ii. Risky behavior:

While in chat room mostly younger's chatted with strangers, mostly younger's provide his private/abuse photos to strangers, which may lead to behavioral threat [1][16].

iii. Cyber-stalking:

These are harassment technique; this attack differs from identity theft. In this attack attackers may or may not copy personality of someone else, attacker represents himself of a different nature, sex, age and also changes his other details. Then attackers collect all details of victim. And make physical attack on them [1][4][8][14][16].

2.2.3 Identity theft:

In online social network every user has their own profile which consists of user personal information and every user has their own identity through which others identified him. Hacker used an attack in which they copy identity of someone and represents himself as they are the real one; this attack is known as identity theft attack. Furthermore hackers misuse the identity of his victim which dismisses the reputation of victim [8][9][10][24]. Figure 4 show percentage of identity theft in each OSN individually, Survey 2011 [8].

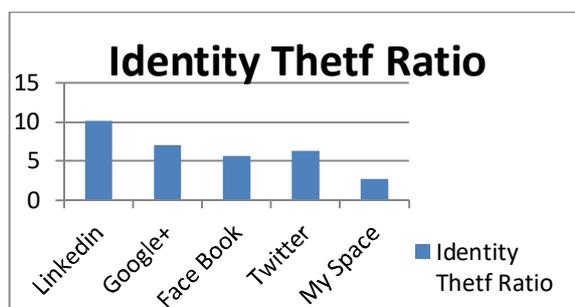


Figure 4: Identity Theft Ratio on Different OSN

A. Profile cloning:

Hacker used name, profile picture and other personal information of victim and create copy of his profile which is known as profile cloning [2][10]. There is no security associated with profile cloning, hackers easily extract his victim personal information and make clone of his profile which they used for neglect purposes [9] [15]. Hackers take advantage from default setting of face book, which allow every user to access user profile data [3][5][8][9][10][14][16][20]. Clone profile is used in two places which are categorized as.

- Cross site profile cloning
- Existing profile cloning

i. Cross site profile cloning:

In cross site profile cloning, attackers used clone profile of his victim on another SNS, where user has not registered before. Hackers also send friend request to victim friends who are registered on that OSN for the purpose to access his profile data [2][9][10][14][21].

ii. Current profile cloning:

As this is common in OSN that mostly users have multiple accounts, on these basis request made by attackers are easily accept by his victim friends. In current profile cloning, attackers used his victim identity in existing Social Network. Attacker send friend request to victim friends as they accept them, attacker got access to his friends profile [2][9][10][21].

B. Phishing attack:

In OSN first phishing attack was done in 2007 [9]. This attack is done to steal users confidential information, attackers provide fake interface for accessing user personal, sensitive, Credit card, banking and financial information [1][3][9][10][15][16][21]. According to current survey 84.5% of phishing attacks target OSN [1]. Mostly in OSN attackers recommend to victim, that authenticates your profile otherwise your account will be expired and provide him false interface as user enter his sensitive information they are accessed by attacker. This attack is success for most time due to unawareness of users [6].

i. Key logging

In this attack, attacker send an infected file which consist key logger, as victim execute the file then, a bit of data that victim typing will be uploaded on hacker server without awareness of user. Attacker also gets all passwords which victim used for any account on his system [15].

ii. Session hijacking

In session hijacking attack, attackers first capture the communication of victim with SNS. Then attacker captures the HTTP header, HTTP header contain session cookies which many websites used for validation purpose. Now attacker can copy HTTP session and use it for extracting victim profile [10][15].

iii. Social engineering attack

In this attack, attacker sends a fake email to victim, which is very attractive for victim and asking victim to enter his password as victim enter password his password reveal to attacker [15].

iv. Trojans attack

In this attack, attacker sends an infected server to victim as victim execute the infected server Trojan open a back door on victim PC, now attacker can extract whatever he wants from victim PC.

2.2.4 Malware attack:

Malware is harmful code which disturbs the operation of computer system and for gaining access to user credential information so that attackers can easily access user private information [1]. In this attack, attackers provide malware injected code as user click on that URL, false information are posted on his wall. Another way, as user follow malware injected code URL, they got access to fake website where a false interface asked user to enter his sensitive information and also client side code installed on victim system which steal information stored on the system [3][6][10][16][21].

Malware are injected to the following ways.

- Fake profile/Sybil
- 3rd party application
- False advertisement
- Shortened URL

- Cross site scripting, viruses and Worms
- Click jacking
- Watering hole

i. Fake profile

With fake profile, an attacker mimics personality of someone else and represents himself a celebrity person. In this way attacker can easily spread malware on different ways, as user click on view profile of attacker which put on personality of some celebrity, malware injected to his system[1][2][6][8][10][14][16][24].

ii. 3rdparty application

Third party application is attractive application; attackers also spread malware by using third party application. Malware are injected through third party application when user is trying to install them [10][13].

iii. False advertisement

The malware also injected through advertisement. False advertisement consist malicious code as user follow them malware injected in his system[3][10][15][21]. The antivirus company, Trend Micro originated that, some face book applications compromised with advertisement companies [10].

iv. Shortened URL

Every web page has unique URL, some URL have much long for reducing them shortened URL methods is used. By following shortened URL its lead to original address. Attacker used shortened URL for spreading malware. As social circle based on trust, if a user share shortened malware injected URL his friend will follow them and result they will be entrapped in malware attack. Symantec Cooperation Survey conducted on malicious shortened URLs in OSN show that, 65% URLs of Online Social Networks are shortened URLs and from them 88% URLs follow by social networks users[10].

v. Cross site scripting attack

Cross site scripting (XSS) is a virus worm which is browser side script and spread out among chain of users that's why OSN is best choice for (XSS) attack. The attacking scenario of (XSS) attack, attacker select a source node for spreading malware, as source node log in to SNS, malware will take control of browser. Then attacker act as an account owner, they can send messages to other SNS users, add application to user account, steal contact list of victim, access cookies, access sensitive information, access session token etc. The process will be continuing and malware will be injected in the form a chain[10][14][16].

vi. Click jacking

In Social Networking Sites click jacking is known like jacking. In this scenario, attacker spread malware code by hiding them into a button or an item as user press on that button/item malware injected into his system for example embedding malware into fake advertisement "LIKE" button, also this attack lead to access personal information of users. For example fake video player same as YouTube interface are present to user as user click on them they lead to a fake interface where user personal information are required for proceeding up, as user enter his personal information attackers access them[9][10]. Popular malware examples are:

- Koobface
- Twitter worm

a. Koobface

Koobface is a worm that spread through messages in face book and my space in the form of a video link, as user trying for playing video a message asking user to update his flash player. As users install update plug in his computer will be infected and attacker can steal his information as well as use his system for attacking on another computer [10].

b. Twitter worm

Twitter worm spread through twitter. Common types of twitter worm are [10].

a. Profile spy worm

This worm spread through downloading "profile spy" which is a third party application that is a fake application which permits users to find out who has viewed their profile. For downloading such application users must fill some information, that information is accessed to attacker. Malware code then injected into followers after infecting victim account [10].

b. Goo.gl worm

Malware spread through this worm in the form of shortened Google URL. As users click on URL users lead to a fake antivirus website and a message displayed that your computer has been infected and suggest to users for installing fake antivirus software. After installing fake antivirus users system got infected [10].

vii. Watering whole

This attack was firstly done on face book in 2013. This attack is not used for extracting user information but it's used to infect the system of developer. In 2003 attacker hacked a mobile developer forum as developer visited to his system their system got infected. After face book this attack was also done on other companies not only on SNS[9].

2.2.5 Spam issues

Spam attacks are done to overload the communication channel, its unwanted messages that send attacker on communication path [1][11][16][22]. But traditional spam attack are not reach to the victim, as many users are aware from these attacks and if spam reach to victim system due to awareness of users they delete them. New spam attacks are in the form of.

- Wall posts
- News feed
- Message spam

The SNS spam commonly consist advertisement and hyperlink that come from fake websites, as users will follow them they will entrapped in spam attack further its lead to phishing and malware attacks [10].

Other spam attacking strategies are.

A. Email based spam attack

In this attacking scenario, attackers get email address of victim and forward spam mails to victim. OSN also provide option to protect email address from others but attackers extract email address through first and last name. OSN also provide the facility to search someone through email address, attackers generate randomly email address for finding his victim [6][10]. There are two types of email spam which are.

- Broadcast spam
- Context-Aware spam

i. Broadcast spam

In this spamming attack, attacker generates spam emails to all email addresses which are in their list. But email is not specified to one email, so victim easily recognized them and deletes the [10][21].

ii. Context-aware spam

In this attack, attacker collects context information or relationship of victim to other users, through these information attacker send spam emails [6][9][10][21].

2.2.6 Physical threats

Providing personal information is leading to physical, psychological and property base threats. As users of SNS provide his real name, contact number and home address which may leads several physical threats [1][6][7][10][11][18]. These threats are Risky Behavior, online predators, and cyber stalking which have been discussed. Attackers track his victim by extracting the Time line history provide by face book, Time line consist all previous details like places visited and attending events. Time line encourage users to upload his images/video by time manner, attackers inspect the time line of a user and understand the nature and habitat of user, that is easy way for attackers to collect old detail about victim. Another feature Geo tag which allow users to tag location with image, which expose the location of user [10]. Additionally sharing day to day activities may also lead physical threats, especially for female like to post that I am going for shopping at 12:00 O clock, lead to kidnapping [6].

3. Recommendations

1. Bound your personal information

SNS are accessible through internet and internet always public. Do not provide real information such as home address, contact number, date of birth and daily events. Such information cause physical attack and online predator.

2. Change privacy setting

As default privacy setting of face book provides access to every user to extract user's personal information's. Default setting of face book welcomes to each attack. Face book provides privacy up to some limit. So be aware from default setting of OSN particularly face book.

3. Skip suspicious application/links

Many SNS provide platform for third party application which is in the form of entertainment or functionality. Skip those applications/links which asked about your personal information for proceeding up. These applications / links lead to malware, phishing, profile cloning and spam issues.

4. Do not trust on strangers

Some information must revealed to your friends list, so do not add persons which are suspicious to you and also do not add everyone to your friend lists after verifying them surely because attacker can fake represent himself.

5. Follow right path

If you found some links, applications or users which are harmful for your personal data, so inform your social circle about them.

6. Update your password

It is a key path for protecting our accounts. Do not use same password for all your accounts because one time attackers got them they can easily access to all of your accounts, so use different password for different accounts and used complex password. Update your passwords after a specific time that will be hard for attacker to guess them.

7. Verifying information

SNS provide platform for sharing thoughts, interest and activities also many users used them for gaining knowledge and updates but information provided by SNS are not surely to be correct, so do not believe on information provided by SNS without verifying them.

8. Be conscious of wifi at public area

Mostly user's access SNS through mobile phone and use single access sign in for all accounts, the concern cons over here, if hacker accesses his password they can access his all accounts financial, banking and credit card detail easily. So, don't trust on WIFI at public area such as hotels, restaurant, hospitals etc because some SNS used insecure data layer which capture the log in detail such as user name/password and also the rest of user communication through snipping tools.

9. Awareness at institutional basis

Teen agers have high ratio of using SNS. They do not aware from privacy of SNS that how to implement them, additionally they do not know the risks of information revelation. So, by arranging "Precaution tips of SNS" at institutional basis can limit attacks on younger's by providing them full guidance.

10. Utilize two-factor validation

Add second factor authentication with user name and password as in the form of Capcha code, voice ID, face recognition, iris recognition, finger scanning etc.

11. Mark "automatic updates" your operating system

Keeping update your operating system is key step for keep yourself safer. Turn on "Automatic Update" on your operating system if you have not done so. Latest version of operating system will be more careful about security.

12. Keep update your anti virus

Install updatable version of antivirus as, attacker try to use new viruses to attack, so old versions of antivirus are unable to block new viruses.

13. Revolving of posts

Mostly posts of SNS revolved on OSN, if any user posts something on his wall every one can share his post without to compromise him. But some post have no need to stay more on SNS and user share them again and again that cause some problems for example, once upon a time a little boy named Asad lived in swat was disappear from his family, the message about him was posted on face book. After some days someone found him and returned him to his family, but the post still revolved on SNS. After that many times, when someone found him by going school, shop, etc he took him to his house. So be careful while sharing that types of content.

14. Keep your software up to date

Be aware of your software specifically your browser up to date as attackers known the vulnerabilities of existing version. Enable mark "Automatic Update" option, if available.

15. Be careful while comments

Commonly conversation takes place over posts which may lead to several threats. Manipulation of ideology on post result, as people said Face book is the way for falling kingdom and twitter can cause to change GOVT faster. Additionally some of secret revealed about secret events through comments.

16. Enhancing the current legislation

Current legislation is not enough to defense new fraud and attacks so modify legislation according to advance fraud and attacks that will hard for attackers to broke them.

17. Build an online status

Be careful while posting something because it represents your personality and behavior that are the keys for your future trends. As researchers concluded that, 70% of recruiters lose their jobs after employer visiting him online. Represent yourself thoughtful and creative mind.

18. Logout your account

If you did not want surfing SNS more so logout from your account, as your account is logged in and you are not visiting SNS attackers can hijack your session and also can infiltrating your account. Delete your cookies while logging out form your account.

19. Do not post about journey

Do not post something about your journey plan i.e. date, time, place and to whom you visit. These kinds of information lead to home robbery and others physical threats.

20. Do Not Follow Shortened URLS

Mostly attackers used shortened URLs for malware spreading which disturb our personal computer and also can extract our personal information. So do not follow any shortened URLs although it provides by your friends don't trust on anyone just verify.

21. Do not trust on OSN

Mostly users are willing to OSN privacy, they think that these networks have free of risks. A survey conducted in 2015 which consists 200 OSN users as samples concluded that, most users feel safe while sharing contents [20].So it's very crucial for OSN users to be aware himself from OSN privacy risks.

22. Be careful while posting

Anything that post user remain forever so be careful while posting something, if someone post sensitive/private picture/data accidently and they directly delete the posted content, the post will be removed from his wall but SNS operators and external web archive automatically accept the copy of post, which is harmful for users.

4. CONCLUSION

Online social networking sites make communication much easier than traditional methods. Online Social Networks are hybrid platform by mean of, they can used for voice calling, video calling, text messages, multimedia messages, news posting, etc. Due to its functionality it's becoming more popular and increases its users day by day. Popularity of Online Social Networks attracts attackers. Existing legislation of social networking sites are unable to protect user profile information. In our proposed work we have categorized common attacks on Online Social Networking sites and hole in privacy. At last we suggest some solution to improve privacy and security of Online Social Networking Sites. Still there is a lot of research work required to improve privacy and security of Online Social Networks.

REFERENCES

- [1] D. Santhana Lakshmi., Dr.T.Hemalatha "A Survey on Threats and Vulnerabilities in on-line Social Networks," International Journal of Emerging Trends in Engineering Research, Vol.4. No.2, Pages : 01-06 (2016) Special Issue of ICCECT 2016 - Held at The Savera, Chennai, India
- [2] S. Priyanga., V.M. Priyadarshini and N.Hariharan "Prevention of Fake Profile Proliferation in Online Social Networks," International Journal of Innovative Research in Science, Engineering and Technology (An ISO 3297: 2007 Certified Organization) Vol. 4, Special Issue 6, May 2015

- [3] M. Chewae., S. Hayikader, M. Hairulnizam Hasan and Jamaludin Ibrahim "How Much Privacy We Still Have on Social Network?," International Journal of Scientific and Research Publications, Volume 5, Issue 1, January 2015 Edition 1 ISSN 2250-3153
- [4] A. Mukesh Kumar., B. Nupur Sharma and Shreesh Kumar Shrivastava "Online Social Networks: Privacy Challenges and Proposed Security Framework for Facebook," International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-4, Issue-1, March 2014
- [5] S. Gangopadhyay., D. Dhar "SOCIAL NETWORKING SITES AND PRIVACY ISSUES CONCERNING YOUTHS," Article - 2 Global Media Journal-Indian Edition Sponsored by the University of Calcutta/www.caluniv.ac.in ISSN 2249 - 5835 Summer Issue/June 2014/Vol. 5/No. 1
- [6] M. Milton Joe., B. Ramakrishnan "A Survey of Various Security Issues in Online Social Networks," International Journal of Computer Networks and Applications Volume 1, Issue 1, November - December (2014)
- [7] A. Singh Rathor., P. Kumar Mishra "Social Networking Websites and Image Privacy," IOSR Journal of Computer Engineering (IOSR-JCE) e-ISSN: 2278-0661, p- ISSN: 2278-8727 Volume 10, Issue 6 (May. - Jun. 2013), PP 59-65 www.iosrjournals.org
- [8] A. Verma., D. Kshirsagar and S. Khan "Privacy and Security: Online Social Networking," International Journal of Advanced Computer Research (ISSN (print): 2249-7277 ISSN (online): 2277-7970) Volume-3 Number-1 Issue-8 March-2013
- [9] A. Kumar., S. Kumar Gupta., A. Kumar Rai and S. Sinha "Social Networking Sites and Their Security Issues," International Journal of Scientific and Research Publications, Volume 3, Issue 4, April 2013 1 ISSN 2250-3153
- [10] D. Gunatilaka "A Survey of Privacy and Security Issues in Social Networks," <http://www1.cse.wustl.edu/~jain/cse571-11/index.html>
- [11] W. Gharibi., M. Shaabi "CYBER THREATS IN SOCIAL NETWORKING WEBSITES," International Journal of Distributed and Parallel Systems (IJDPS) Vol.3, No.1, January 2012
- [12] Y. Wang., A. Kobsa "Privacy in Online Social Networking at Workplace," IEEE Int'l Conference on Computational Science and Engineering, Vancouver, Canada, pp. 975-978. DOI 10.1109/CSE.2009.438
- [13] J. Ahmed "A Privacy Protection Model for Online Social Networks," University of Luxembourg, Luxembourg
- [14] A. Al Hasib "Threats of Online Social Networks," IJCSNS International Journal of Computer Science and Network Security, VOL.9 No.11, November 2009
- [15] A. Suhial "Privacy & Security a Concern in Social Networks," International Journal Of Emerging Trends Of Technology In Computer Science (IJETTCS)
- [16] M. Fire., R. Goldschmidt and Y. Elovici "Online Social Networks: Threats and Solutions," IEEE COMMUNICATION SURVEYS & TUTORIALS, VOL. 16, NO. 4, FOURTH QUARTER 2014
- [17] G. Ravi Kiran., B. Dinesh Reddy "Empowering the Privacy in Online Social Networks," International Journal of Research in Computer and Communication Technology, Vol 4, Issue 12, Dec- 2015
- [18] E. Novak Qun Li "A Survey of Security and Privacy in Online Social Networks," Department of Computer Science The College of William and Mary
- [19] R. Some "A Survey on Social Network Analysis and its Future Trends," International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 6, June 2013
- [20] L. Ban Chieng , M. Mahinderjit Singh, Z. Fitri Zaabal and R. Hassan "MULTI-FACET TRUST MODEL FOR ONLINE SOCIAL NETWORK ENVIRONMENT," International Journal of Network Security & Its Applications (IJNSA) Vol.7, No.1, January 2015
- [21] H. Gao, Jun Hu, Tuo Huang, J. Wang and Y. Chen "Security Issues in Online Social Networks," Published by the IEEE Computer Society 1089-7801/11/\$26.00 © 2011 IEEE IEEE INTERNET COMPUTING
- [22] S.Thiraviya Regina Rajam and S.Britto Ramesh Kumar2 "A SECURITY FRAMEWORK FOR SOCIAL NETWORKING APPLICATIONS," International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 12, December 2013

- [23] H. Hu, Gail-Joon Ahn., Jorgensen “Multiparty Access Control for Online Social Networks: Model and Mechanisms,” IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING, VOL. 25, NO. 7, JULY 2013
- [24] C. Zhang, Jinyuan Sun., X.Zhu and Y. Fang “Privacy and Security for Online social Networks: Challenges and Oppertunities,” IEEE network. July/August 2010
- [25] A. Beach, M. Gartrell and a. Richard Han “Solution to Security and PrivacyIssues in Mobile Social Networking”
- [26] <http://www.statista.com/statistics/283870/google-plus-monthly-active-users-worldwide/>
- [27] <https://www.thesocialmediahat.com/active-users>
- [28]<http://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>
- [29] Fida, N., Khan, F., Jan, M.A. and Khan, Z., 2016, September. Performance Analysis of Vehicular Adhoc Network Using Different Highway Traffic Scenarios in Cloud Computing. In International Conference on Future Intelligent Vehicular Technologies (pp. 157-166). Springer, Cham.
- [30] Usman, M., He, X., Lam, K.K., Xu, M., Chen, J., Bokhari, S.M.M. and Jan, M.A., 2017. Error Concealment for Cloud-based and Scalable Video Coding of HD Videos. IEEE Transactions on Cloud Computing.
- [31] Jan, M.A., Khan, F., Alam, M. and Usman, M., 2017. A payload-based mutual authentication scheme for Internet of Things. Future Generation Computer Systems.

Analysis of Social Acceptability and Impact of Biogas Energy in Pakistan (A Study of District Faisalabad)

Muhammad Tamoor¹, Paris Zaka Ullah², Dr. Muhammad Shabbir Ch.³

¹MPhil Scholar, University of Gujrat, GC University Faisalabad

²Lecturer, Department of Sociology, GC University Faisalabad, Pakistan

³Assistant Professor, Department of Sociology, GC University Faisalabad

Received: November 24, 2017

Accepted: January 22, 2018

ABSTRACT

Biogas energy is one of the feasible options for Pakistan's future sustainable energy needs. Biogas systems have been installed for nearly two or three decades, but due to relatively high costs, significant market penetration has not been achieved in much of Pakistan. While there are some ambitious targets to increase the share of biogas technology implemented in different Pakistani provinces, there is a growing recognition that social acceptance and impact may constitute a factor that constrains its implementation and its expansion. Objective of the study is to assess the social acceptability and impact of biogas technology in Pakistan. In order to investigate the social perspective of biogas technology we conduct a survey in Pakistan (Faisalabad District), a multi-choice questionnaire was designed and divided into three groups: (i) biogas background information, (ii) Social acceptance of biogas technology (awareness and willingness to invest in biogas energy) and (iii) Social impact of biogas energy. The answer shows that 20.52% of respondents are willing to pay extra money (up to 50%) to get biogas energy. 81.27% of respondents said that by installing new plant numerous job opportunities has created and 50.86% respondents agreed biogas plants contribute to the country economy. About 70.35% of respondents are aware that biogas energy can improve public health. More than 69.72% of respondents think that government departments should take the first step in biogas power generation. Similarly, in the eyes of respondents, the government sector should take the initiative to implement biogas technology and provide subsidies and incentives to encourage people, especially villagers, to install biogas plants at Agri farms.

KEYWORDS: Biogas Energy; Social Acceptance; Social Impact; Economy; Public Health

INTRODUCTION

Energy is considered the lifeline of any economy and the most important tool for a country's socio-economic development. Energy is of great importance to all activities in daily life. That is why energy shortages have a serious social impact on people's lives and the economy of the country. That is why it is considered the most fundamental right of the people. Pakistan's energy infrastructure is imperfect, but it is considered underdeveloped and mismanaged. Pakistan is currently facing a serious energy crisis. With the increasing awareness of energy, we have also started to study the fundamental changes in the development of new energy sources such as coal in the 19th century and oil in the 20th century in Europe and the fundamental changes in society. We have fundamentally reshaped our system and social structure as a nation (Khalid, 2003).

Biogas is the product of bacterial activity during the biodegradation of organic matter under anaerobic conditions, and it produces to a large extent small quantities of flammable gases (methane) and other gases such as carbon dioxide (CO₂), hydrogen sulfide (H₂S) and water vapour, Environmental friendliness coupled with the import of fossil fuels, the rising price of hydropower energy, limited and tilted grid distribution in rural areas, limited forest reserves for firewood and charcoal (TDBP, 2009) make biogas technology the best alternative (Homlish, 2004)

Socially recognized biogas is considered as an important issue for the widespread application of renewable energy technologies and the achievement of energy policy objectives. In addition, it is generally agreed that there is a need to change "social attitudes" and to make the implementation of biogas technology more radical (Robert, 2005).

There are several indicators that can be used to measure social acceptability and impact in a given context. These include participants, socio-economic background, age group, political beliefs, attitudes and behaviours. In addition, usefulness, intent, facilitation, cost, trust, location, and participant's stance on biogas energy all play a crucial role (Jaffrelot, 2006).

Rural development involves a wide range of farm and non-farm activities within rural areas and small towns. Like many developing countries, Tanzania's energy problems are related to the development of rural areas, where most of the population live. Biomass energy comes from natural forests and plantations, accounting for 94% of the total energy consumption in the country and has a significant impact on the progress of environmental degradation (Kurhor, 2009).

The majority (74.99%) of the population live in rural areas and only 3.01% have access to electricity. Reasons for this include high installation and operation costs, unstable availability, political disruption and inefficient operations. This low-channel power puts additional pressure on kerosene, diesel, dry-cell, biogas, solar, wind and other available energy sources such as renewable energy. Because of the availability of raw matrices (matrices) in rural biogas digesters, biogas can be offset by a correct combination as biogas mainly produces energy suitable for cooking and lighting (Orgam, 2010).

The study of public perceptions that sought to different forms of energy technologies and their effects produced a rather complex set of findings, in part because of the nature of the issues raised. In addition, while individuals are aware of different sources of energy, the results show that the deeper understanding of these sources varies widely and the terminology that experts use to refer to different kinds of fuels or resources is not always well-known. (Mooren, 2013).

Objectives of the Study

Particular goals of the study are as under:

- To discover the socio financial characteristics of the respondents.
- To know the energy needs and problems of people
- To access the social acceptability of biogas energy.
- To find out the impacts of biogas technology on society.
- To suggest some measures to tackle the issue.

Theoretical Overview

Semeth, (2010) a series of potential interpretations can be identified at three levels of analysis. These include individuals (age, gender, class, and income), social psychology (knowledge and direct experience, perceived impact, environmental and political beliefs, local attachment) and background.

Wilson, (2012) In the UK, some regional surveys have found that older respondents are more aware of and opposed to renewable energy. In contrast, a national study conducted there compared with middle-aged respondents (35-44 and 55-64) found that both young and old (16-24 and older) of the cognitive level and the level of opposition is low. Support for nuclear energy appears to be age-related, and older people are more supportive of young people than younger people.

Temerson, (2013) In the case of the social strata, the level of income-class and support for renewable energy and nuclear power appears to be positively correlated. Also in Finland, recent research shows that men and high-income earners are more supportive of nuclear power. Although some studies suggest that the negative perception of renewable energy is due to a lack of knowledge and public understanding, there is limited evidence that more insiders are embracing renewable energy technologies.

Greogory, (2015) Empirical evidence from the United Kingdom shows that political beliefs are associated with social acceptance of different low-carbon technologies. Pointed out that 37% of the Conservatives support new nuclear power plants (compared with only 12% of labour supporters and 14% of liberal democrats), while the development of new renewable energy sources Support is not large 62%, 86% and 84% respectively). Likewise, in Finland, the Greens and left coalition voters have been opposed to nuclear energy not to those who vote for other parties.

METHODOLOGY OF THE STUDY

In order to measure social awareness and impact of biogas technology, certain procedures and steps were designed starting from the selection of population and sample to the data analysis. A study of cross sectional survey was conducted to discover the research objectives and reliability of the whole dynamics of the research. In order to ensure an effective study researcher used quantitative research design. There was multi stage examining strategy utilized for information accumulation. At the 1st stage I was chosen three Tehsil of Faisalabad, Punjab, Pakistan (Faisalabad, Samundri and Tandlianwala) through simple random sampling technique. At 2nd stage 162 respondents were selected in each Tehsil by using convenient sampling technique. The information was collected with the assistance of interview schedule, consisting of an arrangement of inquiries Which Were Asked from the Respondents by meetings in personal circumstance questions that could be seen in the following sections. Section 1 of the survey is for background information on all respondents, (age group, occupation / Profession and city location). Section 2, in this section, asks for information on whether

biogas technology are acceptable (to measure biogas awareness and willingness to invest in biogas energy) in Pakistan. Section 3 of the survey was asked about the social impact of biogas technology in Pakistan.

The Collected information was analyzed by utilizing SPSS (Statistical Package for Social Sciences). Expressive (recurrence, rate) and inferential (chi-square and gamma) was connected factual systems for information examination.

RESULTS

(Section 1) Background Information

The respondent's recruits were surveyed from different age groups. However, participants for the study were divided into four age groups (15–20, 21–35, 36–50 and 51-65). A total number of 162 people responded to the survey, 29 from (15 to 20), 71 people from (21 to 35), 37 people from (36 to 50) and 25 people from (50 to 65). These age groups are specifically chosen to understand the role of age conditions in the social acceptability and impact of biogas energy. Most participants are agriculturist (54.70%), the second largest group of participants were students (26.43%), some of participants were employed (13.82%) and few of participants were unemployed (5.05%). The survey represents 48.76% of respondents from Faisalabad city, 40.74% from Samundri city while the remaining 10.49% of them from the Tandlianwala city.

Results of this study are lying very close to the research conducted by Greogary (2015). Tube Biogas Production Technology. In Profession/occupations of the interviewees, most of the respondents came from agriculture groups. This is important because biogas technology mainly involves the agricultural sector. More generally, respondents' employment, unemployment and student status seem to be positively related to income and support for different biogas technology. All the results of the above mentioned indicators are very close the study conducted by Mooren (2013), societal acceptance of wind farms: *analysis of four common themes across Australian case studies*. Socio-economic profiles of the respondents are clearly reflect the poor picture of the residents of the tehsil Sumandari and Tandlianwala from district Faisalabad, Pakistan, which means that they are bound to use wood as a fuel, very dangerous for the health of the women as well as for the children

(Section 2) Acceptability (Awareness and Willingness) of Biogas Energy

Knowledge about biogas energy was also probed and this question tested respondents' knowledge of biogas energy. About 91.18% of respondents are aware of biogas energy. However, 8.82% of the respondents did not know about biogas energy. In the response towards the important of biogas energy for social human beings was very impressive. Here, results shows that 59.05% of respondents think "very important", 31.19% are "average" and 9.76% do not understand the importance of biogas energy. Who should take the first step in biogas energy production? 69.72% of respondents think this is the responsibility of government departments. While 27.98% of respondents think this is the responsibility of private energy producers, while 2.30% of respondents think other energy distributors or production in homes at local level. 51.49% of respondents think this is very important, while 43.57% of respondents mean on average, 4.94% of respondents do not know the importance of local biogas production. It is worth noting that people / communities refuse biogas plants in their house backyards or Agriculture farms. Therefore, researcher has developed this question to understand how many people make these as part of their farm or backyard. Most of the answers were interestingly divided into "YES" by 54.78% of respondents and 37.21% of respondents refused to install a biogas plant in their backyard. However, "may be 8.01% of respondents." So we can see that many people do accept them as part of their everyday routine.

On this issue, 73.01% of the respondents are willing to pay an additional cost of up to 15%, 20.52% are willing to pay up to 50% extra cost, and about 6.47% are willing to pay up to 100% extra cost. In these answers, we clearly see a marked change in opinion. However, they may not have the real resources to invest in biogas energy. Generally, everyone really wants to use the cheapest option. The government must work to establish a cost-effective business model that parallels today's energy costs. To overcome the cost barrier, biogas energy recovery is likely to increase among people of villages in Punjab Province of Pakistan.

Results of the study are close in line with the results of the study done by Khalid (2003) that people are very interested to avail this facility and get benefits because this is very cheaper alternative of the gas. Moreover, community are interested to get awareness about the Bio gas, its production and its utilization. Temerson (2013) made a comprehensive research on Reconsidering public acceptance of renewable energy technologies, and the results of this study also favouring the researcher's results of the current results.

(Section 3) Social Impacts of Biogas Energy

81.27% of respondents think that by installing new plant numerous job opportunities has created, whereas 15.80% respondents think opposite to it and 2.93% people don't know about it. The results show that as more jobs are created by the development and operation of biogas energy plants, more people are able to find jobs and more people will have the money to contribute to the country's economy. Yes by 50.86% of respondents and 7.19% of respondents refused that technology means they think that biogas do no contribute in country

economy. “May be” answer given by 41.95% of respondents. The energy generated by biogas power generation is very small air pollution, so biogas combustion is cleaner than fossil fuels. The villages or areas that decide to use biogas to generate electricity will thus enjoy cleaner air quality in the area and thus make people and workers in healthier areas. About 70.35% of respondents are aware that biogas energy can improve public health and 29.65% of respondents refused it.

This research reliability is more prominent because the results of this study are very similarly to the research conducted by Wilson (2012). In Wilson’s research “Exploring domestic energy-saving: the role of environmental concern and background variables” social impact of the Bio gas was clearly focused. Homlish (2009), conducted research on social acceptance of bio gas, and the results of this study were very similar to the current research. When governments or private companies decide to build and operate biogas projects, these projects often help create significant employment opportunities. Workers need to plan projects to develop and implement these projects; this will help reduce the unemployment rate in specific regions.

DISCUSSIONS

Energy is very important for all the activities in daily life. Energy is considered the lifeline of any economy and the most important tool of a country's socio-economic development. Energy is the source and control of all things, all values and all human and natural behaviour. Biogas energy is one of the viable options for Pakistan's future sustainable energy needs. The current biogas market is growing rapidly, with an average annual compound growth rate of 9.20%. Biogas systems have been installed for nearly two or three decades, but due to the relatively high cost, significant market penetration has not yet been achieved in most parts of Pakistan. In addition to the quantitative results, personal circumstances vary from interview to interview. Middle-aged people (aged 21-35), for example, are more conscious of the concept of biogas technology and are more concerned with the environmental issues in Pakistan and the development of biogas technology in response to the questionnaire. The results show that there is a certain difference between the level of public understanding of biogas energy and its social impact and its level of understanding, with 91.18% of the respondents having an understanding of biogas energy. Based on quantitative analysis can come to some qualitative conclusions. The results show that the understanding of biogas technology more profound differences significantly. About 59.05% of respondents recognized that the current development of biogas technology is very important. About 54.78% of respondents are willing to take practical measures to develop biogas energy, such as installing biogas plants or their Agricultural farms or in their backyards. The results also showed that all respondents were willing to pay extra for biogas, 6.47% paid up to 100% additional cost, 20.52% paid up to 50% additional cost and 73.01% paid up to 15% % Extra cost. However, they showed a mixed acceptance of locally produced biogas. 50.86% of respondents think biogas can create huge employment opportunities for the national economy. 70.35% of respondents think biogas plants emit little pollution and they help to improve public health. In this regard, knowledge, perception, fear and political beliefs relate to social acceptance. A large number of respondents (69.72%) think that the public sector should take the first step toward biogas energy production. In the long run, increased use of biogas technology will not only benefit the environment, but also the national economy and reliance on foreign fossil fuels will be minimized.

CONCLUSION

The objective of this study is to understand the acceptability and social impact of biogas technology in Pakistan (District Faisalabad). It is concluded that people of Pakistan have higher expectations of biogas energy production in the public sector. The relationship between Pakistani people's expectations and government expectations is important for taking some action to build confidence in biogas energy technologies and their application in the real world. This step therefore enables us to understand the public's knowledge, perceptions and trust in public responses to biogas energy issues and their social impact. Most biogas users are very satisfied with biogas technology. However, in some cases, the number of user complaints due to inadequate biogas production, poor equipment quality and poor construction was identified as a major challenge. In addition to all these challenges, biogas systems remain the best alternative farm energy that Pakistan's rural areas can easily access and get benefit from it. The government will play a very important role in promoting the development of biogas energy and this concept will soon be developed into a viable solution.

In short, the general public does not have the same perspective on biogas technology issues as energy technologist do. In order to develop biogas energy, future work needs to provide insight into the importance of using existing biogas technologies and to consider all variables related to the social acceptability and social impact of biogas energy.

Recommendations

- Some positive steps can be taken at the start of biogas projects as societies accept not only the bilateral relationship between local communities and biogas energy projects but also the wider social norms, social and political structures.
- Mass media and print media play an important role in raising community awareness of the benefits of biogas energy, and biogas technology is easily accessible and affordable.
- The promotion of this technology; initiatives to attract public-private partnerships, which will help to achieve success.
- Support research and development of effective technology solutions. Energy-efficient use of biogas for production should be the key criterion for environmental permitting and financial support systems.
- The government should take steps to broaden the youth environmental protection and biogas technology horizons.

REFERENCES

1. Greogary, P. 2015. Tube Biogas Production Technology: Experiences in Scaling-up and Implications to Rural Agricultural Development and Environmental Conservation in Kenya. *Soil Science Society of East Africa (SSSEA)*, 26th – 30th November 2015.
2. Homlish, L. 2009. Biogas technology in Tanzania; Annual report on Biogas technology program in Tanzania, a paper presented on African Biogas Partnership Programme (ABPP) Nairobi 2010.
3. Jaffrelot, F. 2006. Energy Balance of Power Poll. Available at: www.populus.co.uk/Poll/Energy-balance-of-power, as of February 11, 2013).
4. Khalid, P. 2003. Reconsidering public acceptance of biogas energy technologies: a critical review. In: *Delivering a Low Carbon Electricity System: Technologies, Economics and Policy*. Department of Applied Physics Occasional Papers (No. 68) July 2008.
5. Mooren, N. 2013. Societal acceptance of wind farms: *analysis of four common themes across Australian case studies*. Energy Policy, 200–208.
6. Orgam, L. 2010. The forest (amendment) regulations and the forest (charcoal preparation transportation and selling) Regulations 2006. *The United Republic of Cameroon*.
7. Semeth, D. 2010. Population and settlement census. *Tanzania Demographics Profile 2011 Central Census office*. Government Printer 59 – 60.
8. Temerson, K. 2013. Reconsidering public acceptance of renewable energy technologies: a critical review. In: *Delivering a Low Carbon Electricity System: Technologies, Economics and Policy*. In: Jamasb, T., Grubb, M., Pollitt, M. (Eds.), *Department of Applied Economics Occasional Papers* (No. 68) July 2008.
9. Wilson, J. 2012. Exploring domestic energy-saving: the role of environmental concern and background variables. Energy policy 47, 69–80

Mediating Role of Coping Strategies between Teacher's Stress and Job Related Outcomes

Haleema Parveen¹, Mehr Bano², M. Naveed Riaz³

¹Ph.D fellow, Preston University Islamabad

²Ph.D, Preston University Kohat

³ Ph.D, University of Sargodha

Received: November 4, 2017

Accepted: January 2, 2018

ABSTRACT

The study intended to examine the mediating role of coping styles between teacher's stress and job related outcomes including job performance and satisfaction. Total sample of 200 teachers was collected from different universities of Pakistan. Four scales were used from data collection including Teacher's Stress Inventory, Brief COPE, Teacher's Performance Scale and Teacher's Satisfaction Scale. Mediation analysis explained that only problem-focused coping has direct and indirect effect on job performance and satisfaction of teachers. The remaining coping strategies including emotions-focused and dysfunctional avoidance were not proven effective in enhancing job performance and satisfaction of teachers. The study shared empirical insights regarding the use of problem-focused coping style at the times of stress in the teaching profession.

KEYWORDS: Teachers' stress, coping styles, job performance, job satisfaction

1. INTRODUCTION

Modern day educational institutions are not stress-free due the rise of high-speed work life which is filled with lot of stressors and stresses for teachers [1]. Thus teacher's stress is a common fact of life in educational institutions in general and in higher education institutions in particular [2]. At times when teachers face teacher's stress, it hardly remains possible to keep their job safe from the deleterious effects of stress. The immediate area of teachers' life affected by stress is their performance at job [3] and overall contentment or satisfaction with their work [4]. However, the teachers are not only professionals but "the teachers of professionals". Therefore it is difficult to believe that at hard times, they helplessly let their stress effect their job performance and job satisfaction without making any intervention. Thus the question arises, what teachers do at the times which stress mar their overall job.

The existing scientific knowledge gives convincing answer to this intricate question. The answer is very simple and that is "teachers use some coping strategies for teacher's stress". Thus while experiencing stress, teachers take a step ahead and select a coping strategy [5, 6]. Now it is worth knowing that what is the function of these coping strategies? Scientific literature shares that coping serves two functions including (1) evaluating and (2) managing. Firstly, the stressful situation is comprehended and then careful planning is executed to get out of that scenario. In short, use of a coping strategy is a response to a stress provoking scenario [7]. The question arises what is the benefit of the use of a coping strategy? Do all people make use of the same coping mechanism? It is always proves beneficial?

The answer to these questions is verily provided by the existing literature. Firstly, "benefit of the use of a coping strategy" cannot be picked until unless those effects of stress are not noticed. Teacher's stress directly effects their job performance and satisfaction [8]. Thus in between the teacher's stress and its effects on the job, the coping strategy is expected to play a beneficial role [9]. All the role of a coping strategy can be only beneficial when it remains successful in mediating the effects of teacher's stress on their job [10]. Probably it does not always happen. Why a coping strategy is not always beneficial? Before knowing that, whether the teachers use a single uniformed strategy, there is no answer. It is to be noticed that teachers use different coping strategies for managing their stress and preventing their jobs from the after effects of stress [6].

Usually three strategies are used by teachers including problem focused, emotions focused and dysfunctional avoidance [11]. The choice of a coping strategy determines whether a strategy will be beneficial or not beneficial [12]. Some teachers intelligently manage to select problem focused strategy for evaluating and managing the effects of stress in their jobs. This strategy has proven positive impact for working as a shield to prevent the job of teachers from the damaging effects of stress [13]. Thus when stress enters, the problem focused coping does not allow it to effect the job outcomes (performance and satisfaction of teachers). Problem focused coping is a bridge which stress never manages to pass to affect the outcomes. Thus, in more clear words problem focused coping is a fit mediator between stress and its outcomes. The other strategies are less or not effective in this regard.

1.1. Conceptual Framework

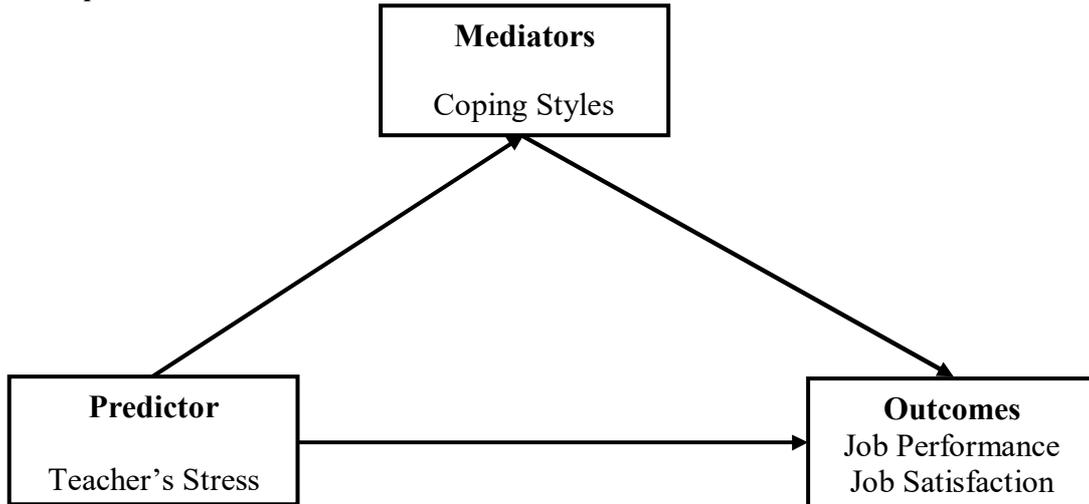


Figure 1: Schematic depiction of the mediating role of coping styles between teacher's stress and outcomes

2. METHOD

The sample consisted of university teachers ($N = 200$) including male and female teachers from public and private sector universities of Pakistan. Teacher's Stress Inventory [14] with 36 items, Brief COPE [11] with 30 items, Teacher's Performance Scale [15] with 28 items and Teacher's Satisfaction Scale [16] with 25 items were used in this investigation. All scales are rated in 5 point rating scale and all are considered reliable and valid measures of underlying constructs.

The study anticipated that problem-focused coping will mediate between teacher's level of stress and job satisfaction in teachers. Problem-focused coping will mediate between teacher's level of stress and job performance in teachers. Emotion-focused coping will mediate between teacher's level of stress and job satisfaction in teachers. Emotion-focused coping will mediate between teacher's level of stress and job performance in teachers. Dysfunctional coping will mediate between teacher's level of stress and job satisfaction in teachers. For testing the hypotheses, mediation analysis is carried out.

3. RESULTS

Table 1: Mediation of coping styles between teacher's stress and outcome including in teachers

	Outcome: Job Performance			Outcome: Job Satisfaction		
	Model 1	Model 2	95%CI	Model 1	Model 2	95%CI
Predictors	Model 1	B	95%CI LL, UL	Model 1	B	95%CI LL, UL
(constant)	93.87***	128.33***	[113.36, 143.30]	29.89***	25.78***	[22.83, 27.52]
Teacher's Stress	-.08*	-.03	[-.10, -.04]	-.12***	-.11***	[-.12, -.19]
Problem-Focused Coping		1.26*	[.72, .80]		.28***	[.16, .40]
R²	.32	.345		.72	.75	
F	4.43*	17.23***		533.97***	304.66***	
ΔR²		.13			.03	
ΔF		29.38***			21.11***	
(constant)	93.88***	99.35***	[83.83, 114.88]	25.78***	22.83***	[22.83, 27.52]
Teacher's Stress	-.08*	-.08*	[-.16, -.01]	-.11***	-.12***	[-.12, -.19]
Emotion-Focused Coping		-.02	[-.72, .28]		.28***	[.16, .40]
R²	.02	.02		.75	.72	
F	4.43*	2.56*		304.66***	533.97***	
ΔR²		.00			.03	
ΔF		0.71			21.11***	
(constant)	93.87***	83.69***	29.89***	29.89***	31.47***	[29.21, 33.73]
Teacher's Stress	-.08*	-.05	-.12***	-.12***	-.12***	[-.13, -.11]
Dysfunctional Coping		-.61			-.05	[-.13, .01]
R²	.02	.03	.72	.72	.73	
F	4.43*	3.12*	533.97***	533.98***	270.64***	
ΔR²		.01			.01	
ΔF		1.79			2.70	

- Problem focused coping mediated between teacher's stress and job performance.
- Emotions focused coping did not mediate between teacher's stress and job performance.
- Dysfunctional coping did not mediate between teacher's stress and job performance.
- Problem focused coping mediated between teachers' stress and job satisfaction.
- Emotions focused coping mediated between teacher's stress and job satisfaction.
- Dysfunctional coping did not mediate between teacher's stress and job satisfaction

4. DISCUSSION

The research focused to investigate the mediating effect of coping strategies between teacher's level of stress and outcomes including job satisfaction and job performance in teachers. The prior studies explained that even in the presence of stress, problem focused coping enhances teachers' performance and satisfaction [17]. The same has been proved in this research as problem-focused coping mediated between teacher's level of stress and job performance in teachers and problem-focused coping mediated between teacher's level of stress and job performance in teachers [18]. The findings have a lesson for the lesson givers i.e. teachers that whenever they face stress they should immediately employ problem-focused coping to maintain the high performance of their jobs and to keep their job satisfaction intact [19]. Knowing that the use of problem-focused coping remains fruitful for teachers is one side of the coin. The other side is still undiscovered and that is what other teachers do who do not employ problem-focused coping. For no longer it remained a secret as scientific literature provided an evidence-based answer that some teachers either use emotions focused coping or rely on dysfunctional avoidance. Quiet obviously, the quest regarding the effectiveness of coping strategies triggers a question about the efficiency of emotions focused coping and dysfunctional avoidance.

The findings uncover the fact that emotion-focused coping did not mediate between teacher's level of stress and job satisfaction in teachers, although the direct effect of stress on satisfaction is established [20]. Emotion-focused coping did not mediate between teacher's level of stress and job performance in teachers. The findings give a lesson to teachers regarding what to do and what not to do at times of stress. Use of emotions focused coping doubles the trouble as during the stressful experiences the teachers are already emotionally disturbed. In such situations, focusing on emotions add in the severity of stress symptoms instead of eliminating them. Personal efforts for seeking a solution for a problem with problem focused coping obviously remains better than just getting emotional support of others [21]. Thus there is no other opinion that teachers should use problem focused coping by putting aside their emotions at the times of stress. Remembering a trauma is actually recreating it.

The same is the case of dysfunctional avoidance. Use of dysfunctional avoidance as a cope is not at all beneficial. Dysfunctional coping did not mediate between teacher's level of stress and job satisfaction in teachers. Dysfunctional coping did not mediate between teacher's level of stress and job performance in teachers. Avoidance offers no solutions to any problem in general and stress in particular. It is just to close eyes in stressful situations and pretending if the problem has gone away. The problems remain still and even get more intense, escalate and multiply. The sole way to eliminate a fear is to face it. Thus instead of dysfunctional avoidance, the problem focused coping is a superlative alternative. The nomenclature "dysfunctional" coping itself is self-explanatory that this coping style is ineffective in nature and outcomes [11].

4.2. Conclusion

The study has mainly concentrated on the direct and indirect effect of teacher's stress on job outcomes. The findings revealed that teacher's stress has direct and indirect effect on job performance as problem focused coping mediated between teacher's stress and job performance. However, emotions focused coping and avoidant coping did not mediate between teacher's stress and job performance. Teacher's stress has direct and indirect effect on job satisfaction as problem focused coping mediated between teachers' stress and job satisfaction. Teacher's stress has direct and indirect effect on job satisfaction as emotions focused coping mediated between teacher's stress and job satisfaction. However, dysfunctional coping did not mediate between teacher's stress and job satisfaction.

4.1. Limitations and Recommendations

The study has relied on self-report data for the performance evaluation of employees which should be replaced with the supervisors' evaluations of job performance in the future research studies. The coping strategies used in the present study were related to general stress coping, it would be more appropriate in future research to investigate the mediating effect of job specific coping strategies instead of general strategies.

REFERENCES

- [1] Zurlo M. C., Pes D., & Cooper C. L. (2007). Stress in teaching: A study of occupational stress and its determinants among Italian schoolteachers. *Stress and Health* 23(4): 231–241. doi:10.1002/smi.1141.
- [2] Kyriacou, C. (2001). Teacher Stress: Directions for future research. *Educational Review*, 53 (1), 27-35.
- [3] Hanif, R., Tariq, S., & Nadeem, M. (2011). Personal and Job Related Predictors of Teacher Stress and Job Performance among School Teachers Pakistan. *Journal of Commerce and Social Sciences*, 5 (2), 319-329.
- [4] Veronica, D. (2011). Stress and job satisfaction among university teachers. *International Conference of Scientific Papers*, (pp. 320-328). AFASES, Brasov. 26-28.
- [5] Brown, S. & Nagel, L. (2004). Preparing Future Teachers to Respond to Stress: Sources and Solutions. *Action in Teacher Education*, 26 (1), 34-42.
- [6] Austin, V., Shah, S., & Muncer, S. (2005). Teacher stress and coping strategies used to reduce stress. *Occupational Therapy International*, 12, 63-80.
- [7] Parker, P.D., & Martin, A.J. (2009). Coping and buoyancy in the workplace: Understanding their effects on teachers' work-related well-being and engagement. *Teaching and Teacher Education*, 25, 68-75
- [8] Sadeghi, K., & Sa'adatpourvahid, M. (2016). EFL teachers' stress and job satisfaction: What contribution can teacher education make? *Iranian Journal of Language Teaching Research* 4(3), 75-96.
- [9] Alhijaa, F. N. (2015). Teacher Stress and Coping: The Role of Personal and Job Characteristics. *Procedia - Social and Behavioral Sciences*, 185, 374 – 380.
- [10] Smith, K. L. (2012). Coping Mechanisms and Level of Occupational Stress Among Agriculture Teachers and Other Teaching Populations. *All Graduate Theses and Dissertations*. Paper 1391.
- [11] Carver, C.S., Weintraub, J.K., & Scheier, M.F. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56(2), 267-283.
- [12] Richards, J. (2012). Teacher Stress and Coping Strategies: A National Snapshot. *The Educational Forum*, 76, 299-316.
- [13] Beers, J. C. (2012). Teacher Stress and Coping: Does the Process Differ According to Years of Teaching Experience. *Dissertations and Theses*. Paper 809.
- [14] Schutz, R.W., & Long, B.C. (1988). Confirmatory factor analyses, validation and revision of a teacher stress inventory. *Educational and Psychological Measurement*, 48, 497-511.
- [15] Kim, E.C. & Richard, D.K. (1991). *A Resource Guide for Secondary School Teaching*. New York: Macmillan Publishing Company.
- [16] Ho, C. & Au, L. (2006). Teaching satisfaction scale: Measuring job satisfaction of teachers. *Educational and Psychological Measurement*, 172-185.
- [17] Vinothkumar, M., Arathi, A., Merin, J., Nayana, P., Jishma, E. J., & Sahana, U. (2016). Coping, perceived stress, and job satisfaction among medical interns: The mediating effect of mindfulness. *Industrial Psychiatry Journal*, 25(2), 195–201.
- [18] Sundberg, L., & Sandberg, C. (2011) The Relationship between Proactive Coping Skills and Job Satisfaction, Absentecism, Tardiness and Performance. *International Journal of Business and Social Science*, 2, 33-49.
- [19] Sudhaker, C.H. and Gomes, L.A. (2010) Job Stress, Coping Strategies and the Job Quality Index of Nurses Working in Selected Multispeciality Hospitals—Towards Human Resource Development. *Journal of the Academy of Hospital Administration*, 22, 10-14.
- [20] Ahsan, N., Abdullah, Z., Yong Gun Fie, D. & Shah Alam, S. (2009) A Study of Job Stress on Job Satisfaction among University Staff in Malaysia: Empirical Study. *European Journal of Social Sciences*, 8, 121-131.
- [21] Ogden, J. 2000. *Health psychology*. Open Univ. Press, Buckingham.



Efficacy of Atorvastatin on Proteinuria in Chronic Kidney Disease Patients of District Mardan, Pakistan

Sulaiman Shams*, Haider Ali Khan, Muhammad Ayaz, Sahib Gul Afridi

Department of Biochemistry, Abdul Wali Khan University Mardan-23200, Khyber Pakhtunkhwa Pakistan

Received: November 3, 2017

Accepted: January 15, 2018

ABSTRACT

Chronic kidney disease (CKD) is a major health problem world wise and is associated with increased risk for cardiovascular disease and end stage renal diseases. The prevalence of CKD is increasing rapidly in urbanizing country like Pakistan, where a significant population of 180 million is predisposed to diabetes and hypertension. Atorvastatin a lipid-regulating drug, used mostly for the treatment of CKD patients. The aim of the current study was to find out the prevalence of chronic kidney disease in district Mardan and to compare the efficacy of atorvastatin on proteinuria in CKD patients. Samples were collected from 3000 patients in the Mardan Medical Complex (MMC) using inclusion/exclusion criteria. The patients were classified into three groups on the bases of atorvastatin dose; Group I patient were treated with 20mg atorvastatin, group II with 40mg and group III with 60mg daily for three months. In the blood, serum creatinine and cholesterol level while in urine, Urine Protein to Creatinine ratio (UPCR) level was determined before and after use of atorvastatin. The results showed that the prevalence of CKD patients was 8.2% in district Mardan. The average level of proteinuria in CKD was 1.5 gram protein/gram creatinine. After atorvastatin treatment, proteinuria level was reduced to >1.5 in group I, ≤ 1.5 in group II, <1.5 in group III. From the current study it was concluded that 40mg of atorvastatin (Group II) is effective and optimal dose for reducing of proteinuria in CKD patients, and may be atorvastatin become an important supportive therapy for renal damage in future.

KEYWORDS: Kidney, Atorvastatin, Proteinuria, Mardan, cardiovascular disorder.

INTRODUCTION

Kidneys are the most important organ of human body which perform different functions such as removal of waste products, water homeostasis, regulation of blood pressure and electrolyte balance [1]. Kidney disease usually affects both kidney and can also cause damage to other part of the body, especially heart. There are different types of kidney disease such as alport syndrome, diabetic nephropathy, glomerulonephritis, Berger's disease, kidney stones, nephrotic syndrome and polycystic kidney disease. But among all these disorder, CKD is the most end-stage renal disorder which usually leads to renal failure [2]. Chronic kidney disease (CKD) is a major health problem resulting in a considerable increase of morbidity and mortality, decreased quality of life, and substantial health care costs. CKD occurs when kidney shrunk due to fibrosis or Glomerular Filtration Rate (GFR) value decreased below 60ml/min [3]. Diabetes and hypertension are also found to be the major causes of chronic kidney disease, together contributing to about 70% of cases. Hyperlipidemia has been hypothesized to play an important role in the progression of kidney disease [4]. Extensive knowledge about abnormal lipid patterns among patients with advanced CKD and elevated total cholesterol, high non-HDL cholesterol, a high ratio of total cholesterol/HDL, and low HDL in particular was significantly associated with an increased risk of developing renal dysfunction [5]. About 30% of CKD patients are progress to end-stage renal disease (ESRD) and some form of renal transplant therapy is required [6]. Chronic kidney disease progresses over time by transitions through advanced stages of CKD. This progression may occur due to the continuous effect of the disease responsible for inciting the damage and other multiple factors independent of the initial disease. These progression factors include hypertension, proteinuria, and smoking [7]. Normal kidneys don't allow serum proteins like albumin, globulins and other low molecular weight proteins to filter across its filtration barriers but once CKD develop these filters are damaged and protein leakage started in urine and lead to proteinuria [8].

*Corresponding Author: Dr. Sulaiman Shams, PhD., Stem Cell Regenerative Medicine lab, Department of Biochemistry, Abdul Wali Khan University Mardan-23200, Khyber Pakhtunkhwa Pakistan.
Email: Sulaiman@awkum.edu.pk Contact: +92-3339202865

In CKD patient's proteinuria has been associated with high mortality and morbidity and also increases cardiovascular risk. Proteinuria is not only a biomarker of progression of chronic kidney disease but also a mediator of this devastating disorder. Micro albuminuria and cardiovascular risk in these patients has been reduced by using angiotensin-converting enzyme inhibitors (ACE) and statins [9]. In CKD patient's cardiovascular disease is the main cause of morbidity and mortality. By far a great majority of the patients will succumb to cardiovascular diseases or other complications of CKD prior to ESRD [10]. For irreversible CKD, transplantation was the most effective modality of renal replacement therapy (RRT); however, this therapy has some limitations such as immunologic rejection, adverse effects of immune suppressant agents, and a relative shortage of organ availability. After implementation of Medicare funding for RRT in 1972, long-term dialysis rapidly evolved as first-line treatment but can be considered only a temporary respite from the basic form of treatment [11,12]. Therefore, strong evidence reported that transplantation is most successful when implemented before onset of long-term dialysis, only 2.5% of patients with end-stage renal disease undergo transplantation as initial RRT [13,14].

Use of statins is beneficial for most patients with CKD who are at high cardiovascular risk [15], although research is needed to ascertain how to best prevent kidney injury. Currently, it has been recommended that statins have the ability to slow down kidney function decline in patients with renal diseases. Statins competitively inhibit HMG-CoA reductase which catalyzes the biosynthesis of cholesterol. Statins can also reduce the rate of very low density lipoprotein synthesis and increase its clearance and thus decrease TG in some patients [16,17]. Present study assessed the efficacy of different doses of atorvastatin on proteinuria in chronic kidney disease patients which would help to sensitize the treating physicians regarding the use of these drugs in slowing the progression of chronic kidney disease. This present comparative study would help to evaluate optimize dose of atorvastatin in reducing proteinuria and can be addressed to the health authority to plan future strategy for the problem.

MATERIALS AND METHODS

Sample and Data Collection

This study was carried out at Mardan Medical Complex; Mardan (MMC Mardan) & AWKUM. Patients with CKD were selected from MMC Mardan. The name of patient, their age and hospital ID number was written in the Performa of those patients from which the sample was collected. Sample was collected from the blood serum and urine of CKD patients, using Inclusion/Exclusion criteria.

Ethical approval

All the experimental procedures were approved from the bioethics committee from the department of Biochemistry Abdul Wali Khan University Mardan Pakistan. To ensure their voluntary participation, informed consent was obtained from all the participants.

Inclusion criteria

Patients having documented CKD by ultrasound or GFR calculation (less than 60 ml/min), both gender having age above 18 years and Patient having proteinuria in the range of 0.5-3.5 grams protein per gram creatinine on UPCR was included in this study.

Exclusion criteria

Inclusion criteria include those patients with renal replacement therapy and acute liver disease was excluded from this study because atorvastatin can further damage liver. Those patients were also excluded from the study who already used atorvastatin or show hypersensitivity to atorvastatin.

Classification of patients

In this study all the patients were classified into three different groups, on the basis of atorvastatin dose used daily for three months. These groups were named as; Group I (treated with 20mg atorvastatin daily), Group II (treated with 40mg atorvastatin daily), Group III (treated with 60mg atorvastatin daily). Each group contains equal number of patients.

Serum creatinine and cholesterol analysis

The serum sample of proteinuria patients were analyzed for the estimation of blood serum creatinine and cholesterol level, before and after use of different doses of atorvastatin treatment. The creatinine assay kit (SIGMA-ALDRICH)

was used for serum creatinine determination quantitatively while cholesterol assay kit (CELL BIOLAB, INC) was used to measure total cholesterol level in the blood serum of CKD patients with proteinuria.

Determination of UPCR level

UPCR assay kit (IDXXX) is used to measure the amount of protein in a random urine sample along with urine creatinine and reported as the ratio of urine protein to creatinine (UPCR). UPCR initially was determined as a base line reference and then after the use of atorvastatin. The result was compare with previous result of UPCR patient to determine the efficacy of atorvastatin with different doses on proteinuria. For the estimation of UPCR test, catalyst one chemistry analyzer was used.

Data analysis

All collected data was put in SPSS version 17. For quantitative variables like age of the patient, pre and post treatment proteinuria descriptive statistics such as mean and standard deviation was calculated. Finally to see the effect modification, efficacy was stratified between age and gender.

RESULTS

Prevalence of CKD in district Mardan

In this study out of 3000, 246 patients was found that having proteinuria in the range of 0.5-3.5 gram/gram creatinine. From this study it was concluded that the prevalence of proteinuria in CKD patients in district Mardan was 8.2%, as shown in Table1.

Table 1: Prevalence of CKD in district Mardan

Total number of observed patients	Total number of CKD patients	Prevalence of CKD in district Mardan
3000	246	8.2%

Classification of CKD patients on the basis of age

On the basis of age, CKD patients was classified into three classes which showed that 89 (36%) patients were in age range 20-40 years, 145 (59%) patients were in age range 41-60 years, 12 (5%) patients were in age range >60 years (Table 2). This result showed that patients in the range 41-60 years presenting high suspected clinical feature of CKD.

Table 2: Age wise distribution of CKD patients

AGE	FREQUENCY	PERCENTAGE
20-40 years	89	36%
41-60 years	145	59%
> 60 years	12	5%
Total	246	100%

Classification of patients based socioeconomic value

In this study the patients are classified into three classes, based on socioeconomic value. This classification is based on income, occupation and education facilities. Additionally, education and low income are also significant predictors of physical and mental health problems due malnutrition, lack of health facilities and heavy and stressful jobs. This result showed lower class people have high risk to CKD as compared to middle and upper class (Table 3).

Table 3: Classification based on socioeconomic value

Total no of patients	Lower class	Middle class	Upper class
246	130	75	41

Gender wise distribution of CKD patients

Among 246 patients, it was analyzed that 114 (46.34%) patients were male and 132 (53.66%) patients were female (Table 4). In this study the female ratio was high due to increased risk of hypertension and diabetes.

Table 4: Gender wise distribution of CKD patients

GENDER	FREQUENCY	PERCENTAGE
MALE	114	46.34%
FEMALE	132	53.66%
Total	246	100%

Classification of patients based on GFR value

In this study, CKD patients with proteinuria were classified into four groups on the basis GFR (Table 5). The frequency of CKD patients having GFR value in the range 45-59 mL/min showed increased risk to CKD.

Table 5: Stages of CKD patients based on GFR value

Stages of CKD with GFR value	Frequency	Percentage
Moderate CKD (stage IIIA) with GFR = 45-59 mL/min	90	36.58%
Moderate CKD (stage IIIB) with GFR = 30-44 mL/min	81	32.93%
Severe CKD (stage IV) with GFR = 15-29 mL/min	52	21.14%
End stage CKD (stage V) with GFR = <15 mL/min	23	9.35%
Total	246	100%

Serum cholesterol and creatinine level before and after treatment

In the blood serum of CKD patient's cholesterol and creatinine level was shown in the table 6. The mean value of serum cholesterol and creatinine was high in CKD patients with proteinuria while a significant decrease was observed after atorvastatin treatment as compared to before treatment.

Table 6: Serum cholesterol and creatinine level in CKD before and after treatment

Serum biomarker	Pre-treatment	Post-treatment		
		Group I (20mg)	Group II (40mg)	Group III (60mg)
Total cholesterol (mg/dl)	253.26 ± 39.72	195.6 ± 23.8	183.6 ± 23.8	174.6 ± 23.7
Creatinine (mg/dl)	1.97 ± 0.52	1.46 ± 0.2	1.31 ± 0.24	1.2 ± 0.19

Proteinuria level before and after treatment

In CKD patients, proteinuria level was analyzed with mean and standard deviation (S.D) before atorvastatin treatment. The result showed that before atorvastatin treatment proteinuria level in CKD patients was high with mean and S.D, compared to normal control. After atorvastatin treatment with different doses the post-operative proteinuria level with mean and S.D was significantly reduced in all three groups as compared to pretreated results (Table 7).

Table 7: Pre and post-treatment proteinuria level

Proteinuria level	Pre-treatment	Post-treatment		
		Group I (20mg)	Group II (40mg)	Group III (60mg)
Gram protein/gram creatinine	1.5 ± 0.835	>1.5 ± 0.835	≤1.5 ± 0.675	<1.5 ± 0.535

DISCUSSION

CKD is the main cause of earlier mortality and co morbidities. CKD patients have a greater risk of premature mortality associated with cardiovascular disease even during the initial stages of disorder. Oxidative stress, inflammation, platelet and endothelial dysfunction, electrolyte imbalances and proteinuria usually increase in renal dysfunction [18]. The prevalence of CKD has been evaluated based on proteinuria in different populations of Pakistan. The combined prevalence of CKD in all provinces in Pakistan was found to be 14%. Based on economic survey 2005-06, about 21 million people have CKD patients in the total population of Pakistan [19]. In present data

total 3000 patient were studied in MMC Mardan, in which 246 patients were found with CKD having proteinuria. Table 1 showed that the prevalence of CKD patients was found to be 8.2% in district Mardan.

It has been known that estimated GFR decline with age. In the diabetic population Diabetes-related ESRD incidence has decreased in all age-groups in the US due to the reduction in the prevalence of ESRD risk factors and improved treatment. The 15-year cumulative risks were 52% for ESRD and 11% for pre-ESRD death. The prevalence of CKD among females in the Chinese population is 7.4% with age 18-39 while the patients with age from 60-70 have 24.2% [15]. The present study determined that in young patients (age <40 years) the ratio of CKD is low(36%) while in elderly patients (40 to 60 years) CKD ratio was significantly high (59%) due to different risk factors such as hypertension and diabetes. The CKD ratio is very high in older individual (>60 years) due to decline renal functions, diabetes and hypertension but these patients usually die early (Table 2).The prevalence of CKD in Pakistan is probably high due to increased risk factors such as diabetes and hypertension. Most of the CKD patients cannot get optimized management due to many reasons such as lack of financial support by the government, high cost of management, absence of health insurance, complex management issues, less health care facilities, failure of health professionals to recognize the magnitude of this disease and the complications of CKD. Due to these factors the magnitude of complications of CKD patients in Pakistan is expected to be higher [20]. In this study out of three classes, lower class people have high risk to CKD due to low income and education, physical and mental health problems, malnutrition and lack of health facilities (Table 3).

Much effort has been made to identify the risk factors associated with CKD development, establish better prevention strategies and early detection of CKD patients, effect of gender on the prevalence, progression and characteristics of CKD. The life time risk of diabetes is greater in women than in men and has greater prevalence chronic kidney disease due to hypertension, hyperglycemia, dyslipidemia and obesity. In addition, female sex has been associated with higher risk of nephropathy [21]. The current study also found gender base differences in the prevalence of CKD risk factors. Females (53.66%) have a greater prevalence of CKD as compared to males (46.34%) (Table 4). Patients with increased levels of proteinuria have a high risk of severe CKD and as an indicators of future decreased in GFR, but limited therapeutic options are available to decrease proteinuria. Use of statins is beneficial for most patients with CKD who are at high cardiovascular risk [22]. The result showed that serum cholesterol and creatinine level was high in CKD patient with proteinuria before atorvastatin treatment but significantly reduced after atorvastatin treatment due to their high therapeutic efficacy in CKD patients as shown in the table 6 respectively.

Statin therapy may benefit CKD patients by improving renal function and reduced proteinuria [23].The PLANET I study showed that 40 mg rosuvastatin decreased the excretion of urinary protein, close to baseline, in patients with diabetes and proteinuria but the eGFR was significantly reduced from the baseline [24]. Therefore Reno protective effect of statins depends upon the dose and type of statin used. High-dose statin therapy improve the decrease in eGFR in CKD patients (eGFR <60 mL/min/1.73 m²) [25]. In this study atorvastatin was used with different doses for reducing proteinuria in CKD patients. Before treatment, the proteinuria level was found to be very high in CKD patients range between 0.5-3.5 gram protein/gram creatinine with mean 1.5 ± 0.83 while a significant reduction was observed in patients with atorvastatin treatment(Table 7). In group II (40mg dose) the proteinuria level was significantly reduced, as compared to group I, with less adverse effect. The patients with 60 mg atorvastatin (group III) treatment, was more significantly reduced proteinuria as compared to group I & II but having more adverse effect. Therefore, 40mg atorvastatin is a optimized dose for proteinuria in CKD patients.

Conclusion

The current results suggested that atorvastatin treatment is safe and reduces the risk of major cardiovascular events in patients with chronic kidney disease. These agents may have antiproteinuric effects in chronic kidney disease patients. Different doses of atorvastatin reduce the risk of CKD. High dose of atorvastatin reduces proteinuria significantly but due to adverse effect high dose prove unsuccessful. There are also additional benefits appear to occur by using 40mg of atorvastatin as compared to those patients whose treated with standard CKD management. In conclusion our results suggested that atorvastatin may have a dose-related effect on kidney function as only high-intensity atorvastatin significantly improved renal function assessed by estimated GFR and our results also added evidence that the use of 40mg of atorvastatin in CKD patients may delay progression of kidney disease. From the current study it was concluded that use of 40mg atorvastatin daily for three months is an optimized dose for patients with CKD by preventing progression end-stage renal disease.

Recommendations and Limitations of the current study

There are certain limitations of the current study which should be considered. The current study enrolled a small sample size from a single district of Pakistan; therefore large randomized trial should be conducted among different districts of Pakistan to confirm these finding. Second, other confounding factors such as type 2 diabetes and hypertension and change of metabolic parameters should also be considered.

As due to adverse side effect of atorvastatin in dialysis and renal transplant recipients and risk of myopathy, it is highly recommended, that the patients of diabetes mellitus and renal impairment should be monitored carefully. In our current study, no severe adverse effects such as persistent elevations in liver function enzymes and creatine values were observed in those patients whose using 40mg of atorvastatin. But still, It is also an important recommendation to keep in mind that the liver function enzymes and creatinine kinase levels must be monitored and guidelines should be strictly followed. The clinical significance of the results requires further studies for confirmation.

Competing Interest

All the authors declared that they have no competing interest.

Acknowledgment

We thank all the patients of district Mardan who participate in this study.

REFERENCES

- [1]. Tanner, G.A.,2009.Kidney function. In *Medical physiology: Principles for clinicalmedicine*: Baltimore, Maryland, Lippincott Williams and Wilkins, pp: 391-418.
- [2]. Khawaja, Z. and C. S.Wilcox, 2011. Role of the Kidneys in Resistant Hypertension. *Int J Hypertens*,10: 1-8.
- [3]. Levin, A., B.Hemmelgarn, B.Culleton, S.Tobe, P.McFarlane, andM.Ruzicka, et al.,2008. Guidelines for the management of chronic kidney disease. *Canadian Medical Association Journal*. 179(11):1154-62.
- [4] Schaeffner, E. S., T. Kurth and G. C. Curhan et al. 2003. Cholesterol and the risk of renal dysfunction in apparently healthy men. *Journal of the American Society of Nephrology*. 14(8):2084– 2091.
- [5] Satirapoj B., K. W. Bruhn and C.C. Nast, 2012. Oxidized lowdensity lipoprotein antigen transport induces autoimmunity in the renal tubulointerstitium. *American Journal of Nephrology*. 35(6): 520–530.
- [6].Jungers, P., Z. Massy, T.K. Nguyen, C. Fumeron, M. Labrunie andB. Lacour, et al.,1997. Incidence and risk factors of atherosclerotic cardiovascular accidents in predialysis chronic renal failure patients: a prospective study. *Nephrol Dial Transplant*, 12(12):2597-602.
- [7]. Assiago, M., A.S. Levey andL.A. Stevens,2009. Chronic kidney disease: classification, risk factors, and natural history. *Chronic Kidney Disease: A Practical Guide to Understanding and Management*.pp: 77-93. Oxford University Press.
- [8]. Keane, W.F. andG. Eknoyan,1999. Proteinuria, albuminuria, risk, assessment, detection, elimination (PARADE): a position paper of the National Kidney Foundation. *American Journal of Kidney Diseases*. 133(5):1004-10.
- [9]. Strippoli , G.F., 2010. Effects of the dose of erythropoiesis stimulating agents on cardiovascular events, quality of life, and health-related costs in hemodialysis patients: the clinical evaluation of the dose of erythropoietins (CE DOSE) trial protocol. *Trials*. 11(1):70.
- [10]. Hage, F.G., R ,Venkataraman, G.J. Zoghbi, G.J. Perry, A.M. DeMattos and A.E. Iskandrian, 2009. The scope of coronary heart disease in patients with chronic kidney disease. *Journal of the American College of Cardiology*. 53(23):2129-40.
- [11]. Abecassis, M., S.T. Bartlett, A.J.Collins,C.L. Davis, F.L. Delmonico andJ.J. Friedewald et al.,2008. Kidney transplantation as primary therapy for end-stage renal disease: a National Kidney Foundation/Kidney Disease Outcomes Quality Initiative (NKF/KDOQI™) conference. *Clinical Journal of the American Society of Nephrology*. 3(2):471-80.

- [12]. Rennie, D.,1978. Home dialysis and the costs of uremia. Mass Medical Soc;
- [13]. Ashby, V., J.Kalbfleisch, R.Wolfe, M. Lin , F. Port andA. Leichtman. 2007. Geographic variability in access to primary kidney transplantation in the United States, 1996–2005. *American journal of transplantation*. 7(s1):1412-23.
- [14]. Rudich, S., J. Hanson, D. Cibrik, A. Leichtman andB. Kaplan,2000. Effect of waiting time on renal transplant outcomes. *Kidney Int*. 58:1311-7.
- [15].Fried, L.F.,2008. Effects of HMG-CoA reductase inhibitors (statins) on progression of kidney disease. *Kidney international*. 74(5):571-6.
- [16]. Hou, W., J. Lv, V. Perkovic, L. Yang, N. Zhao andM.J. Jardine et al.,2013. Effect of statin therapy on cardiovascular and renal outcomes in patients with chronic kidney disease: a systematic review and meta-analysis. *European heart journal*. 34(24):1807-17.
- [17]. Dasari T.W., D. J.Cohen and N. S.Kleiman, 2014. Statin therapy in patients with chronic kidney disease undergoing percutaneous coronary intervention (from the evaluation of drug eluting stents and ischemic events registry). *American Journal of Cardiology*. 113(4): 621–625.
- [18].Coresh, J., E. Selvin, L.A. Stevens, J. Manzi, J.W. Kusek and P. Eggers et al.,2007. Prevalence of chronic kidney disease in the United States. *Jama*. 298(17):2038-47.
- [19].Kazmi, W.H.,2013. A greater than expected prevalence of chronic kidney disease (CKD) in Pakistan. *Annals of Abbasi Shaheed Hospital and Karachi Medical & Dental College*. 18(1):2-4.
- [120].Zhang, L., F. Wang, L. Wang, W. Wang, B. Liu andJ. Liu et al. 2012. Prevalence of chronic kidney disease in China: a cross-sectional survey. *The Lancet*. 379(9818):815-22.
- [21].Narayan, K.V., J.P. Boyle, T.J. Thompson, S.W. Sorensen and D.F. Williamson,2003. Lifetime risk for diabetes mellitus in the United States. *Jama*. 290(14):1884-90.
- [22].Cravedi, P. and G. Remuzzi,2013. Pathophysiology of proteinuria and its value as an outcome measure in chronic kidney disease. *British journal of clinical pharmacology*. 76(4):516-23.
- [23].O'driscoll, G., D. Green and R.R. Taylor,1997. Simvastatin, an HMG–coenzyme A reductase inhibitor, improves endothelial function within 1 month. *Circulation*. 95(5):1126-31.
- [24].Zeeuw, D., D.A. Anzalone, V.A. Cain, M.D. Cressman, H.J. Heerspink and B.A. Molitoris. 2015. Renal effects of atorvastatin and rosuvastatin in patients with diabetes who have progressive renal disease (PLANET I): a randomised clinical trial. *The lancet Diabetes & endocrinology*. 3(3):181-90.
- [25].Cho EY, Myoung C, Park H-s, Kim AJ, Ro H, and Chang JH, et al.,2017. Efficacy of Statin Treatment in Early-Stage Chronic Kidney Disease. *PloS one*. 12(1): 1-11.



The Metaphor of War in Print Media: A Futuristic Case Study for Language of Peace

Zafar Ullah Shaheen¹, Ayyaz Qadeer², Huma Batool³, Iffat Nazir⁴

¹Govt. Gordon College, Rawalpindi

²COMSATS Institute of Information Technology, Wah Campus

³FAST National University of Computer & Emerging Sciences, Islamabad

⁴IMCG (Post Graduate), F-7/4 Islamabad

Received: September 16, 2017

Accepted: December 31, 2017

ABSTRACT

The study presents a makeup of linguistic metaphor how it has been widely used in the language of newspaper stories over the years. With the use of intense and handy linguistic structures, a metaphor can politicize the language which can further be used in favor or against someone to get vested results out of it. This study attempts to look into and dig out expressions where it has been used in a subtle way that an ordinary reader never deciphers it. Having said that, one linguistic community gets hold over the other and marginalize it not only linguistically but in terms of politics, war and media. Human beings are labelled as animals, and down to subhuman levels while others are glorified and sublimed in the same text—thus inching towards hatred which can further lead to social and political upheaval. The article suggests change in vocabulary words from war to peace in order to give new thoughts/words to the policy makers, writers and politicians.

KEY WORDS: metaphor, futuristic, war on terror, linguistic, print media, hate language.

INTRODUCTION

We are living in an era of ideological conflicts and social disbelief, and are facing disharmony at the national and international level, where language is used as a weapon and war is channelized through the medium of discourse. Language used for such purpose carries with it duality, irony, metaphoricity, and at times, strong satire and sarcasm. Metaphors are meant to initiate and create a war-like atmosphere to critics, and to condemn those having opposing belief systems. It is a challenge for people to understand them, encounter them successfully, to defend themselves and to have their own clear image of the world. Metaphors not only suggest similarities across different domains, but can also ‘activate conscious and sub-conscious, relational and emotional responses’ in their listeners. It is a big weapon in the modern age as it is believed, and can be seen from the surroundings that the third world war may not be atomic, but the bomb shells are already being exploded in the form of these malevolent metaphors.

Metaphor and language go hand in hand and are practiced since ages but recently the conceptual foundation of metaphor, and its involvement in linguistic model are re-discovered by George Lakoff and Mark Johnson in their seminal work ‘Metaphor We Live By’, in 1979. According to them, the whole conceptual system in which human beings think and act, is completely metaphorically in nature. Therefore, this notion laid the firm foundation of the cognitive theory of metaphor, which was later on known as Conceptual Metaphor Theory (Lakoff and Johnson 2011). They believed that most of our experiences are structured, not just described, by our “conceptual systems”, and they are of the opinion that most of our conceptual systems are metaphorical.

The present study takes into account various metaphors printed in newspaper reports and examine them under the light of above said theory. What image metaphor of war entails, and how human beings are presented through these symbols/images especially in case of enemy in war? When a powerful enemy encounters the other through physical assault to damage his opponent and leave no stone unturned to destroy her through verbal attack, especially language in use. Language has never been transparent medium and it can be used in a lethal manner against the other especially when the receiving agent is un-powerful and remains in a weak state, in a zero response level. How has language remained successful in dehumanizing the other through verbal attack? The study seeks to answer these questions and has been done in pursuit of these queries.

In this study we have presented different case histories of Western newspapers language, where they have dubbed certain human beings onto the level of sub-human creatures, like ants, mice, snake and reptiles. This tendency showed a clear distinction on the part of journalists and writers as they are biased towards a certain class and a section of human cross-section. The language of war and related vocabulary has been consistently employed against Muslim population in order to humiliate them. Bourdieu (2000) language habitus claim undergoes the same notions that it is a phenomenon in which human beings are declared as nominal creatures needs to be understood and studied in its perspective. Language has evolved from mere a transparent tool to an instrumental, effective and embodied mechanism which has become lethal weapon of war and waging verbal attack on others.

The study seeks answers but also provide formidable solutions to the extent that the present idiom and vocabulary is 'war based' rather than peace related words. It amounts to challenge to the existing scholars, thinkers, global leaders in media and politics to present a counter lexicon to the hardliners sitting at the helm of affairs both in military top positions and civilian management. It is mandatory not only for human survival but also for the forth coming generation that we have more peace related words rather than the whole discourse is war based. It could give existing peace loving friends a whole new frames to think and act and consequently the whole thought processing can get changed which is at present moment based on linear thinking style. Therefore, the present study instigates the experts in language, linguistics, especially the morphologists and lexicographers to look for new peace related words/idioms.

Metaphorical Language

If we want to understand how people use metaphorical language, its functions, in what kind of situations and in what ways it is used, how people understand metaphorical language and what kind of effects it might have on them, we must need to look at real language as it is used and produced in everyday life. This focus on metaphorical language use by real people in real situations of use is only a recent phenomenon (Cameron, 2011).

How do employed metaphors function in a particular context of the text? A text does not exist in a vacuum – it is produced by someone for someone else in a certain situation and, it fulfills a particular purpose. Van Dijk (2015) elaborates, "Discourse is a complex communicative event that also embodies a social context, featuring participants as well as production and reception processes." Consequently natural discourse provides a much richer source of investigating the function of metaphor.

One of the sources of real discourse occurring is news. Since society is pervaded by media language (Bell, 1991), news influences much of our daily lives. Therefore, it has gathered much research interest. In the same vein, language carries metaphor, because it cannot be plain, all the time referring to literal meaning. So, metaphor has got the natural ability to highlight some aspect of a concept, while at the same time hiding other aspects (Lakoff & Johnson, 1980). Thus it becomes a very powerful tool for creating subtle persuasive messages serving ideological purposes in the press: asks for investigation.

A huge body of studies across the disciplines demonstrates because of the human nature, and nature of news item published in newspapers, the whole media are simple unable to give us a perspective that is entirely free from the subjective interpretation of events (Fairclough, 2011; Fowler, 2015). Moreover, Fairclough (2011) opined that news is seen as operating within our social system, and some part of our cognition co-exists with the social environment, which allows us to comprehend and express events through in and with language. Therefore, it becomes mandatory to analyze the written language of newspapers in terms of cognition, context and metaphor.

"War on Terror"

The phrase 'war on terror' has been so frequently employed that it is deeply entrenched in our thinking. It is rooted so deep by that we seldom realize that this phrase is not a description but a clear metaphor. The use of the war metaphor phrase needs to be dealt with great caution, especially when it is coined in the case of war on terror. Previously, the phrase 'The War on Drugs' was widely employed by the White House during 1980's and onwards. To say that we are at war with something immediately invokes some alarming associations.

What different kinds of metaphor are being employed by writers in a particular text or news items, and how does it works? In the next section we shall enlist some practices of newspapers during war on terror, and it will be evident that how through the use of metaphor, human beings are defamed and degraded to the lower level of blood-thirsty animals. Such practices are not rare; rather they have changed the whole mindset and mental frames of certain audiences. This is the reason that our public discussions regarding war on terror have a powerful impact on the way we think and act. By systematically stripping humans of humanity, those who consider themselves champions of human rights and humanity, provide a cultural platform for acts of war; and a potent cognitive framework for interpreting such acts.

In the war on terror the mainstream media labeled the rest of the enemy as 'rat trapped', most of the bloggers termed minorities as 'cockroaches' and the political regimes called for the extermination of such forces from all over the world. Officials belonging to the military urged for 'cleansing' operations, and Islam is considered as a 'cancer'. Muslims are thought to 'infest' the Western communities and Iraqi people are called 'dune coons, sand niggers and camel jockeys.' Turban wearing Afghan men are called 'diaper heads' by the Western politicians (Joan Mckinney 2001).

Concepts and Misconception

In this process, the mind allows one to understand a concept by relating to certain characteristics of another concept. This kind of transfer/mapping of metaphor shifts meaning and ideas to one thing from another, to achieve "a new, wider, special precise meaning." With repetition, this happens so adeptly that the transference is invisible and comes to seem inevitable. When the media repeatedly return, therefore, to similar patterns of image and language, these patterns begin to appear both familiar and natural. Instead of viewing Muslims as people who have been symbolically portrayed as animals, they begin in our minds to become animals, imaginatively transposed with the images that represented them. This transportation is one of the key effects of metaphor (Terence Hawkes 1972).

In the Iraq war Americans soldiers described the attack in hunting terms as "clubbing seals." Pilots flying over cities said that Iraqi soldiers "ran like ants" when bombs were dropped on them. In his book **Hidden Agendas**, veteran investigative journalist John Pilger describes and telling the details of media coverage of the mass massacre.

In a memorable report for the BBC radio, Stephen Sackur described the carnage in such a way that he separated, for his listeners, ordinary Iraqis from Saddam Hussein. He converted the ducks, turkeys and fish to human beings. The incinerated figures, he said, were simply people trying to get home. Most newspapers, however, preferred a front-page photograph of a U.S. Army medic attending a wounded Iraqi soldier. Here was the supreme image of magnanimity and tenderness, a "lifeline" the Daily Mirror called it, and the exact opposite of what had happened.(Daily Mirror, 1991)

Similar Symbolism

There has been a remarkable similarity in the symbolic vocabulary employed by the media discourses, including print media, particularly since the beginning of the war on terror. Many reporters lead their stories with "Raid Zaps Iraqi Rats," "Suspected Al-Qaida Nest," "The Vermin Have Struck Again," and "Wiper Nest of Terrorism." When we examine media sources and the public discussion of the war on terror it reveals a pattern of not just animal symbolism but the related metaphor of hunting. Reports covering the war on terror are filled with terms implying the pursuit and capture of an animal, employing verbs like 'hunt,' 'trap,' 'snare,' 'net,' and 'corral.' The much-used phrase 'hunt for terrorists' has widely replaced the more neutral verbs like 'search' and 'look for.'

Jean Paul Sarter once said that words are loaded pistol. In the same vein George. Bush referred to terrorists as 'cowards' and later on his description was quickly changed from coward to animal; his later statement remarked 'smoking them out of their holes'. A symbol which has been consequently used in the newspapers after rats, is snake. In the Western countries the serpent is considered a symbol of evil and its trajectory goes back to Satan who disguise himself in the shape of serpent in order to deceive Eve. There are certain variation of snake, serpent and viper used in the headlines news:

US Reports Calls for War on Principal Nest of Terrorist Vipers (Financial Express, May 18, 2002)

Port city of 14 million Harbours Vipers' Nest of Terrorism (London Daily Telegraph, June 15, 2002)

The Vipers awaits (London Sunday Times, March 23, 2003)

The Snake Leaves the Desert (The Weekend, Australian, April 5, 2003)

Former Arab Power Is Poisonous Snake (Birmingham Post, March 13, 2003)

Britain Bitten By A Snake (Calgary Sun, July 17, 2005)

Apart From Terrorists, BSF Jawans Fight Snakes And Scorpions At India-Pakistan Border
(INDIATIMES AUGUST 12, 2017)

Hamas designs terror-inspired 'Snakes and Ladders' (THE TIMES OF ISREAL 11 April, 2017)

Trump Read "The Snake" On His 100th Day As President As A Metaphor For Immigrants
(BUZZ Feed NEWS, 30 April, 2017)

Snakes in the backyard: China and Pakistan betray grand delusions (DAILY O20 July, 2017)

Whittick (1971) believed that Western art the snake has been typified as a force of an evil which always oppose and the just forces of righteousness. The role of snake carrying symbolic meaning of evil has also been depicted with an eagle, here eagle is representing the force of justice and righteousness overpowering the evil. The

same image has been employed in Homer's Iliad in which an eagle carrying a bleeding snake appeared in front of Greek heroes as an omen of their victory of Trojans. Similarly vipers have got a rich symbolic history, many young vipers troubling the bellies of their mothers symbolizes them plotting against their parents. During the Sixteenth century, the vipers signified a woman who is ready to sting men with their lust. The combination of snake and wiper gave the idea that the opponents desire to poison the other exactly like a snake. The serpent will definitely strike the enemy as it is included in its nature. Against the bite of snake there is no emotions, no arguments and simply no reasoning because its lethality is in its nature. When you are confronted with a snake the only thing one can do is to counter attack to save one's own life.

Another category used in the media under the labelling of animals are rats, they are specifically considered loathsome. Rats are symbolic representation of disease, destruction and death and in both oriental & occidental cultures rat has always been considered as unclean and has negative connotation. It has been observed that place of dirt, plague, and poverty are abodes of rats. When images of rats are associated with terrorists, political leaders and enemy military, it embodies a negative cultural association. There are the following headlines appeared in the mainstream media associated with rats:

- Troops Grab 50 in Raid on Afghan Rat's Nest** (NY Post, May 25, 2002)
- Rats in Trap: How Feds Snared Fort Dix Terror Plotters** Daily News (New York), May 9, 2007.
- Hussein's Rat Hole** {St. Petersburg Times (Florida), December 15, 2003}
- Out of a Rat Hole** (The Christchurch Press, December 16, 2003)
- Americans Cleared out Rats' Nest in Afghanistan** (Irish News, June 7, 2005)
- Fallujah: 'It's a Rat Nest'** (Yorkshire Evening Post, November 8, 2004)
- This Rat Better of Dead** (The Australian, December 18, 2003)
- In tackling terror, Kenya must avoid falling into the rat and cobra trap** (Daily Nation 31 May, 2014)
- Monster 16-inch rat terrifies Swedish family in kitchen: report** (Daily News, 26 March. 2014)
- My Own Private Terrorists: Why I'll No Longer Let Mouse Phobia Ruin My Life Huff Post** (17 December, 2012)
- Syrian army launched a two-pronged offensive against Daesh (ISIL/ISIS) terrorists entrenched in the vicinity of the town of Al-Sukhnah located in Homs province.** (Sputnik International 01 August, 2017)
- ISIS trapped like rats** (Live Leak 27 December, 2015)

Civilization and Metaphor

The role of metaphor and the discourses it sustains are so fundamental that as, E.L. Doctorow has argued, "The development of civilizations is essentially a progression of metaphor." The cultural lexicon of dehumanizing metaphor is remarkably enduring; not only has it colonized discussion of the war on terror, it has permeated our public conversations about other degenerated or marginalized groups. If such groups and communities are unaware of how such metaphors influence and shape our thoughts, perception and understanding of social situations, Schon (1979) says that in this process the influence becomes even more powerful. When metaphors remain tacit or implicit, they can condition the way in which a situation is understood as problematic. The consequences of buried or hidden metaphors can, therefore, be dangerously counter-productive, constraining, and sometimes negatively controlling, the way in which individual and groups constructs, the world view in which they live and act. M. D. Nalapat writes in his article "US policy-makers ignore the Bible" published in Pakistan Observer, Islamabad dated: June 14, 2013

Indeed Osama Bin Laden's terror attack of 9/11 has turned out to have some positive spinoffs for Washington. Using the excuse of the "War on Terror", Swiss and other off-shores banking entities have been forced to reveal details of the secret bank accounts of VIPs across the globe. It is difficult to believe that US authorities will resist the temptation to trawl off shore banking systems for data on policymakers in other countries. This data can then be used to blackmail such policymakers to introducing measures which harm their own enterprises for the benefit of the US and allied entities. This columnist has always been a bit nonplussed about the manner in which successive governments in India have fashioned policies which discriminate against local in favours of outsiders....India's policy makers, several of whom have secret bank accounts abroad, as well as other assets, are most likely nervous of disclosure and therefore eager to please US authorities.

On the other hand, America is spending heavily on war, and all mechanism related to war, including language and metaphor to perpetuate its war driven policies. John Naughton writes in the most noted newspaper of the UK 'The Guardian'

"A branch of US intelligence service called Intelligent Advanced Research Projects Activity (IARPA) announced that it would be pouring millions of dollars into a "Metaphor Program" in the first phase of the two-phase program, performers [IARPA's intriguing term for researchers] will develop automated tools and techniques for recognizing, defining and categorizing linguistic metaphors associated with target concepts and found in large amounts of native-language text."

Language – As a futuristic Phenomenon

Language – a communicative phenomenon has been developed into a rigorous political tool, remained a major political weapon for people related to all walks of life, and especially, for those at the helm of affairs to get their vested interests. Linguistic activity at state level can play havoc with the state of the people and it can externalize those seeking human rights, freedom and justice. It becomes pivotal to re-examine whatever has been published, produced and reproduced to harness such lethal political linguistic outburst. As a futurist, one should not be oblivious of these developments occurring in linguistic and political arena. In the coming day's language can play its positive role in enhancing futuristic as peace studies and keep a guard on the theoretical as well as methodological underpinnings of language and its system. There is a dire need that one should establish mechanism in futuristic studies that can save the language from being indulge in filthy political activity. As I have highlighted American Metaphor Program and billion-dollar investment into it, if it goes unchecked it can endanger many existing structures and it would further strengthen war-friendly policy of American elites. This is a clear threat to Global Peace, as well as peace related endeavors because metaphor in language has been employed since centuries to disguise real intentions of the investor.

Assumptions: Metaphorical Humans

It may be assumed here that language is not neutral, as it appears on the surface. All the time all of the people are engaged in a linguistic activity to achieve their aims/targets, may be political, social, economic, military or educational. Investment in linguistic capital is not only done on the individual level, but, also on the state level under the patronage of rulers, through writing in the newspapers, oral discourse, speeches, policy making, discursive rules formation and computer programming. Nietzsche rightly pointed out once that human beings are metaphorical beings engaged in metaphorical phenomenon, understanding it and manipulating it. There is a dire need for all of those who are related to linguistic phenomenon, to look into this; what kind of language is being employed around, who is employing it and for what purposes: a critical gaze must examine who is writing and for what purpose?

Conclusion:

It can be concluded that metaphoric language has been extensively used in the newspaper to demean certain human beings especially in the war settings. These expressions are heavily loaded like guns and full of verbal attack presenting a war like analogy outside the war arena. There is a huge spending in metaphoric program in the West which can further aggravate the situation in which the less powerful are bound to suffer from more lethal oral attack from them. The language for peace remains totally non-existent and the intellectual class even suffers from scarcity of verbal expressions when they confront the policy makers, researchers and writers in a dialogic discussion. The lack of new vocabulary, idiom, and metaphor of peace in English language forced the think-tanks to deliberate in a fixed position marked by the frames of dominant discourse of 'others'. This according to the authors remain the prime reason why the world is moving towards more conflicts day by day, war after war, and fight over fight. If we start thinking of generating new metaphor and idiom of peace, there would be more pragmatic debate on peace and consequently less fight syndrome; a step towards peaceful world and conflict resolution.

Suggestions/Recommendations

As reflexive human beings we are always looking for new avenues and new vistas which seems quite natural phenomenon. As far as conflicts/disputes are concerned, concerned quarters hinges upon the same rhetorical rehearsal therefore resulting with the same output in which nothing concrete comes out. In order to achieve renewed objectives first linguistic behavior needs to be changed. For this purpose, the while responsibility lies on the linguists and language scholars to pave the way for alternative vocabulary that can give a sigh of relief to the old trodden thoughts and discourse. In this way old practices, debates and talks can be shunned and at the same time it could prove an energetic stimulus for neologistic thoughts to problem solving. Language in practice must be ready to embrace the future with futuristic linguistic emblem.

In the light of above discussion one feels there is a dire need to look for a new kind of metaphor—changing metaphoric language use to end hatred generating war and reactive-reactionary terrorism, which in turn can lessen the long lasting effect of war-trodden metaphor. This will not only put different thinking system in place, but it can uproot the existing structure of the language, in which we talk and write about. In the same vein, the writer has suggest following recommendations to be consider upon in order to insert practicability into the field of language and linguistics as well as for those who are at the helm of affairs – policy makers, linguists, scholars, think-tanks and politicians. In future paradigm it ought to be encouraged to using language to promote Positive Peace and Sovereign Fraternal Freedom.

- The need for an alternative vocabulary through coinage, neologism, metaphor, and idiomatic phrases from war to peace
- Reinterpretation, action and implementation
- Education/ A key to peaceful sustainable future
- Teaching defense strategic/ war studies as peace studies
- Teaching futuristic as integral to peace studies at all levels of education—primary, secondary and tertiary
- Practicing peace at the individual, family, institution and social level
- Teaching and practicing Islam as peace
- Solving the historical problems such as Kashmir and Palestine
- Ending imperialism, colonialism, internal as well as indigenous, as a core cause of war on terrorism
- Converting the MIC (Military Industrial Complex) and the NATO into instruments & agents of sustainable global peace
- Continuous interfaith, intercultural and inter-civilizational reciprocally respectful and respectable interaction
- Ensuring democratic pluralism and multi-polarity for the global balance of power for peace

Aristotle communicated a long time ago that skillful use of metaphors by political actors can induce listeners to see things that they might not otherwise perceive.

In the end I would like to include a poem recently written by Dr. Ikram Azam (Co-Founder and Co-Chairperson) by the name 'Hate Language' surely it truly depicts his vision of futuristic language in futuristic studies.

Hate Language.
(By: Ikram Azam)

Language and literature

Are regarded as the repositories of

The very best that is thought and felt

In the whole wide world

Throughout human history

As encoded in the Perennial Human Values

Focusing global Peace, progress, plenty and prosperity

In the altruistic love of sovereign fraternal freedom:

Alas! Currently

Humanity is being menaced malevolently

By the curse words of hate language

Fanning confrontation and conflict

As volatile war and reactive-reactionary terrorism

Dividing humanity along

Racial, religious, sectarian and ideological fault-lines

Between the evil exploiter haves

And the ever-exploited have-nots:

The real ready remedy of this linguistic rotten root cause

Lies in a totally transformative

New Language of Peace in Love

A New Paradigm of Peace

A New Idiom and

A New Healing Metaphor!

REFERENCES

Journal paper

1. Bourdieu, P. (2000) Making Economic Habitus: Algerian workers revisited, *Ethnography*, 1 (1) 17-41
2. Van, D. T. A. (January 01, 2015). *Critical Discourse Analysis*. 466-485.

Books

1. Cameron, L. (2011). *Metaphor in Educational Discourse*. London; New York: Continuum.
2. Fairclough, N. (2011). *Media discourse*. London: Bloomsbury Academic.
3. Fowler, R. (2015). *Language in the news: Discourse and ideology in the press*. Routledge.
4. Joan, M. (2001). *Cooksey: Expect Racial Profiling*. Advocate. September
5. Ortony, A. (1993). *Metaphor and thought*. Cambridge [England: Cambridge University Press.
6. Lakoff, G.& Johnson, M. (2011). *Metaphors we live by*. Chicago [u.a]: Univ. of Chicago Press.
7. Whittick, A. (1971). *Symbols, signs and their meaning*. London: Leonard Hill.
8. Hawkes, T. (1989). *Metaphor*. London: Routledge.



Endophytic Fungi Promote Growth of *Zea Mays* L. Under PEG Induced Drought Stress

Nighat Seema^a, Muhammad Hamayun^{a,*}, Anwar Hussain^a, Mohib Shah^a,
Muhammad Waqas^b and Ayaz Ahmad^c

^aDepartment of Botany, Abdul Wali Khan University Mardan 23200, Pakistan

^bDepartment of Agriculture Extension, Govt of Khyber Pakhtunkhwa Buner 19290, Pakistan

^cDepartment of Biotechnology, Abdul Wali Khan University Mardan 23200, Pakistan

Received: November 5, 2017

Accepted: January 31, 2018

ABSTRACT

Plants are sometimes exposed to extreme environmental conditions. Drought stress is one of the major abiotic constraint limiting crop growth and productivity worldwide. It is reported that endophytic fungi can benefit the host plants under biotic and abiotic stress conditions. In the current study, we isolated 46 endophytic fungi from three xerophytes and screened them on *Waito-C* rice, gibberellins (GAs) deficient dwarf rice cultivar, for their growth promoting capacity. It was observed that 27 fungal isolates promoted growth attributes of *Waito-C* rice. These growth-promoting fungal endophytes were further bio-assayed on maize (*Zea mays*L.) under normal and 8% polyethylene glycol (PEG) induced drought stress. The fungal endophytes promoted maize growth attributes and chlorophyll contents. The best results were recorded for isolates 1-3-1, 1-5-2, 2-1-1, 2-1-2, 3-1-2 and 3-1-3. Based on our finding, it was concluded that endophytic fungi can ameliorate the adverse effect of drought stress on the growth of plants growing in dry environments.

KEYWORDS: Drought stress; Endophytic fungi, Plant growth; Maize.

INTRODUCTION

The plants of almost all the species of the Plantae kingdom have shown that they are inhabited by endophytic microbes. These unique associations may have positive effects on plant growth and tissue differentiation, as well as on biotic and abiotic stresses to which plants are exposed without any damage[1]. In addition, endophytic fungi can help plants providing them nutrients and make them immune to pathogenic microbes[2]. Being very diverse in distribution and association, these endophytes are a rich source of biologically active secondary metabolites[3]. In fact, in recent years, many biologically active compounds such as anticancerous, cytotoxic, antimicrobial and antioxidant compounds have been isolated from endophytic fungi[4].

Plants are sometimes exposed to extreme environmental conditions. Drought stress is one of the major abiotic constraint limiting crop growth and productivity worldwide. Fungal endophytes are a significantly important component of terrestrial ecosystems, which enable host plants to flourish in severe environments. Studies show that fungal endophytes can enhance tolerance of their host plant and also increase resistance against a variety of other stressors[5]. By influencing plant morphology, development, and physiological and biochemical responses to stress, fungal endophytes can induce mechanisms of drought tolerance in their hosts[6].

Plants and fungi in the natural ecosystem have a symbiotic relationship. Plants are subjected to many stresses (biotic and abiotic stresses) in their natural environment, and commensal fungi contribute to and adapt plants to these environmental stresses[7]. These fungi are important for the structure, function, and health of plant communities[8, 9]. Endophytic fungi are the major part of plant-associated fungal symbionts present in plant tissue and may be associated with roots, stems and/or leaves, without causing any disease symptoms[10]. These fungi can serve as a defender of predators[11], growth promoters[12] and competitors to microbial pathogens[13]. The promotion of plant growth can be attributed to the secretion of secondary metabolites (gibberellin, auxins, cytokinins) by endophytic fungi in the rhizosphere[14, 15]. These fungi express symbiotic, parasitic and other symbiotic ways of life[16].

The resistance of host plants to drought stress has been known as a completely documented feature of abiotic stress tolerance in endophyte-infected grasses[6]. In fact, a few investigations have given confirmation that the endophyte can enhance tolerance to drought stress[17-19]. Variety of plants treated with endophytes, under low

*Corresponding Author: Muhammad Hamayun, Department of Botany, Abdul Wali Khan University, Mardan 23200, Pakistan.
Email: hamayun@awkum.edu.pk

water accessibility, indicated more prominent development and biomass formation[20], as compared to uninfected plants.

In general, drought stress occurs when available soil moisture decreases and atmospheric conditions cause transpiration or evaporation to cause loss of water[21]. *Otostegialimbata* (Benth) belonging to family *Lamiaceae* used to treat gum disease, dental disease, wound healing, high blood pressure, eye inflammation, and most importantly as an anti-cancer agent. Many plants belonging to the family *Labiatae* have been screened because they also have potential pharmaceutical uses for antimicrobial activity[22]. *Gymnosporiaroyleana* (Wall) commonly called “surazghay” belonging to Celastraceae family while *Rhazystricta* (Decne) is a common evergreen poisonous shrub of the Apocynaceae.

Waito-c rice is a known dwarf rice cultivar with reduced GA biosynthesis. Thus, shoot elongation of these seedlings can be effectively associated with the activity of plant-propagating secondary metabolites from the applied fungal culture filtrate. Recent studies have shown that plant growth promotion may be attributed to the secretion of gibberellins (GAs) by the endophytic fungi in the rhizosphere[23, 24]. Application of polyethylene glycol-induced drought stress in combination with host plants and endophytic fungi significantly increased plant biomass and related growth parameters as compared to control plants. Thus, fungal endophytes promote the survival of their host plants under stress conditions by the secretion of favorable secondary metabolites. The purpose of this study was to investigate endophytic fungi that promote plant growth by producing secondary metabolites.

MATERIALS AND METHODS

Collection of Plant Samples

Two plants (*otostegialimbata* & *gymnosporiaroyleana*) were collected from the Kot Manzary baba Dargai, Malakand agency, Khyber Pakhtunkhwa, Pakistan. Malakand agency is located 341, 35 north latitude and 711, 57 east longitude. the plants collected were identified, dug out as a whole, sealed in sterile bags, labeled and transported to laboratory. the samples were processed immediately to reduce the risk of contamination. *rhazystricta* was collected from tehsil Takht-e-nasratti, district Karak, Khyber Pakhtunkhwa, Pakistan. The total area of the tehsil is about 613.66km². Majority of the area consists of rigged dry hills and rough field areas.

Isolation and purification of fungal isolates from xerophytes

The plant samples were first washed with tap water than surface sterilized by 70% ethanol for 30 sec and washed with autoclaved double distilled water and make a thin slice of each surface sterilized part of the plant (size= 5mm) [25].

For fungal endophyte isolation, five to six plant segments (0.5 cm) of each part of the plants were carefully placed in Petri-plates, containing Hagem media (0.5% glucose, 0.05% MgSO₄, 0.05% KH₂PO₄.7H₂O, 0.05% NH₄Cl, 0.1% FeCl₃, 80 ppm streptomycin and 1.5% agar; pH 5.6 ± 0.2). The sterilized plant segments were also imprinted on separate Hagem plates to ensure the effectiveness of surface sterilization[26, 27]. The Petri dishes were sealed with aluminum foil and incubated at 27±2°C for a week under the dark condition and checked every day for the emergence of endophytic fungi.

The initially emerged fungal spots from the plant segments were isolated and subculture on potatodextrose agar medium (PDA) under sterilized conditions[27, 28]. After purification, PDA medium plates/slants were inoculated by the fungal isolates, and finally, pure grown cultures were stored for further experiments.

For secondary metabolites production, the fungal isolates were inoculated on Czapek broth medium (pH 7.3±0.2) and incubated in a shaking incubator set at 30°C with 120 rpm for 7 days. The composition of Czapek medium was: 1% Glucose, 1% Peptone, 0.05% KCl, 0.05% MgSO₄.7H₂O, and 0.001% FeSO₄.7H₂O[27].

Colonization Frequency

The colonization frequency of isolated endophytic fungi from root parts of the plants can be calculated following the established protocol[29, 30].

$$\% \text{ Colonization frequency} = \frac{\text{Total twig segments colonized}}{\text{Total number of segments in that sample}} \times 100 \quad (01)$$

$$\text{Dominant fungi \%} = \frac{\text{No.of isolates collected from the sample}}{\text{Total no.of twig segment in sample}} \times 100 \quad (02)$$

Screening for Plant Growth Promoting Capacity on Waito-C rice

Presence or absence of plant growth promoting metabolites in fungal CF was confirmed by performing screening bioassays on gibberellins biosynthesis deficient mutant rice Waito-C. Waito-C has a dwarf phenotype. For bioassay experiment, rice seeds were surface sterilized with 2.5% sodium hypochlorite for 30 minutes or 70% ethanol, rinsed with autoclaved DDW and then incubated for 4days to obtain equally germinated seeds[31]. Then pre-germinated

Waito-C seeds were transferred to small beakers having water: agar medium (0.8% w/v) under aseptic conditions[27]. The rice seedlings were grown in growth chamber (day/night cycle: 14 hr - 28°C ± 0.3; 10 hr - 25°C ± 0.3; relative humidity 70%;) for 1 week. 10µl of fungal CF was applied at the apex of the rice seedlings. One week after treatment, the shoot length, chlorophyll content and shoot fresh weight were recorded and compared with negative (autoclaved DDW) and positive controls (Czapek broth). Upon screening results, bioactive fungal strains were selected for further experiments and identification.

Bioassay of Fungal Isolates on Zea Mays Growth under Drought Stress

Experiments were conducted with a completely randomized block design in order to assess the endophytic fungus relationship with host-plants. Experiments comprised of maize plants (*Zea mays* L, Azam variety), with (i) fungal inoculation, (ii) without inoculation, (iii) fungal inoculation with drought stress (8% PEG), and (iv) without inoculation and with drought stress. On the basis of results obtained in Waito-C rice, fifteen bioactive endophytic fungal isolates were selected to assess their effects in mitigating drought stress. Fungal isolates were inoculated in Czapek broth (50 ml) as described previously. Then sterilized pre-germinated maize seeds were grown in pots containing soil (300 g/ pot). The fungal mycelia and culture filtrate (20 ml for each pot containing ten propagules) were added to the pot containing soil. The control plants only received 20 ml/pot autoclaved distilled water (DDW). The endophytic fungi and maize plants were grown together for ten days in a growth chamber (day/night cycle: 14 hr - 28°C ± 0.3; 10 hr - 25°C ± 0.3; relative humidity 60-65%; 12 plants per treatment) and irrigated with distilled water. After ten days, three doses of 8% PEG solution (20-50 ml/ pot) was applied to maize plants at three days intervals for one week in order to assess the effect of drought stress on these plants[32]. The growth parameters i.e. shoot length, root length, shoot fresh and dry weights and root fresh and dry weights were measured for harvested maize plants, while chlorophyll content of fully expanded leaves were analyzed³³ with the help of chlorophyll meter (SPAD-502 Minolta, Japan). Dry weights were measured after drying the plants at 70°C for 72 h in oven[33, 34].

RESULTS AND DISCUSSION

Isolation of Endophytic Fungi from Xeric Flora

We isolated 46 endophytic fungi from 160 root pieces of three xeric plants. These fungi were grown on Hagem media plates for seven days. The pure culture plates were grouped on the basis of colony shape, height and color of aerial hyphae, base color, growth rate, margin characteristics, surface texture and depth of growth into medium[5]. The morphological trait analysis reveals that 27 endophytic fungi were different. A maximum number of endophytic fungi were isolated from *Rhizystricta* (21), with 95% infection rate. The colonization frequency of *O. limbata* and *G. royleana* was 95%, and 85% respectively. The dominant frequency of *R. stricta*, *O. limbata*, and *G. royleana* was 35%, 22% and 30% respectively (Table 1). Little attention has been given to endophytic fungal association in extreme environmental conditions because of their slow growth rate and strenuous handling, however endophytic diversity of these microbes is of great interest because of producing secondary metabolites. The microbial population decreases with an increase in the altitude[5]. Endophytic fungi interact with the host plant by producing secondary metabolites that induce resistance and protection against various pathogens. They protect the plant in drought as well as in cold climatic conditions[35].

Table 1: Dominant fungi (%) and colonization frequency (%) of the fungal isolates

Plant names	Fungal Isolates	Segments screened	Segments with fungi	Colonization frequency	Dominant fungi
<i>Rhizystricta</i>	21	60	57	95%	35%
<i>Ostogialimbata</i>	13	60	57	95%	22%
<i>Gymnosporiaroyleana</i>	12	40	34	85%	30%

Screening of Fungal Isolates on Waito-C Rice

After careful removal of duplication, 27 endophytic fungi were selected from a total of 46 isolates. The culture filtrate (10µl) of these endophytic fungi were applied on Waito-C rice seedlings, under growth chamber conditions. It gave significant growth promotion results, which was possibly induced by gibberellins present in fungal culture filtrate. The shoot & root lengths, fresh weights and dry weights of rice seedlings were checked and compared with positive and negative control (autoclaved distilled water, DDW) after one week of culture filtrate application. On the basis of shoot length, all the screened fungal isolates were growth promoter (Figure 3). Since Czapek medium contains nutrients, we used it as a positive control in order to observe the level of growth promotion imparted by it. The seedlings survived easily in water-agar media in the absence of nutrient solution and gave shoot elongation

results in 2 weeks. No two fungal isolates with similar morphological growth pattern and/or colonial morphology were selected to avoid unnecessary repetition (Table 2). Best growth promoter was selected for further study. We used screening bioassays of endophytic fungal culture filtrate in order to identify bioactive fungal strains because endophytic fungi have been known as an important source of various kinds of bioactive secondary metabolites²⁰. It has been known recently that some of the strains of endophytic fungi can produce plant hormones especially gibberellins (GAs). GAs are ubiquitous substances that elicit various metabolic functions required for plants growth particularly shoot length. To characterize GAs secreted in the pure fungal culture of bioactive endophyte, it was inoculated in Czapek broth (50 ml) for 7 days at 30°C (shaking incubator-120 rpm) as described previously²⁵. The filtrate and mycelium were separated by centrifugation (10,000rpm at 4°C for 10min). In screening bioassays, rice cultivars were used as rice can easily grow under controlled and sterilized conditions using an autoclaved water-agar hydroponic medium that can help in the assessment of culture filtrate obtained from endophytic fungi.

Table 2: Screening of fungal isolates on Waito-C for their plant growth promoting capacity

Fungal Isolates	Shoot length (cm/ plant)	Root length (cm/ plant)	Fresh weight (g/plant)	Dry weight (g/plant)	Growth status
Control	5.92±2.27	6.67±2.98	0.07±0.02	0.004±0.003	
CZPK	6.50±0.45	6.58±1.68	0.06±0.01	0.006±0.003	
1-1-1	7.50±0.71	6.00±1.05	0.08±0.03	0.010±0.003	Promoted
1-1-2	7.42±1.53	7.00±2.60	0.08±0.02	0.012±0.003	Promoted
1-1-3	8.25±1.60	8.25±3.19	0.11±0.02	0.011±0.003	Promoted
1-1-4	7.92±0.86	5.83±2.40	0.12±0.02	0.010±0.003	Promoted
1-2-2	7.50±0.84	7.67±2.25	0.05±0.04	0.011±0.003	Promoted
1-2-3	7.50±1.22	8.17±2.46	0.08±0.03	0.010±0.003	Promoted
1-2-4	7.58±0.80	5.75±1.92	0.11±0.03	0.010±0.003	Promoted
1-2-5	7.92±1.32	7.33±1.13	0.12±0.02	0.011±0.003	Promoted
1-3-1	7.90±1.14	7.67±1.66	0.11±0.03	0.011±0.003	Promoted
1-3-2	7.67±0.41	6.42±2.54	0.08±0.02	0.011±0.003	Promoted
1-3-3	8.50±1.00	7.25±1.04	0.07±0.01	0.011±0.003	Promoted
1-4-2	7.58±1.07	7.75±3.25	0.06±0.01	0.011±0.003	Promoted
1-4-6	7.50±0.84	7.67±2.25	0.05±0.04	0.011±0.003	Promoted
1-5-2	8.33±0.75	8.00±3.03	0.05±0.01	0.012±0.003	Promoted
1-5-3	7.83±0.52	6.42±1.36	0.08±0.02	0.011±0.003	Promoted
2-1-1	8.42±0.80	8.42±2.28	0.07±0.03	0.012±0.003	Promoted
2-1-2	8.42±0.97	9.33±2.44	0.04±0.02	0.011±0.003	Promoted
2-1-3	8.42±0.58	8.33±0.82	0.07±0.02	0.012±0.003	Promoted
2-2-1	7.50±1.22	8.17±2.46	0.08±0.03	0.010±0.003	Promoted
2-2-2	7.58±1.07	7.75±3.25	0.06±0.01	0.011±0.003	Promoted
3-1-1	7.67±0.75	7.67±2.80	0.06±0.01	0.011±0.003	Promoted
3-1-2	8.00±0.84	8.08±2.41	0.13±0.03	0.011±0.003	Promoted
3-1-3	8.50±1.14	6.83±1.91	0.12±0.02	0.011±0.003	Promoted
3-2-2	8.08±1.39	6.67±2.66	0.09±0.04	0.011±0.003	Promoted
3-3-2	7.67±1.03	6.08±2.13	0.14±0.02	0.011±0.003	Promoted
3-4-1	7.92±0.58	5.50±1.30	0.14±0.03	0.011±0.003	Promoted
3-5-2	8.00±0.63	7.33±2.42	0.04±0.01	0.011±0.003	Promoted

Bioassay of Fungal Isolates on *Zea Mays* Under Drought Stress

On the basis of screening results of *Waito-C* rice seedlings, fifteen bioactive endophytic fungi were selected to assess their effects in mitigating drought stress. Drought stress was induced by applying 8% PEG to plants. Three doses of drought stress were given at 3 days intervals. On the completion of the third dose, growth parameters i.e. shoot lengths, root lengths, plants fresh and dry weights were measured for harvested maize plants, while chlorophyll content of fully opened leaves was analyzed with the help of chlorophyll meter (SPAD-502 Minolta, Japan). Dry weights were measured after drying the plants at 70°C for 72 h in an oven. All the growth parameters were compared with the controlled plants receiving only autoclaved distilled water (DDW). Non-inoculated and stressed plants had lower shoot length (18.98±0.78) and dry weight (0.21±0.02). Fifteen fungal isolates were applied in order to assess their drought tolerance ability. Eight bioactive fungal isolates showed an increase in shoot lengths and dry weights and also enhance the chlorophyll contents of the plants under stress conditions (Table 3).

Table 3: Bioassay of endophytic fungal isolates on *Zea mays* L. under normal conditions

Fungal Isolates	SL(cm)	RL(cm)	PFW(g)	PDW(g)	ChL (SPAD)
Control	21.40±1.01	12.53±0.94	1.32±0.16	0.24±0.03	35.60±13.15
1-1-2	20.00±1.73	17.57±1.69	1.80±0.27	0.25±0.03	35.10±9.23
1-1-3	19.47±1.24	16.90±0.96	1.65±0.10	0.25±0.02	32.23±7.54
1-1-4	21.53±1.12	17.00±2.01	1.53±0.13	0.23±0.02	27.13±4.17
1-2-3	23.62±0.90	19.08±1.69	2.02±0.31	0.24±0.03	30.33±10.88
1-3-1	22.75±1.19	17.18±1.32	1.65±0.10	0.30±0.02	43.73±2.11
1-3-3	25.53±1.48	11.80±0.92	1.71±0.17	0.30±0.02	42.07±1.19
1-5-2	23.77±1.82	12.87±1.64	1.64±0.24	0.27±0.03	53.26±5.49
1-5-3	21.67±2.29	15.67±1.51	1.55±0.09	0.24±0.02	31.40±9.28
2-1-2	22.48±1.85	18.93±1.25	1.66±0.22	0.28±0.03	44.10±3.19
2-1-3	24.75±1.76	11.83±0.89	1.75±0.22	0.28±0.03	26.07±3.09
2-3-1	20.52±1.82	12.73±1.14	1.14±0.09	0.20±0.03	29.06±6.38
2-3-2	22.85±1.91	10.80±1.74	1.43±0.16	0.26±0.01	33.90±10.79
3-1-1	23.32±1.09	13.55±1.30	1.30±0.09	0.26±0.04	28.60±4.77
3-1-2	24.20±2.41	12.35±0.75	1.47±0.20	0.27±0.04	28.77±2.22
3-1-3	23.72±2.50	14.33±1.42	1.69±0.07	0.26±0.02	46.93±0.98

Shoot length(19.13±2.11) and dry weight (0.21±0.03) of fungal isolate 1-1-2 was at par with the control (Table 4) under drought stress. On the basis of results obtained five fungal isolates, 1-3-3 (27.25±1.28), 3-1-3 (25.95±2.08), 2-1-2 (24.28±1.69), 1-5-2 (25.42±1.80 and 1-3-1(23.58±1.31) showing a maximum increase in shoot lengths and dry weights. These fungal isolates were marked as N1, N2, N3, N4, and N5 respectively. Endophytic partner residing in root tissues and secreting plant growth regulating compounds are of great interest to enhance crop yield and quality. Such growth regulating compounds can influence plant growth in stressful environments. Endophytic fungi offer an important role in the protection of plants and making plants more fit to cope with biotic and abiotic stress tolerance, decreasing water consumption and increasing biomass[34, 35].

Table 4: Bioassay of fungal isolates on *Zea mays* L. under PEG-induced drought stress

Fungal Isolates	SL(cm)	RL(cm)	PFW(g)	PDW(g)	CC (SPAD)
Control	21.40±1.01	12.53±0.94	1.32±0.16	0.24±0.03	35.60±13.15
Stress (8% PEG)	18.98±0.78	16.85±1.43	1.34±0.26	0.21±0.02	31.70±9.09
1-1-2 +8%PEG	19.13±2.11	16.62±1.14	1.29±0.38	0.21±0.03	32.36±4.20
1-1-3 +8%PEG	20.33±0.59	14.90±1.25	1.61±0.14	0.26±0.01	24.83±1.09
1-1-4 +8%PEG	24.42±1.53	19.08±0.88	1.93±0.33	0.32±0.02	26.30±3.33
1-2-3 +8%PEG	24.78±1.36	18.00±1.55	1.81±0.28	0.28±0.04	28.23±3.76
1-3-1 +8%PEG	23.58±1.31	18.67±0.58	2.14±0.22	0.32±0.02	43.90±2.22
1-3-3 +8%PEG	27.25±1.28	14.57±0.91	1.94±0.15	0.35±0.03	42.70±3.48
1-5-2 +8%PEG	25.42±1.80	17.05±1.30	1.94±0.22	0.29±0.05	57.20±5.05
1-5-3 +8%PEG	21.48±1.25	17.23±0.77	1.94±0.12	0.24±0.02	34.63±6.40
2-1-2 +8%PEG	24.28±1.69	17.25±0.87	1.75±0.22	0.30±0.03	45.76±4.94
2-1-3 +8%PEG	24.40±1.24	10.57±1.56	1.60±0.16	0.28±0.03	30.50±2.18
2-3-1 +8%PEG	21.88±1.57	12.57±1.55	1.38±0.14	0.26±0.03	30.50±6.87
2-3-2 +8%PEG	23.88±0.63	12.38±1.34	1.57±0.10	0.26±0.03	31.10±6.09
3-1-1 +8%PEG	22.27±2.78	12.03±1.67	1.22±0.10	0.24±0.04	27.96±2.31
3-1-2 +8%PEG	23.55±1.63	14.03±1.35	1.49±0.16	0.25±0.02	27.93±4.08
3-1-3 +8%PEG	25.95±2.08	14.20±0.88	1.77±0.18	0.33±0.04	46.03±2.02

SL = Shoot Length, RL= Root Length, PFW = Plant Fresh Weight, PDW =Plant Dry Weight. For each set of treatment, the different letter indicates significant differences at p < 0.05 levels as estimated by Duncan’s Multiple Range Test (DMRT).

Conflict of Interests

The authors declare that they have no conflict of interest.

REFERENCES

1. Saikkonen, K., et al., *Fungal endophytes: a continuum of interactions with host plants*. Annual Review of Ecology and Systematics, 1998. **29**(1): p. 319-343.
2. Singh, L.P., S.S. Gill, and N. Tuteja, *Unraveling the role of fungal symbionts in plant abiotic stress tolerance*. Plant signaling & behavior, 2011. **6**(2): p. 175-191.
3. Strobel, G.A., *Endophytes as sources of bioactive products*. Microbes and infection, 2003. **5**(6): p. 535-544.
4. Aly, A.H., et al., *Fungal endophytes from higher plants: a prolific source of phytochemicals and other bioactive natural products*. Fungal diversity, 2010. **41**(1): p. 1-16.
5. Rodriguez, R., et al., *Fungal endophytes: diversity and functional roles*. New phytologist, 2009. **182**(2): p. 314-330.
6. Malinowski, D.P. and D.P. Belesky, *Adaptations of endophyte-infected cool-season grasses to environmental stresses: mechanisms of drought and mineral stress tolerance*. Crop Science, 2000. **40**(4): p. 923-940.
7. Herman, P., *Biodiversity and evolution in mycorrhizae of the desert*. Microbial Endophytes. Marcel Dekker, New York, USA, 2000: p. 141-160.
8. Clay, K. and J. Holah, *Fungal endophyte symbiosis and plant diversity in successional fields*. Science, 1999. **285**(5434): p. 1742-1744.
9. Rodriguez, R. and R. Redman, *Fungal life-styles and ecosystem dynamics: biological aspects of plant pathogens, plant endophytes and saprophytes*, in *Advances in botanical research*. 1997, Elsevier. p. 169-193.
10. Arnold, A.E., *Endophytic fungi: hidden components of tropical community ecology*. Tropical forest community ecology, 2008: p. 178-188.
11. Siegel, M. and L. Bush, *Toxin production in grass/endophyte associations*, in *Plant relationships*. 1997, Springer. p. 185-207.
12. Bacon, C.W. and J. White, *Physiological adaptations in the evolution of endophytism in the Clavicipitaceae*. Microbial endophytes, 2000: p. 237-261.
13. Scannerini, S., A. Fusconi, and M. Mucciarelli, *The effect of endophytic fungi on host plant morphogenesis*, in *Symbiosis*. 2001, Springer. p. 425-447.
14. Rim, S.-O., et al., *Fusarium proliferatum KGL0401 as a new gibberellin-producing fungus*. Journal of microbiology and biotechnology, 2005. **15**(4): p. 809-814.
15. Ahmad, W., et al., *A novel hybrid decision support system for thyroid disease forecasting*. Soft Computing, 2018: p. 1-7.
16. Lewis, D., *Symbiosis and mutualism: crisp concepts and soggy semantics*. 1985.
17. Arachevaleta, M., et al., *Effect of the tall fescue endophyte on plant response to environmental stress*. Agronomy journal, 1989. **81**(1): p. 83-90.
18. Bacon, C.W., *Abiotic stress tolerances (moisture, nutrients) and photosynthesis in endophyte-infected tall fescue*. Agriculture, ecosystems & environment, 1993. **44**(1-4): p. 123-141.
19. West, C.P., C. Bacon, and J. White, *Physiology and drought tolerance of endophyte-infected grasses*. Biotechnology of endophytic fungi of grasses, 1994: p. 87-99.

20. Morse, L.J., T. Day, and S.H. Faeth, *Effect of Neotyphodium endophyte infection on growth and leaf gas exchange of Arizona fescue under contrasting water availability regimes*. Environmental and Experimental Botany, 2002. **48**(3): p. 257-268.
21. Khajeh-Hosseini, M., A. Powell, and I. Bingham, *The interaction between salinity stress and seed vigour during germination of soyabean seeds*. Seed Science and technology, 2003. **31**(3): p. 715-725.
22. Orhan, D.D., et al., *Assessment of antioxidant, antibacterial, antimycobacterial, and antifungal activities of some plants used as folk remedies in Turkey against dermatophytes and yeast-like fungi*. Turkish Journal of Biology, 2012. **36**(6): p. 672-686.
23. CHOI, W.-Y., et al., *Isolation of gibberellins-producing fungi from the root of several Sesamum indicum plants*. Journal of microbiology and biotechnology, 2005. **15**(1): p. 22-28.
24. Ahmad, W., et al., *Thyroid Diseases Forecasting Using a Hybrid Decision Support System Based on ANFIS, k-NN and Information Gain Method*. J. Appl. Environ. Biol. Sci, 2017. **7**(10): p. 78-85.
25. Khan, S.A., et al., *Plant growth promotion and Penicillium citrinum*. BMC microbiology, 2008. **8**(1): p. 231.
26. Arnold, A.E., et al., *Diversity and phylogenetic affinities of foliar fungal endophytes in loblolly pine inferred by culturing and environmental PCR*. Mycologia, 2007. **99**(2): p. 185-206.
27. Hamayun, M., et al., *Gibberellin production and plant growth enhancement by newly isolated strain of Scolecobasidium tshawytschae*. Journal of microbiology and biotechnology, 2009. **19**(6): p. 560-565.
28. Waller, F., et al., *The endophytic fungus Piriformospora indica reprograms barley to salt-stress tolerance, disease resistance, and higher yield*. Proceedings of the National Academy of Sciences of the United States of America, 2005. **102**(38): p. 13386-13391.
29. Schulz, B., et al., *Endophytic fungi: a source of novel biologically active secondary metabolites*. Mycological Research, 2002. **106**(9): p. 996-1004.
30. Ragazzi, A., et al., *Endophytic fungi in Quercus cerris: isolation frequency in relation to phenological phase, tree health and the organ affected*. Phytopathologia Mediterranea, 2001. **40**(2): p. 165-171.
31. Merzlyak, M.N., A.E. Solovchenko, and A.A. Gitelson, *Reflectance spectral features and non-destructive estimation of chlorophyll, carotenoid and anthocyanin content in apple fruit*. Postharvest Biology and Technology, 2003. **27**(2): p. 197-211.
32. Pandey, A. and L. Palni, *The rhizosphere effect in trees of the Indian Central Himalaya with special reference to altitude*. Applied Ecology and Environmental Research, 2007. **5**(1): p. 93-102.
33. Bohm, P., *Estimating willingness to pay: why and how?* The Scandinavian Journal of Economics, 1979: p. 142-153.
34. Clay, K. and C. Schardl, *Evolutionary origins and ecological consequences of endophyte symbiosis with grasses*. the american naturalist, 2002. **160**(S4): p. S99-S127.
35. Rim, S.-O., et al., *Isolation and identification of fungal strains producing gibberellins from the root of plants*. Microbiology and Biotechnology Letters, 2007. **35**(4): p. 357-363.



Constructing VMMSCText for Re-conceptualizing Students' Conception

Neni Hermita^{1*}, Andi Suhandi², Ernanwulan Syaodih³, Achmad Samsudin², Khoiro Mahbubah²,
Eddy Noviana¹ and Otang Kurniawan¹

¹Program Studi PGSD, FKIP Universitas Riau, Pekanbaru, Indonesia

²Departemen Pendidikan Fisika, Universitas Pendidikan Indonesia (UPI), Bandung Indonesia

³Program Studi Pendidikan Dasar, Universitas Pendidikan Indonesia (UPI), Bandung, Indonesia

Received: November 10, 2017

Accepted: January 20, 2018

ABSTRACT

VMMSCText (Visual Multi-Media Supported Conceptual Change Text) has been constructed to represent the neutral object concept change into more existent and meaningful learning. The key design of VMMSCText is a combination computer that agrees users to explore the complete neutral object concept in relations of the present conceptual and applied. The aim of this study is to develop an established conceptual change text which can help lecturers related their students to change their misconceptions only by understanding a text. The ADDIE research model has been developed VMMSCText, which contains the steps of: Analyzing, Design, Development, Implementation and Evaluation. The research was conveyed of the academic year 2016/2017 at the PGSD (Elementary Education in Indonesia Context) FKIP Universitas Riau. Based on data analysis, it can be determined that VMMSCText could successfully increase understanding for re-conceptualizing about students' neutral object conceptions.

KEYWORDS: VMMSCText; remediation; misconception; neutral object; elementary education.

I. INTRODUCTION

Teachers are keys in successful the quality of education because it is the spearhead in the field where they meet face-to-face to the student by scheduled and programmed. This opinion is supported by [1] which stated that the quality of the learning process is highly dependent on the quality of teachers in addition to facility factors. Teachers are fragment of the package as curriculum, textbooks, communiqués unit and newssheets [2]. Thus, a very strategic step towards improving the quality of education is an effort to improve the quality of teachers through the preparation of qualified teachers in the University. Identified substantial and major holes for successful use of the theoretic conceptions the pre-service teachers through their professional practice [3].

Through the earlier limited years, considerable determination has been positioned on educations of students' misconceptions in numerous physical subject substances. Students could treasure that selected physical concepts such as heat, electricity and magnetism are abstract, difficult, unclear and problematical. Several study were based on misconceptions of some physical concepts: the concept of static electricity [4], electric circuit [5, 6], force and motion [7], heat and temperature [8, 9], Newton Laws [10] and magnetism concept [11, 12].

Misconceptions are resistant to the new ideas and more scientific, even students holding misconceptions will reject the new idea received [13] so it is difficult for them to embed a scientific conception, in the end that will ultimately hinder the achievement of a full understanding of teaching materials.

Prospective primary teachers' misconceptions should not be allowed and must be eliminated immediately. If it is not immediately remedied, they will bring the misconceptions until they become teachers and will effect to their students. Changing the misconception has been firmly entrenched in the mind of the students that is more difficult than inculcating a new concept, because they are not realizing that they got misconceptions. Like a psychoneurotic would never feel that they have mental disorder. Misconception is a person having misconceptions (error concept) will not feel that he is wrong; even he has high confidence in the truth of his concept. Surely it will be difficult to correct a misconception when the person himself feels no error.

It needs a special strategy to turn a misconception into a scientific concept. The approach often used is known as the conceptual change approach. One of the strategies widely used in conceptual change is the cognitive conflict strategy [14]. This strategy holds that it is difficult to change the misconception because the person does not feel wrong, and then there is no other way but by undermining the level of belief in the wrong concept. Through the decreasing of the belief in the wrong conception, expecting that he will soon realize that there are mistakes in his

*Corresponding Author: Neni Hermita, Program Studi PGSD, FKIP Universitas Riau, Pekanbaru, Indonesia.
Email: neni.hermita@lecturer.unri.ac.id

concept. In cognitive conflict strategies, to decrease the level of students' belief in their concepts, conventional confrontation is typically processed by confronting the concept with reality according to the scientific concept. The usual technique used is that they are asked to perform a direct observation of phenomena contrary to their concepts. The situations of conflict in their minds (disequilibrium state) are expected to occur by knowing what they see while observing is contrary to their current concept. When this situation has happened it will be easier to change their wrong concept into a scientific concept. Cognitive conflict strategies are developed based on constructivism [15].

In practice, cognitive conflict strategies are applied in the conceptual change model (CCM). There are four essential conditions for changing the concepts: 1) dissatisfaction with current concepts (dissatisfaction), 2) introducing of new intelligible concepts (intelligible), 3) new concepts introduced must be reasonable (plausible) and 4) new concepts introduced must be clearly fruitful (fruitful) [16]. Developed CCM based on constructivism consisting of six process steps following: 1. the process of disclosing the students' concept on an occasion or physical phenomenon; 2. The disclosure of the belief level of the students' concepts; 3 [17]. Confrontation the student's belief through observation of real phenomena; 4. Scientific explanation process to help students accommodate new scientific concepts; 5. Strengthening and expansion process of concepts; and 6. Searching process of new ideas in accordance with the concept accommodated [15, 18].

CCM can be used to remedial teaching activities. Remedial teaching is important after regular teaching, as stated above that teaching can be a cause of misconceptions among students. Remedial teaching can be done with face-to-face learning mode in the classroom or by giving the students reading material (text) of changing concept mode that can be read and learned by their own selves.

One of the choices techniques for eliminating misconceptions is using computer supported instructional materials in classroom [19]. Computer supported instructional ingredients provides students to study with their speeds, facilitate learning, and gives prospects to replication the course contents out of school. Courses controlled with computer supported instructional materials would be sustained by pictures, videos, virtual experiment environments, animations, etc., [20, 21, and 22]. Using computers in classrooms have also effects on students' effective learning.

Then, around is a crucial for a considerable which can restructure learners' conceptual constructions. This considerable need be basically presented then basically presented besides essential profit from preceding understanding of the students. However the usage of this substantial, learner must understand both old and new understandings on an exact foundation. Established the conceptual change texts (CCT) by implementing the step of the conceptual change principle recommended [23, 24, 25]. CCT purposes at facilitating students to transformation their misconceptions to scientific knowledge. Step in CCText concluded question or interrogations to the significant personalities thru the determination of detection their present misconceptions (dissatisfaction), encounter towards remaining misconceptions by using analogies (intelligibility), contribute the correct meanings of the perceptions (plausibility) and offer new situations for relating the new perception (fruitfulness) [23]. Several other researchers have deliberated on the CCText since the education of Roth. Several educations e.g. [24, 26, 27, 28, 29, 30] roughly the CCText and physics concepts. Basically, premeditated on the CCText by relating them to the traditional texts (TT) in physics besides current the texts in their studies [24]. This guides that here is not sufficient suggestion demonstration that CCText are more operational or effective in reorganize the misconceptions. Is VMMSCText able to change student misconception into scientific conception on neutral object concept? Based on the research-background, we have been developing a Visual Multi-Media Supported Conceptual Change Text (VMMSCText) since 2016 [31, 32, 33, 34, 36]. This study aims to improve a confirmed conceptual change text which can help lecturer attendant their learners to reorganize their misconceptions only by reading a text.

II. MATERIALS AND METHODS

A. Material

Is the technique of developing the outline or design had established an authority. This basic that at this step everything needed or that would support the learning exercise would have been successful organized. As sketch of the design, the development step has been organized based on scheme VMMSCText as the following.

Part I. Concept Disclosure and Conceptual Beliefs

Text type: narration and discussion
 Contains of interrogative sentences
 Using the Picture media (Photos)

.....

.....

Part II. Text Confrontation Confidence Conception

Text type: discussion
 Contains declarative sentences
 Using video media phenomena and/or Virtual Simulation

.....

.....

Part III. Text of Scientific Explanation and Conception-Changing Statement

Types of text: narration, discussion and explanation
 Contains of interrogative and imperative sentences
 Using static image media, photos, video phenomena and/or Virtual Simulation

.....

.....

Section IV. Conception, Reinforcement and Enrichment Statement

Text type: narration and discussion
 Contains of interrogative and declarative sentences.
 Media: Static image or virtual simulation

.....

.....

Figure 1. Design VMMSCText

To categorize [33] assert of learner dilacerated on FTT (four-tier test) consequences, the data analysis as presented in table 1.

Table 1. The Category of Students' Conceptions concluded FTT (four-tier test)

No	Category	Combination of answers			
		Tier I Option	Tier II The first Confidence Rating Scale	Tier III Reasons	Tier IV The Second confidence Rating Scale
	SK	Correct	Sure	Correct	Sure
	LK	Correct	Sure	Correct	Not Sure
		Correct	Sure	Incorrect	Not Sure
		Correct	Not Sure	Correct	Sure
		Correct	Not Sure	Correct	Not Sure
		Correct	Not Sure	Incorrect	Not Sure
		Incorrect	Sure	Correct	Not Sure
		Incorrect	Sure	Incorrect	Not Sure
		Incorrect	Not Sure	Correct	Not Sure
		Incorrect	Not Sure	Incorrect	Not Sure
		M	Correct	Sure	Incorrect
	Correct		Not Sure	Incorrect	Sure
	Incorrect		Sure	Incorrect	Sure
	Incorrect		Not Sure	Incorrect	Sure
	E	Incorrect	Sure	Correct	Sure
		Incorrect	Not Sure	Correct	Sure

Note: SK, LK, M and E stand for Scientific Knowledge, Lack of Knowledge, Misconception and Error

B. Methods

The ADDIE model of research approaches has been developed to improve Visual Multi-Media Supported Conceptual Change Text (VMMSCCText), which contains the steps of: Analyzing, Design, Development, Implementation and Evaluation. The development of VMMSCCText concluded ADDIE model has been useful to the students'; as therefore the students were able to be recognized hold the current concept. The research was conveyed of the academic year 2016/2017 at PGSD (Pre-Service Elementary Teacher) FKIP Universitas Riau.

The improvement of Visual Multi-Media Supported Conceptual Change Text (VMMSCCText) on the neutral object concepts is emphasizing on the conceptual approach to re-conceptualize students' more effusively understanding the concepts. Moreover, VMMSCCText improvement will be argued as follows.

A. Analyzing

The analyzing step was a development of needs calculation such the step to categorize the research problems (needs) and to accomplish tasks' analyze. The productivity of the analyzed procedure was more prominence on conceptual teaching concluded the use of multimedia computer. Grounded on further analysis, investigators have been found the development of VMMSCCText. Analyzing step were also directed by "SAP" or learning plan and syllabus of basic concept of science at that moment researchers completely conducted an ultimate revision of the "SAP" and the current syllabus. The "SAP" and syllabus have been established based on a conceptual approach concluded a VMMSCCText. With the reality of a fundamental modification of the curriculum and syllabus, the analyzing method produced the developing VMMSCCText publicized more highlighting on the concept of a neutral object.

B. Design

This step was well-known as constructing blue-print [33, 34, 35], alike with the construction before it was made there would be a design on paper. Design in interrogation is the design of VMMSCCText used in learning. VMMSCCText design idea concentrated by static electricity concept specifically in the main concept of neutral object via simulations, figure and videos. This VMMSCCText was designed by science concepts such as; atoms, static electricity and matter. An example of a multimedia design developed in VMMSCCText in the form of storyboards is presented in Fig 1 and 2.

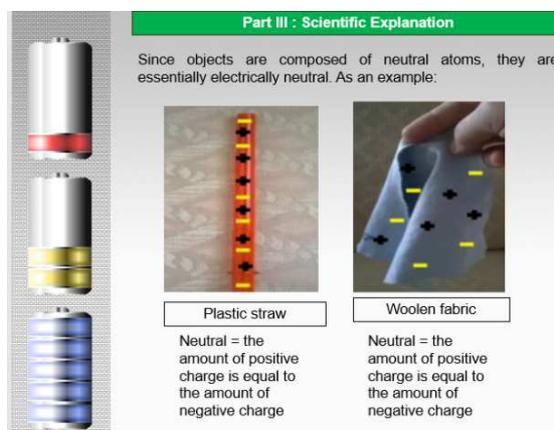
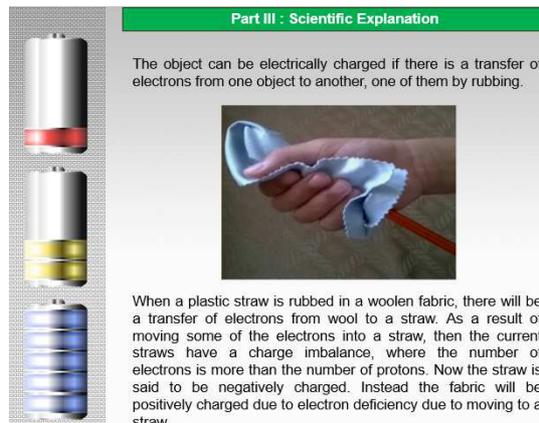


Figure 2. An Example of VMMSCCText



Part III : Scientific Explanation

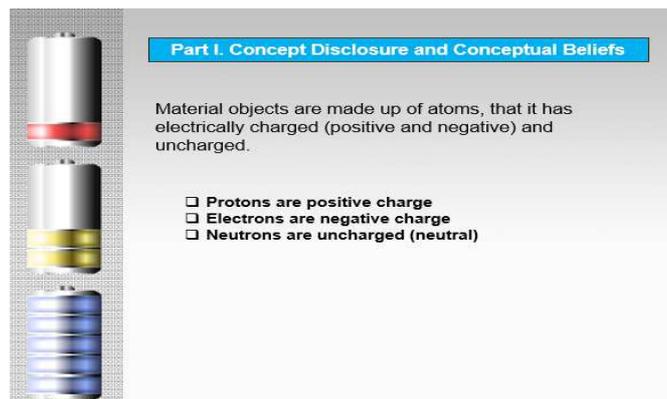
The object can be electrically charged if there is a transfer of electrons from one object to another, one of them by rubbing.

When a plastic straw is rubbed in a woolen fabric, there will be a transfer of electrons from wool to a straw. As a result of moving some of the electrons into a straw, then the current straws have a charge imbalance, where the number of electrons is more than the number of protons. Now the straw is said to be negatively charged. Instead the fabric will be positively charged due to electron deficiency due to moving to a straw

Figure 3. An Example of VMMSCTText

C. Development

Development step was the practice of recognizing the design or scheme had become a reality. The resources that at this step all needed or that would maintenance the learning procedure would have been well organized. As an sample of the design, the improvement step has been arranged based on multimedia form as the following sample:

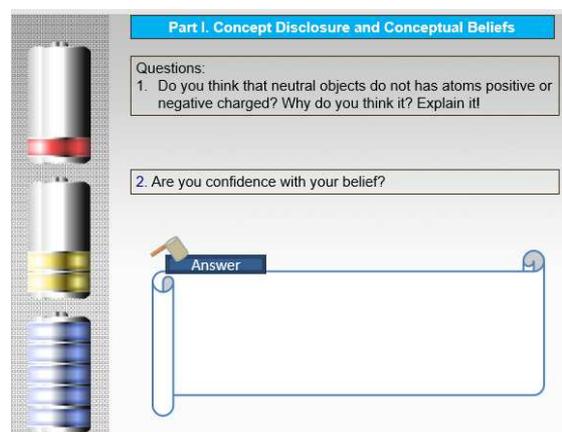


Part I. Concept Disclosure and Conceptual Beliefs

Material objects are made up of atoms, that it has electrically charged (positive and negative) and uncharged.

- Protons are positive charge
- Electrons are negative charge
- Neutrons are uncharged (neutral)

Figure 4. An Example of VMMSCTText (Part I)



Part I. Concept Disclosure and Conceptual Beliefs

Questions:

1. Do you think that neutral objects do not has atoms positive or negative charged? Why do you think it? Explain it!
2. Are you confidence with your belief?

Answer

Figure 5. An Example questions' VMMSCTText

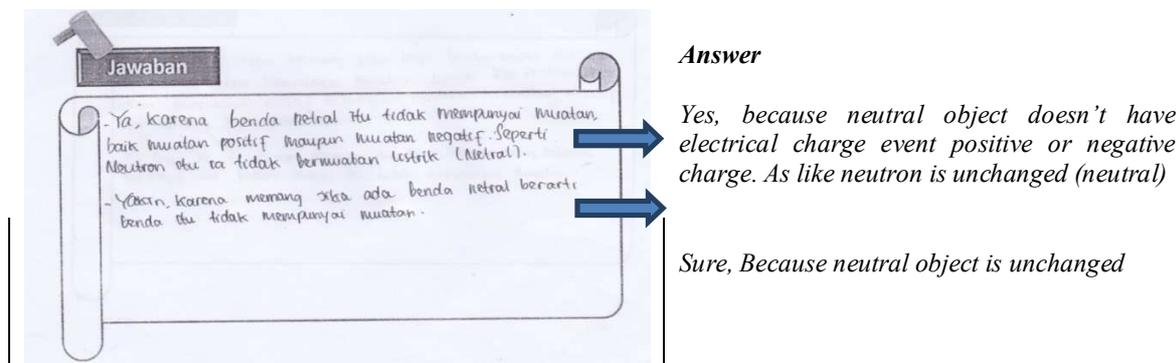


Figure 6. An Example students' answer VMMSCText

The development was accepted connecting the improvement design and VMMSCText contented. VMMSCText scheme that was developed consuming the program Flash MX and Java Applet were individually developed by the researchers and here remained also used Physics Education Technology (PhET) Simulation and others.

D. Implementation

Implementation was the existent step to appliance a learning method that was being shaped. At this step altogether that has been established was installed or set in such a way applicable to the part or function to be applied. Once the produce was ready, self-educated education then re-evaluated and revised so as to create a final product that was ready to be distributed. But at the preliminary design VMMSCText was only done on a minor group trial and evaluation. Here was sample of the application of the VMMSCText in Basic Science Concept.



Figure 7. The Implementation VMMSCText

E. Evaluation

Evaluation was the procedure of education to understanding whether the structure was actuality created effectively, discussing to primary expectations or not. Evaluation step was intellectual to be carried out at every of the four steps over the thought determinative evaluation, because this step characteristic was estimated in applying process. For sample in the application step desired accomplished evaluations to give feedback to the exhausted from the tap that was being completed.

III. RESULT AND DISCUSSION

This can be appreciated in the use of parts of VMMSCText could be used at home and in the classroom. In adding, VMMSCText was also charity as a concentration on the learning activities in the preceding step. Table 2 displayed the amount of students in both formal of conception earlier to the VMMSCText activity and whose misconceptions were remediated when the VMMSCText activity shares to the concept of Neutral Objects.

Table 2. Quantity of students on any state of conception earlier to VMMSCCText activity and whose misconceptions are remediated when VMMSCCText activity

Concept	Quantity of students on any state of conception prior to VMMSCCText (%)			Quantity of students whose misconceptions are remediated after VMMSCCText activity (%)	
	SC	M	LK		
Neutral Objects	00.00	71.43	28.57	96.00	4.00
Total	0	25	10	24	1

In the table elsewhere it accomplishes that in the initial situations of VMMSCCText activity, first, an insignificant percentage of students require had a scientific conception, ultimate of them sensitivity misconceptions and practically incomplete are in a correct of lack of knowledge. Advanced contributing in VMMSCCText activities completely student’s (96.00%) suffering misconceptions on the concept of Neutral Objects can be remediated. This endorses that the use of VMMSCCText in the teaching of basic science concepts can advantage the conceptual change of all students’ undertaking misconceptions.

It funds that the VMMSCCText might effectively increase the education process on neutral object conceptions and the equal time the ideal could re-conceptualize the students’ conceptions. This is reinforced by research conducted by Hermita et. al [31, 32, 33, 34, 36], the VMMSCCText can increase learning progression and CCText supported virtual simulation very effectively to remediate misconceptions [21].

IV. CONCLUSION

Recognized on the breakdown data, it can be determined that the improvement of VMMSCCText on the neutral object finished ADDIE emerging model (Analyzing, Design, Development, Implementation and Evaluation) was able to successfully increase the student’s understanding on neutral object.

V. RECOMMENDATION

Based on conclusion and research findings, they are recommendation for next research:

1. VMMSCCText product is used to basic of science program lecturers’ in PGSD Program PGSD (Pre-Service Elementary Teacher) for remediate teaching.
2. VMMSCCText can be developed in another science contents rich remediate teaching in basic concept of science lecture.
3. VMMSCCText needs to be developed and provided in visual media.

REFERENCES

[1] Gagne, R. M., and Driscoll, M. P. 1998. *Essential of Learning for Instruction*. New Jersey: Prentice Hall Inc.

[2] Nawaz, A. & Jumani, N. B. 2017. Effectiveness of Microteaching on Pedagogical Design Capacity of Prospective Teachers. *J. Appl. Environ. Biol. Sci.*, 7(10)86-91.

[3] Bilal, M., Rizvi, S. A. A., Bhatti, A. J. 2016. Bridging Gaps at Application Level Between Theoretical Knowledge and Professional Practice in Teacher Education. *J. Appl. Environ. Biol. Sci.*, 6(11)115-122.

[4] Hermita, N., Suhandi, A., Syaodih, E., Samsudin, A., Isjoni, I., Rosa, F., Sapriadi, S., Setyaningsih, R. & Johan, H. 2017. Constructing and Implementing a Four Tier Test about Static Electricity to Diagnose Pre-Service Elementary School Teachers’ Misconception. *Journal of Physics: Conference Series*, 895.012167.

[5] Kucukozer, H., and Kocakulah, S (2007) Secondary School Students’ Misconceptions about Simple Electric Circuits, *Journal of Turkish Science Education*, Volume 4, Issue 1, May, pp. 101-115.

[6] Hermita, N., Suhandi, A., Syaodih, E. & Samsudin, A. 2017. Profil Learning Progression Mahasiswa Calon Guru SD Terkait Konsep Benda Netral Setelah Aktivitas VMMSCCText. *Jurnal Pedagogika dan Dinamika Pendidikan*. Vol 7 no 2.

[7] Fadaei, A. S. and Mora C. (2015) An Investigation About Misconceptions in Force and Motion in High School, *US-China Education Review A*, January 2015, Vol. 5, No. 1, 38-45.

- [8] Kartal, T., Öztürk, N., Yalvaç, G. (2011) Misconceptions of science teacher candidates about heat and Temperature, *Procedia Social and Behavioral Sciences* 15, pp. 2758–2763
- [9] Wibowo, F.C., Suhandi, A., Samsudin, A., Darman, D.R., Akbardin, J. Hermita, N., Supryatman, Rusdiana, D., Nahadi & Coştu, B. 2017. Contribution of Virtual microscopic simulation (VMS) to unveil students' misconceptions the physics concepts of heat transfer. *Turkish Online Journal of Educational and Technology (TOJET)*, Special issue Oktober 2017 For INTE 2017.
- [10] Samsudin, A., Suhandi, A., Rusdiana, D., Kaniawati, I. and Coştu, B. 2016. Investigating the effectiveness of an active learning based-interactive conceptual instruction (ALBICI) on electric field concept. *Asia-Pacific Forum on Science Learning and Teaching*, Volume 17, Issue 1, Article 1.
- [11] Hermita, N., Suhandi, A., Syaodih, E., Samsudin, A., Isjoni, I. & Rosa F. 2017. Assessing Pre-service Elementary School Teachers' Alternative Conceptions through a Four-Tier Diagnostic Test on Magnetism Concepts. *Advanced Science Letter*, 23 (11).
- [12] Demirciougla, N., Çirkinoglu, A., (2004) Determining Students' reconceptions/Misconceptions in Electricity and Magnetism, *Journal of Turkish Science Education* Volume 1, Issue 2, December, pp. 51-54.
- [13] Gurel, D., Eryilmaz, A. & Mc Dermott, L. 2015. A Review and Comparison of Diagnostik Instruments to Identify Students' misconceptions in Science. *Eurasia Journal of Mathematics, Science & Technology Education*, 11 (5), 989-1008
- [14] Hermita, N., Suhandi, A., Syaodih, E., Samsudin, A. 2017. Level Conceptual Change Mahasiswa Calon Guru SD Terkait Konsep Benda Netral Sebagai Efek Implementasi VMMSCText. *Jurnal Wahana Pendidikan Fisika*, Vol.2 No. 2: 71-76.
- [15] Stepan, S. 2011. Targeting students' science misconceptions: Using the conceptual change model. Sticlound, MN. Saiwood Publications.
- [16] Posner, G.J., Strike, K.A., Hewson, P.W., dan Gertzowg, W.A. 1982. *Accomodation of a scientific conception: Toward a theory change*. *Science Education*, Vol 66, 211-227.
- [17] Stepan, S., Echimidt, D., Welsh, K., Reins, K., and Saigo, B. 2005. Teaching for K-12 mathematical understanding using the conceptual change model. Sticlound, MN. Saiwood Publications.
- [18] Stepan, S. 1994. Targeting students' science misconceptions: Using the conceptual change model. Idea Factory, Inc. Riverview, FL: U.S.A.
- [19] C., İpek H. & Çepni, S. 2010. Computer Supported Conceptual Change Text: Fluid Pressure. *Procedia Social and Behavioral Sciences*, 2, 922-927.
- [20] Cepni, S., Tas, E., Kose, S. 2006. The effects of computer-assisted materials on students' cognitive levels, misconceptions and attitudes towards science. *Comp Educ* 2006; 46:192-205.
- [21] Samsudin, A., Suhandi, A., Rusdiana, D., Kaniawati, I. and Coştu, B. 2016. Investigating the effectiveness of an active learning based-interactive conceptual instruction (ALBICI) on electric field concept. *Asia-Pacific Forum on Science Learning and Teaching*, Volume 17, Issue 1, Article 1.
- [22] Sinclair Kesley, J., Renshaw, C. E & Taylor, H.A. 2004. Improving computer assisted instruction in teaching higher order skills. *Comp Educ* 2004; 42:169–180.
- [23] Roth, K. J. 1985. Conceptual Change Learning and Students' Processing of Science Text. *Annual Meeting of the American Education Research Association*. Chicago.
- [24] Chambers, S. K. & Andre, T. 1997. Gender, Prior Knowledge, Interest, and Experience in Electricity and Conceptual Change Text Manipulations in Learning about Direct Current. *Journal of Research in Science Teaching*, 34 (2), 107-123.
- [25] Akgün, A. 2009. The Relation between Science Student Teachers' Misconceptions about Solution, Dissolution, Diffusion and Their Attitudes toward Science with Their Achievement. *Education and Science*, 34 (154), 26-36

- [26] Akpınar & Tan. 2011. Developing, Implementing, and Testing A Conceptual Change Text About Relativity. *Western Anatolia Journal of Educational Sciences (WAJES)*, Dokuz Eylül University Institute, Izmir, Turkey ISSN 1308-8971.
- [27] Aydın. 2015. Pre-service Science Teachers' Views on Conceptual Change Strategies and Practices Carried out. *International Journal of Psychology and Educational Studies*, 2015, 2 (2), 21-34.
- [28] Durmuş, J. & Bayraktar, Ş. 2010. Effects of Conceptual Change Texts and Laboratory Experiments on Fourth Grade Students' Understanding of Matter and Change Concepts. *Journal of Science Education and Technology*, 19, 498-504.
- [29] İpek, H. & Çalık, M. 2008. Combining Different Conceptual Change Methods within Four-Step Constructivist Teaching Model: A Sample Teaching of Series and Parallel Circuits. *International Journal of Environmental and Science Education*, 3 (3).
- [30] Ozkan & Selcuk. 2015. Effect of Technology Enhanced Conceptual Change Texts on Students' Understanding of Buoyant Force. *Universal Journal of Educational Research* 3(12): 981-988, 2015 <http://www.hrpub.org> . DOI: 10.13189/ujer.2015.031205.
- [31] Hermita, N., Suhandi A. & Syaodih, E. 2016. Identifikasi Miskonsepsi konsep listrik statis pada mahasiswa calon guru sekolah dasar. *Prosiding Seminar Nasional Pendidikan Dasar UPI Bandung*.
- [32] Hermita, N., Suhandi, A., Syaodih, E., Samsudin, A., Isjoni, I. & Rosa F. 2017. Assessing Pre-service Elementary School Teachers' Alternative Conceptions through a Four-Tier Diagnostic Test on Magnetism Concepts. *Advanced Science Letter*, 23 (11).
- [33] Hermita, N., Suhandi, A., Syaodih, E., Samsudin, A., Isjoni, I., Rosa, F., Sapriadi, S., Setyaningsih, R. & Johan, H. 2017. Constructing and Implementing a Four Tier Test about Static Electricity to Diagnose Pre-Service Elementary School Teachers' Misconception. *Journal of Physics: Conference Series*, 895.012167.
- [34] Hermita, N., Suhandi, A., Syaodih, E. & Samsudin, A. 2017. Profil Learning Progression Mahasiswa Calon Guru SD Terkait Konsep Benda Netral Setelah Aktivitas VMMSCText. *Jurnal Pedagogika dan Dinamika Pendidikan*. Vol 7 no 2.
- [35] Isjoni, I., Hermita, N. & Samsudin, A. 2017. Why Should History Teachers Develop Their Pedagogical Competences?. *Advanced Science Letter*, 23 (11).
- [36] Hermita, N., Suhandi, A., Syaodih, E., Samsudin, A. 2017. Level Conceptual Change Mahasiswa Calon Guru SD Terkait Konsep Benda Netral Sebagai Efek Implementasi VMMSCText. *Jurnal Wahana Pendidikan Fisika*, Vol.2 No. 2: 71-76.



Effect of Stem Cell and Vitamin E for the Reduction of Liver Fibrosis

Sulaiman Shams*, Salman Khan, Muhammad Ayaz, Haider Ali Khan, Hammad Hassan

Department of Biochemistry, Abdul Wali Khan University Mardan-23200, Khyber Pakhtunkhwa Pakistan

Received: November 13, 2017

Accepted: January 12, 2018

ABSTRACT

Liver disease is seventh leading cause of death worldwide. In the past, liver transplantation was thought to be the only treatment for the last stage liver disease but currently stem cells therapy is an alternative method for the treatment of liver disease. So mesenchymal stem cells (MSCs) transplantation is one of the best tool for treatment of liver disease. The aim of the current study was to investigate the combined effect of vitamin E (Vit E) and MSCs on liver fibrosis. Liver damage was induced in male albino mice intraperitoneally with carbon tetrachloride (CCl₄) twice a week for six weeks. Mice bone marrow derived MSC was cultured in vitro and then transplanted to CCl₄ injured mice through their tail vein injection. Two weeks after MSCs transplantation, all group of mice were examined. The morphological result showed that the combined therapy of Vit E (orally) and MSCs transplantation have significant therapeutic effect on CCl₄ injured mice as compared to Vit E and MSCs individually. Biochemical data also showed that serum ALT and bilirubin level were found to be significantly decreased by the combined treatment of Vit E and MSCs as compared to those mice which received MSCs and Vit E separately. MSCs and Vit E treated mice combined showed a significant decrease in liver weight, closely to normal. Reverse transcriptase PCR result also confirmed a significant anti fibrotic effect of Vit E combined with MSCs transplanted mice on liver fibrosis as showed by down-regulating apoptotic marker (Bax) expression and increasing the expression of anti-apoptotic marker (Bcl-xl). Therefore Vit E along with MSCs have strong therapeutic potential on liver fibrosis in CCl₄ injured mice.

KEYWORDS: Stem Cells, Liver, Fibrosis, Vitamin E, Mice

INTRODUCTION

Mesenchymal stem cells are one of the main type of adult stem cells, which reside in cord blood, bone marrow and adipose tissue. Recently MSCs originate as an promising applicant for hepatic regeneration [1,2]. The stem cells research has a great impact on human community because they could generate cures and will provide treatment for everything from heart disease to cancer. MSCs elucidate their therapeutic potential from both pre-clinical and clinical studies [3]. Other therapeutic uses of stem cells include neuron regeneration, bone repair, drug examination, repair of damage muscle, treatment of spinal cord injury, cancer therapy and other cell based therapy, etc. Stem cells might brought a bright future for the therapeutic world, as a regenerative medicine, for various diseases that are considered as incurable today. Due to their high regenerative ability and funding stem cell research, it will be possible to open a new way of stem cell therapy in the form of organ development and replacement of lost tissue such as hairs, tooth and retina cells [4].

The liver is a vital organ in the body which perform important role in the body as homeostasis, manufacturing and storing of glucose and protein, detoxification and immune defense [5]. Thus the liver has a significant regenerative ability but due to long time liver injury, it finally lead to liver fibrosis [6]. Liver fibrosis is a therapeutic response to chronic liver damage in which the accumulation of extracellular matrix (ECM) occur, mainly in liver parenchyma cells. Different substances like virus, cholestasis, toxic or metabolic diseases, autoimmune and nonalcoholic steatohepatitis may cause liver injury [7]. In advance phases of liver fibrosis, liver contains six times more ECM compared to normal liver, which contain different types of collagens (types I, II and IV), hyaluronic, laminin, Fibronectin, elastin, undulin, and proteoglycans [8]. The operational treatment for liver fibrosis was orthotropic liver transplantation (OLT). With the passage of time organ donation was not under the demand due to which the annual number of deaths and sickness increased and OLT become ineffective [9]. Besides organ donation there were some others limitations like the risk of operation, rejection of post transplantation, recurrence of already

*Corresponding Author: Dr. Sulaiman Shams, PhD., Stem Cell Regenerative Medicine lab, Department of Biochemistry, Abdul Wali Khan University Mardan-23200, Khyber Pakhtunkhwa Pakistan.
Email: Sulaiman@awkum.edu.pk Contact: +92-3339202865

existing liver diseases and high cost of organ. So cell based therapy was suggested as alternative to OLT [10]. MSCs was suggested as potential therapeutic options for liver degenerative diseases like fibrosis and cirrhosis due to their differentiation and immune regulatory properties. MSCs has also some interesting features like the secretion of antifibrotic molecules such hepatocytes growth factors (HGF). Besides this, MSCs have no ethical issues and have a safer profile in term of oncogenicity as compared with embryonic stem cells (ESCs) [11].

In a series of liver diseases, liver injury is caused by direct attack of reactive oxygen species (ROS) on important biomolecules, affecting their functions and sustainability of cells. ROS disrupt membrane structure and function by lipid peroxidation of these membrane polyunsaturated fatty acid [12]. Various types of antioxidant have been reported to treat and prevent liver diseases in case of oxidative stress. The therapeutic potential of antioxidants as adjuvants including Vit E has shown some useful effects in the treatment of liver ailments like hepatitis C, liver fibrosis and cirrhosis [13, 14]. Vit E is a strong antioxidant, commonly found within the phospholipid bilayer of the plasma membranes where it has a key biological role in defending polyunsaturated fats and other parts of the cell membrane from free radicals oxidation. Vit E is a good antioxidant due to its structure, it provides hydrogen to free radicals from the hydroxyl group situated on its ring structure and rendering them inactive [15]. It also acts as scavenger for ROS distracting their activity in different tissues. Vit E has the ability to prevent liver damage from oxidative stress produced by ROS and other chemicals [16]. We employed CCl₄ induced liver injured model and examined the combined effect of Vit E and MSCs in liver fibrosis reduction. The current research was performed to determine the therapeutic potential of Vit E and MSCs on CCl₄ induced liver fibrosis in animal model.

MATERIALS AND METHODS

Animals

Female albino mice (Balb/c), six to eight weeks age, weighting between 26-30 gm were bought from university of Peshawar (department of pharmacy), Pakistan. All the experimental mice were kept in a permitted animal facility with 12h light/dark cycle at constant temperature (25°C).

Ethical approval

All the animal handling and experimental procedure were approved from the bioethics committee from the department of Biochemistry Abdul Wali Khan University Mardan Pakistan.

Preparation of BM-derived MSCs culture

The mice were anesthetized with a lethal dose of chloroform and the bone marrow was harvested from the femur and tibial bone of six weeks male albino mice. These BM-derived MSCs was cultured prepared culturing medium called Dulbecco's modified Eagle's medium (DMEM, GIBCO) along with 100 units/ml penicillin and 100 µg/ml streptomycin (CAPRICON) and 10% fetal bovine serum (BIOWEST). Cell culture were maintained in CO₂ incubator (5%) at 37 °C for 3 days. On 3rd days of incubation, removed all old media and wash with PBS (two times) to remove non adherent cells (hematopoietic stem cells) and allow the adherent cells (mesenchymal stem cells) attach and add fresh medium to 25 mm culture plate and return to incubator. Examine the cultured cells daily under inverted phase contrast microscope. Continue this process until the MSCs reached to 70%-90% confluency. These cultured MSCs were transplanted to CCl₄ injured mice through injection in their tail vein.

Establishment of animal model

In this study, five different group of mice were prepared, each contains six mice. Group I were injected olive oil alone (intraperitoneally) two time a week for 6 weeks, at a dose of 1 µl/g body weight. Group II received a mixture of CCl₄ and olive oil (1:1 ratio) intraperitoneally at a dose of 1 µl/g body weight twice a week for 6 weeks. Group III that received CCl₄ by the same way as mention above, were transplanted MSCs at a dose of 1x10⁶ cells/100 µl PBS/mice through their tail vein. Group IV in addition to receiving CCl₄, were given Vit E orally at a dose of 16mg/100g body weight for two weeks. Group V also involved CCl₄ treated mice, that received both Vit E orally and MSCs through their tail.

Vitamin E and MSCs administration

For MSCs transplantation, first the cells were detached from culture flask with trypsin EDTA and then centrifuged. The centrifuged pellet (MSCs) were diluted in about 100-200 µl of PBS. This diluted MSCs in 1ml syringe were transplanted to CCl₄ injured mice through their tail vein, at a dose of 1x10⁶ cells/ 100 µl PBS/ mice. Vit E was administrated orally to CCl₄ injected mice at dose of 16mg/100g body weight of the mice.

Mice Scarification

After 15 days of transplantation, the mice was sacrificed, blood and liver were collected for further analysis. The intensity of liver fibrosis was measured morphologically, biochemically and at molecular basis by physical examination of liver, blood serum tests and at RNA level by PCR analysis.

Alanine transaminase (ALT) and bilirubin examination

Animals were given anesthetic with pentobarbital for collection of blood sample from their hearts of each group of experimental mice. For serum isolation, the blood was centrifuged at a speed of 8000 rpm for 10 mints. The serum was analyzed for ALT and bilirubin level determination through spectrophotometer, using Vitro scient kit.

PCR analysis

From the homogenates of liver tissue total RNA was isolated using TRizol kit (INVITROGEN) and cDNA were synthesized with reverse transcriptase PCR using 2 μ g of RNA (Invitrogen kit). cDNA was then amplified through PCR using standard PCR kit with specific pairs of primer. In this study specific pair of primer was used to determine the expression level of different gene marker such as Bax (apoptotic marker) and Bcl-xl (antiapoptotic marker), in mice model. β -actin (housekeeping gene) was used as a reference gene and their expression was checked in all group. The sequence of the primers, their temperature and product size were shown in the table below (Table 1). The PCR protocol consisted of 95°C for 5 minutes (35 cycles), 56-58°C for 30 sec, and 72°C for 30 sec, followed by a final extension for 10 minutes at 72°C. Gene expression levels of apoptotic marker (Bax) and anti-apoptotic marker (Bcl-xl) were analyzed by running PCR product on agarose gel and detected with ethidium bromide. β -actin was used as reference gene.

Table 1: Primer list with their sequence, annealing temperature and product size

PCR primer	Sequence	Annealing temperature	Size in bp
Bax(F)	TGGAGATGAACTGGACAGCA	58°C	152
Bax(R)	CAAAGTAGAAGAGGGCAACCAC		
Bcl-xl(F)	TTCGGGATGGAGTAAACTGG	58°C	150
Bcl-xl(R)	AAGGCTCTAGGTGGTCATTGAG		
β -actin(F)	GCTGTGTTGTCCCTGTATGC	58°C	106
β -actin(R)	GAGCGCGTAACCCTCATAGA		

Statistical Analysis

Data were statistically analyzed using SPSS version 16.0. $P \leq 0.05$ is considered statically significant.

RESULTS

Comparative anatomy of liver morphology

Comparative liver morphology showed that the color of group II mice liver were more scar, brownish black color and shrink architecture in appearance (Fig. 1b). Groups V mice liver showed more similarities to group I (normal mice liver). The liver colors of group V mice were closed to radish black with minorscar as compared to group III and IV (Fig. 1). These morphological results described that group V mice liver presented high reduction in fibrosis on CCl₄ injured mice.

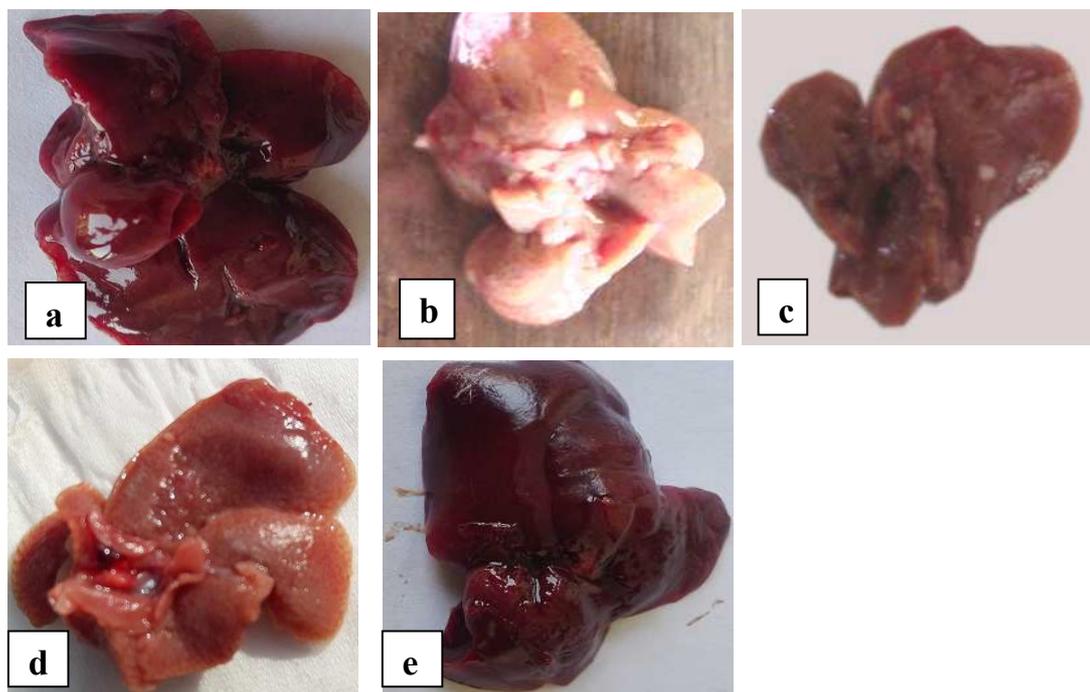


Figure 1: Comparative liver morphology of group v (e) showed high reduction on liver fibrosis in CCl₄ injured mice (a) due to strong therapeutic effect of Vit E and MSCs combintly as compared to group III (c), group IV (d).

Effect on liver weight

The result showed that the liver weight of CCl₄ treated mice (3.00gm) was significant increased as compared to normal liver. In group V mice the liver weight was significantly reduced (2.79gm, closely to normal), by the combined treatment of Vit E and MSCs, as compared to group III and IV (Table 2). Group IV mice liver weight (2.95gm) showed very slightly reduction due to less therapeutic potential of Vit E orally. Thus therapeutic power of Vit E and MSCs combintly was significantly high on CCl₄ injured mice, compared to Vit E and MSCs individually.

Tab 2: Effect of Vit E and MSCs on liver weight

Groups of mice	Group I	GroupII	GroupIII	GroupIV	Group V
weight in gm	2.71	3.00	2.86	2.95	2.79

Biochemical examination

To analyze the combined treatment effect of Vit E and MSCs on liver fibrosis, serum ALT and bilirubin level was studied in all experimental mice model. In CCl₄ injured mice ALT (290.52 units/L) and bilirubin (1.61 mg/dl) level was very high as compared to normal mice. Serum ALT level was significantly lowered by the combined treatment of Vit E and MSCs in group V mice (130.23 units/L) as compared to group III (170.42 units/L) and IV (260.52 units/L) (Fig. 2A). Likewise, serum bilirubin level in group V mice (0.85 mg/dl) was significantly lower than group III (1.36 mg/dl) and group IV mice (1.43 mg/dl), as shown in the figure (Fig. 2B). Collectively, these results clearly indicate that the combined therapeutic effect of Vit E and MSCs have high recovery on liver function in CCl₄ injured mice than either of Vit E or MSCs alone.

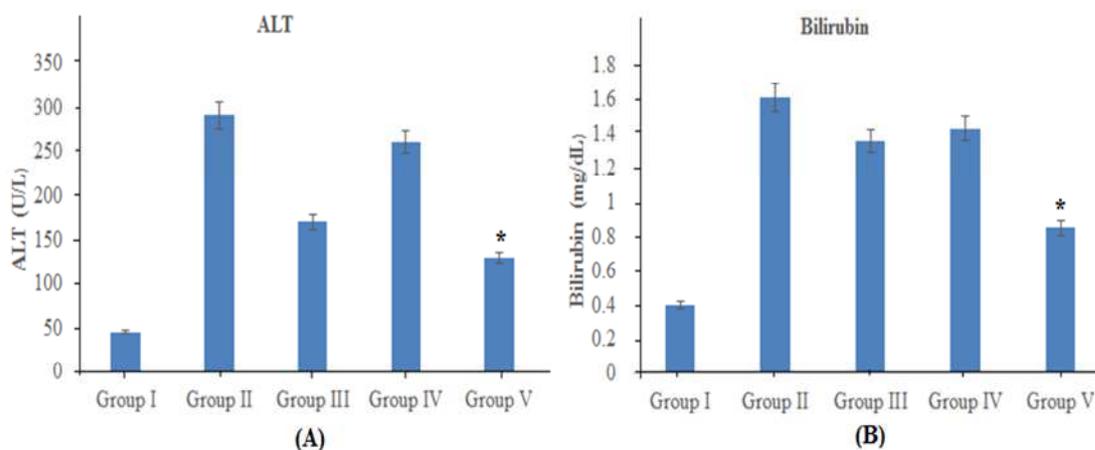


Figure 2: Biochemical examination of serum showed ALT and bilirubin level were significantly reduced in group V mice due to strong therapeutic effect of Vit E and MSCs compliantly as compare to group III and IV.

Gene expression analysis

The expression level of apoptotic and anti-apoptotic marker in all experimental groups were analyzed by using reverse transcriptase PCR. In this study β -actin is used as a standard and the expression level of other marker were compared with it. The expression of apoptotic marker (Bax) was very high in group II mice as compared to all other group. Bax expression was downregulated in Vit E and MSCs treated mice (Group V), compared to group III and IV (Fig. 3). In contrast to Bax marker, the expression level of antiapoptotic marker (Bcl-xl) in CCl₄ treated mice was downregulated. The Bcl-xl gene expression level in group V was significantly high as compared to group III and IV.

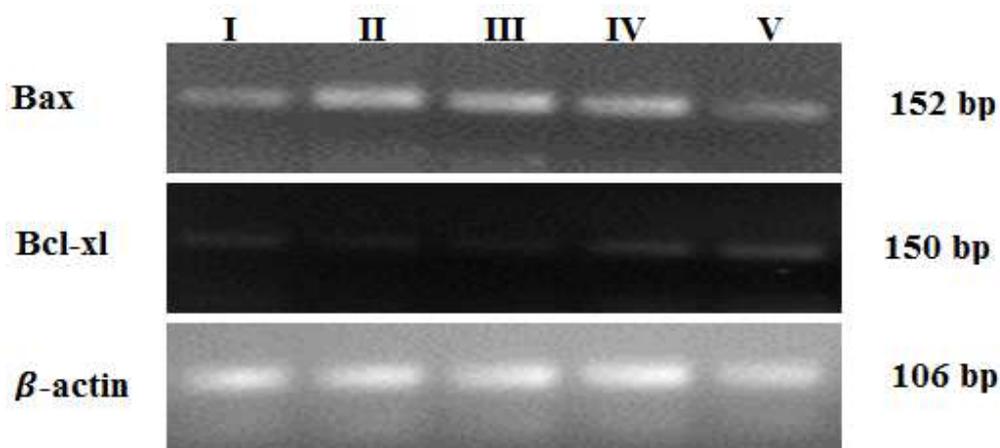


Figure 3: Expression of Bax, Bcl-xl and β -actin; line 1: group I mice, line 2: group II mice, line 3: group III mice, line 4: group IV mice, line 5: group V mice.

DISCUSSION

Liver fibrosis is one of the leading cause of death world-wise in which disruption occur in the architecture of hepatic tissue and extracellular matrix accumulate in response to chronic liver injury [17]. Chronic injury of the liver may be caused due to viral hepatitis, autoimmune, cholestatic, toxic compound, metabolic disorders such as nonalcoholic steatohepatitis[4]. CCl₄ is a toxic chemical which produces damage to the liver. When CCl₄ is given repetitively at low doses it causes liver fibrosis. The repetitive doses of CCl₄ produces rings of wound healing as a result hepatic stellate cells activation due to which imbalance occur between production and degradation of ECM

and liver fibrosis is developed [18]. Stem cell regenerative therapy is an alternative way for curing liver fibrosis. MSCs have a basic property to reduce different diseases such as fibrosis and also improve the function of lung, liver, heart, and brain when administered in these organs [19]. In the current study, BM-derived MSCs was isolated from femer and tebial bone of male albino mice and was cultured. These MSCs combined with Vit E were transplanted to CCl₄ injured mice tail vein.

In stem cell therapy, allogeneic or autologous stem cells were transplanted to the doner body (patient) through systemic infusion or by local delivery. For example in cancer such as leukemia HSCs transplantation has been used for many years [20]. Other most frequently used stem cells therapy, which have been recently reported, include marrow-derived MSCs. These MSCs have extensive spectrum of application therapy such as cardiovascular disease, lung fibrosis therapy, treatment of spinal cord injury and bone and cartilage therapy [3]. It has been investigated that locally migrated bone marrow cells can be useful in treating coronary artery disease, by generating de novo myocardium, and therefore have a dramatic improvement in worldwide heart activity [21].

Fibrotic scar produced during liver fibrosis, which is mostly made of type I and III collagen, proteoglycans etc[22]. It has been reported in our previous manuscript that the liver color of healthy mice is reddish black while that of CCl₄ induced liver injured mice was brownish- black colors [23]. In this study the liver morphology in regard to their color showed that group V mice have more similarity to group I due to strong therapeutic effect of Vit E and MSCs combined as compared to group III and IV mice (Fig. 1). This morphological result showed that the therapeutic effect of Vit E and MSCs combined was significantly high on CCl₄ injured mice as compared to Vit E and MSCs individually. Furthermore, mice treated with CCl₄ show a more increase in liver weight, compared to normal liver. MSCs and Vit E combined therapy reduces this increase in liver weight, caused by CCl₄ as shown in the table (Table 2).

The liver contains several important enzymes for drugs degradation and detoxification of dangerous materials. CCl₄ toxicity enhance the level of ALT and AST in blood and give rise to hepatocytes necrosis in rats [24]. In the current study, the effect of Vit E and MSCs were studied on the serum ALT and bilirubin level in mice. Vit E and MSCs transplantation individually restored the level of liver enzymes but the combined effect of Vit E and MSCs (Group V) have significant reduction on liver enzyme, closely to usual level as compared to group III and IV (Fig. 2).

PCR analysis showed that the expression level of *Bax*, which is an apoptotic markers is upregulated in CCl₄ injured mice while that of anti-apoptotic marker (*Bcl-xl*) was downregulated[23]. These apoptotic markers are the indicator that clearly demonstrates liver disease. These expression level of the apoptotic and anti-apoptotic markers were reversed after transplantation of Vit E and MSCs. Vit E with MSCs combined decreases the expression of Bax and increases the expression of Bcl-xl marker in group V mice as compared to group III and IV. Vit E combined with MSCs transplantation significantly restore the abnormal expression of Bax as compared to MSCs and Vit E administrated separately in CCl₄ treated mice (Fig. 3). Thus it is cleared that the combined therapy of Vit E and MSCs have high therapeutic effect on CCl₄ injured as compared to Vit E and MSCs individually. From all the results, it was concluded that the individual administration of Vit E and MSCs showed decrease effect on the reduction of liver fibrosis in CCl₄ injuredmice as compared to the combined therapy of Vit E and MSCs. Administration of Vit E combined with MSCs bring back the fibrotic liver to its normal state. Vit E acts as a strong antioxidant by increasing the antioxidant activity of liver enzyme, glutathione peroxidase and thioredoxinreductase, which neutralize free radicals and thus reduces the rate of liver hepatocyte damage. Therefore combined therapy of Vit E and MSCs revealed as the hopeful source of stem cells therapy for liver fibrosis.

Conclusion

Currently a very novel treatment option for fibrotic liver disease is the use of stem cell therapy. The present study suggested that Vit E and MSCs combined have strong therapeutic potential on the reduction of hepatic fibrosis in CCl₄ injured animal. VitE enhancing the antioxidant activity of liver enzyme such as glutathione peroxidase and thioredoxin reductase, which neutralize free radicals and thus reduces the rate of liver hepatocyte damage in CCl₄ injured mice. Similarly, MSCs transplantation enhancing liver function by stimulating hepatocyte regeneration in CCl₄ injured mice. Thus from morphological, biochemical and molecular studies, it was concluded that Vit E combined with MSCs transplantation have high therapeutic effect on reduction of liver fibrosis as compared to the individual effect of Vit E and MSCs. So it can be concluded that stem cells research has a valuable impact on human society as it would cures and provide treatment for every type of human disease i.e. from heart disease to cancer.

Competing Interest

All the authors declared that they have no competing interest.

Acknowledgment

We thank our colleague Dr. Abdul Sajjid, College of veterinary science, Abdul Wali Khan University Mardan, Pakistan for helping in animal experiment.

REFERENCES

- [1] Caplan, A. I. and J. E. Dennis, 2006. Mesenchymal stem cells as trophic mediators. *Journal of cellular biochemistry*, 98: 1076-1084.
- [2] Parekkadan, B., D. P. Van, K. Suganuma, E. A. Carter and F. Berthiaume, 2007. Mesenchymal stem cell-derived molecules reverse fulminant hepatic failure. *PloS one*, 9:1-6.
- [3] Barry, F.P. and Murphy, J.M., 2004. Mesenchymal stem cells: clinical applications and biological characterization. *The international journal of biochemistry & cell biology*, 36(4): 568-584.
- [4] Avasthi, S., Srivastava, R.N. Singh, A and Srivastava, M, 2008. Stem cell: past, present and future--a review article. *Internet Journal of Medical Update*, 3(1): 22-31.
- [5] Fikry, H., A.G. Sara and B. Walaa, 2016. Therapeutic Potential of Bone Marrow-Derived Mesenchymal Stem Cells on Experimental Liver Injury Induced by Schistosomamansoni: A Histological Study. *Int J Stem Cells*, 9(1): 96-106.
- [6] Friedman, S. L. 2004. Mechanisms of disease: mechanisms of hepatic fibrosis and therapeutic implications. *Nature clinical practice Gastroenterology & hepatology*, 1: 98-105.
- [7] Friedman, S. L., 2003. Liver fibrosis—from bench to bedside. *Journal of hepatology*, 38: 38-53.
- [8] Bataller, R. and D. A. Brenner, 2005. Liver fibrosis. *Journal of clinical investigation*, 115(2): 209-218.
- [9] Forbes, S. J., 2008. Stem cell therapy for chronic liver disease—choosing the right tools for the job. *Gut*, 57: 153-155.
- [10] Francoz, C., J. Belghiti and F. Durand, 2007. Indications of liver transplantation in patients with complications of cirrhosis. *Best Practice & Research Clinical Gastroenterology*, 21: 175-190.
- [11] Prockop, D. J., M. Brenner, W.E. Fibbe, E. Horwitz, K. Blanc and D.G. Phinney et al., 2010. Defining the risks of mesenchymal stromal cell therapy. *Cytotherapy*, 12: 576-578.
- [12] Sies, H., 1986. Biochemistry of oxidative stress. *Angewandte Chemie International Edition*, 25: 1058-1071.
- [13] Emerit, I., C.Y. Huang, F. Serejo, P. Filipe, A. Fernandes and A. Costa et al., 2005. Oxidative stress in chronic hepatitis C: a preliminary study on the protective effects of antioxidant flavonoids. *Hepato-gastroenterology*, 52: 530-536.
- [14] Esrefoglu, M., 2012. Oxidative stress and benefits of antioxidant agents in acute and chronic hepatitis. *Hepatitis monthly*, 12: 160-165.
- [15] Li, A.N., S. Li, Y.J. Zhang, X.R. Xu, Y.M. Chen and H.B. Li, 2014. Resources and biological activities of natural polyphenols. *Nutrients*, 6: 6020-6047.
- [16] Hickman, I. and G. Macdonald, 2007. Is vitamin E beneficial in chronic liver disease? *Hepatology*, 46: 288-290.
- [17] Friedman, S. L. 2008. Hepatic fibrosis-overview. *Toxicology*, 254: 120-129.
- [18] Starkel, P. and I. Leclercq, 2011. Animal models for the study of hepatic fibrosis. *Best practice & research Clinical gastroenterology*, 25: 319-333.
- [19] Rabani, V., M. Shahsavani, M. Gharavi, A. Piryaee, Z. Azhdari and H. Baharvand, 2010. Mesenchymal stem cell infusion therapy in a carbon tetrachloride-induced liver fibrosis model affects matrix metalloproteinase expression. *Cell biology international*, 34: 601-605.
- [20] Tabbara, I.A., Zimmerman, K. Morgan, C and Nahleh, Z, 2002. Allogeneic hematopoietic stem cell transplantation: complications and results. *Archives of internal medicine*, 162(14): 1558-1566.
- [21] Orlic, D., Kajstura, J. Chimenti, S. Jakoniuk, I. Anderson, S.M and Li, B et al., 2001. Bone marrow cells regenerate infarcted myocardium. *Nature*, 410(6829): 701-705.
- [22] George, J., M. Tsutsumi and S. Takase, 2004. Expression Of Hyaluronic Acid In N-Nitrosodimethylamine Induced Hepatic Fibrosis In Rats. *The International Journal Of Biochemistry & Cell Biology*, 36: 307-319.
- [23] Nasir, G. A., S. Mohsin, M. Khan, S. Shams, N.A. Ghazanfar, S.N. Khan and S. Riazuddin, 2013. Mesenchymal Stem Cells And Interleukin-6 Attenuate Liver Fibrosis In Mice. *Journal Of Translational Medicine*, 78: 1-7.
- [24] Yachi, R., O. Igarashi and C. Kiyose, 2010. Protective Effects Of Vitamin E Analogs Against Carbon Tetrachloride-Induced Fatty Liver In Rats. *Journal Of Clinical Biochemistry And Nutrition*, 47: 148-154.

The Socio-Economic Impact of Ngos Development on Beneficiaries in Khyber Pakhtunkhwa Province (Kp) of Pakistan

Anwarul Mujahid Shah¹, Wong Swee Kiong², Syed Arshad Ali Shah³, S.M. Shah⁴

Department of Sciology and Gender Studies Bacha Khan University Charsadda, Pakistan¹
Faculty of Social Sciences, Universiti Malaysia Sarawak (UNIMAS)²
Department of Management Sciences Bacha Khan University Charsadda, Pakistan³
Faculty of Economics and Business University of Malaysia Sarawak⁴

Received: November 2, 2017
Accepted: January 15, 2018

ABSTRACT

This study focuses on the analysis of socio-economic impacts of Non-governmental Organizations (NGOs) development on beneficiaries in Khyber Pakhtunkhwa (KP) of Pakistan. In order to accomplish the task, the qualitative method has been adopted based on the triangulation method in the study. Three fundamental approaches comprising of Regime Theory, Agency Theory, and Theory of Change have been applied to examine the role of NGOs. The findings illustrated a fact that NGO in KP are the root of improving the standard of living of beneficiaries who are poor and socially separated. In opposition, some adverse impacts of these NGOs were found during the 9/11 incident when the beneficiaries were socially divided and poorly developed. However, these impacts do not take over the positivity of NGOs development in KP including the Aga Khan Rural Support Program (AKRSP) and such kinds of other NGOs.

KEYWORDS: Non-Governmental Organizations (NGOs), Khyber Pakhtunkhwa, socio-economic impact, Asian Development Bank, Aga Khan Rural Support Program.

1. INTRODUCTION

When the governments are unable to provide services to the individuals and communities due to the lack of resources or rational decision-making then Non-governmental organisations (NGOs) take the responsibility for the improvement in the region (Teegen, Doh, & Vachani, 2004).

In the Khyber Pakhtunkhwa (KP) where the development of NGOs has been a considerable alternative to the beneficiaries/refugees hit by war and/or natural incidences (Khan, Kurosaki, & Miura, 2011). KP is also formally known as the North-west Frontier Province (NWFP) where the military disturbances and fallout have been increasing over the decades (Bennett, 1998). After the Afghanistan war, these disturbances have been further increased that affected the people mental health illnesses and injustice and increased the ratio of KP beneficiaries (Ahmad, 2010).

At this stage, NGOs development could be effective to ensure the social and cultural justice on the humanitarian ground (Jazayery, 2003). As per the Theory of Justice (Rawls, 2009), the socially just efficient distribution of goods/services in a society through developing social contract improves the social situation of a region. By contrast, it is ambiguous to what extent these organisations may contribute positively to the incumbent KP beneficiaries' living.

This study examines the literature on the role of NGOs on beneficiaries in KP by identifying the socio-economic impact that has been seen over the past few years, as Khan, Kurosaki, & Miur (2011), Mietzner (2012), Hafiza, Shah, Jamsheed, & Zaman (2011) reinforce the adverse impact of NGOs. According to Teegen, Doh & Vachani (2004), in all over the Pakistan, there are several NGOs performing well. In opposition, the role of NGOs can be inescapable, particularly in KP (Sungi Development Foundation, 2005). Over the past one decade, the number of KP NGOs has increased (Tahir, 2014).

After the tribal governance failure, these NGOs started social activities in most of the regions of KP (Tahir, 2014). This increased the justice for beneficiaries and/or refugees and empower the marginalised, particularly women in accordance with their rights (Mehboob, 2011). It led the NGOs to the replication of community participation model for other support programs (Tahir, 2014).

The NGOs located in KP have launched various working system of socioeconomic development by developing the partnership with Pakistan government (Bennett, 1998). The major purpose behind these programs is to facilitate local residents including refugees/beneficiaries (Teegen, Doh & Vachani, 2004). Therefore, these NGOs have positive economic impact on beneficiaries in terms of fulfilling the gap of poverties but after the 9/11 incident, some NGOs in Pakistan fragmented the country' local education system and ultimately contributed to the high

social inequality that further accelerated the division in society (Talat, 2014). This small exposure reduces the importance of NGOs development as an alternative to the beneficiaries whether they live in any area.

The intended literature on socio-economic influences of NGOs on beneficiaries in KP does not present the real consensus on the effective/ineffective working of these institutions, particularly in this region. Based on this evaluation, the contemplated research paper focuses on the theory triangulation method in which different theories and perspectives are analysed to generate influential results in the context of NGOs for beneficiaries in KP.

2. RESEARCH METHODOLOGY

Three approaches are used in research named as qualitative, quantitative, and mixed qualitative approaches. Quantitative research approaches are focused on analyzing data quantitatively using the numerical analysis with the help of statistical tools (Creswell, 2013). Qualitative research approaches, on the other hand, are focused on the analyzing the data descriptively. These research approaches commonly use descriptive methods for interpreting the data such as content and thematic analysis (Patton, 2005). The mixed research approach is a combination of both qualitative and quantitative research approaches whereby both methods are used together to enhance the outcome and increase the validity of the research. This method includes both statistical and non-statistical analysis (Frels & Onwuegbuzie, 2013).

The research topic of this research has not been studied extensively before and has a significant gap in the literature. This research, however, uses qualitative research approach since it allows analysis of the qualitative material. This method is useful for obtaining rich information in short period of time (Patton, 2005).

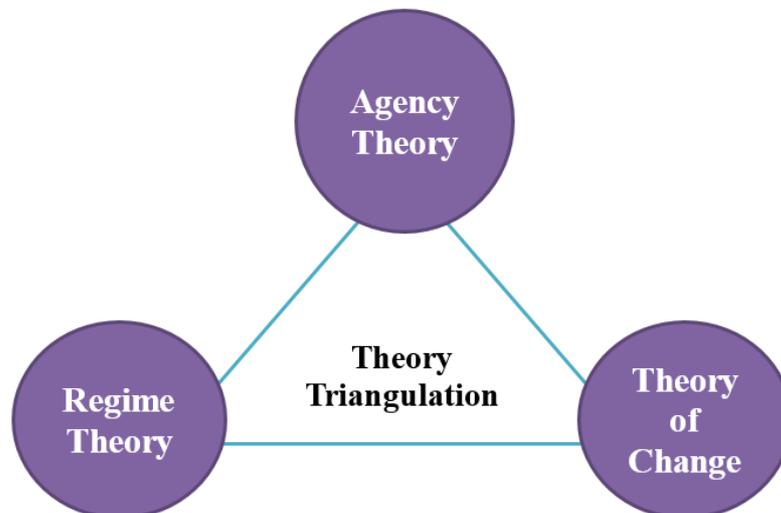
2.1. Data Collection

The present research used four research articles as source of secondary data for in-depth analysis supported by theoretical frameworks conducted in NWFP (old name of Khyber Pakhtunkhwa) and Pakistan. These include,

1. Assessing the role of government and non-government organizations (G0's\NGO's) towards poverty alleviation in the rural areas of NWFP (Pakistan) (Khan, 2002)
2. A critical analysis of communication strategies of NGOS, working for afghan refugees in NWFP by (Ayaz, A Critical Analysis of Communication Strategies of NGOs Working for Afghan Refugees in NWFP, 2005)
3. NGOs and Gender Development the case of AKRSP in District Chitral NWFP Pakistan (Hamayun, 2004)
4. Study on the Role of Media, NGOs and Civil Society in Promoting Pluralism in Pakistan (Sadrudin M. M., 2012)

2.2. Data Analysis

Triangulation is the method of enhancing validity in qualitative research while analyzing data from multiple perspectives (Bush, 2007). According to the nature of this research, the triangulation method opted for the study was Theory triangulation. This method involves adopting different theories for interpreting the data that in this case is collected from the secondary sources. The three theories selected for the analysis of the data include Theory of Change, Regime theory, and Agency Theory.



Theory of Change focuses on a particular methodology type for planning, participating, and evaluating in the NGOs for the promotion of social change. This theory focuses on long-terms objectives and then maps backwards for identification of essential preconditions (Carman, 2009).

Regime theory is defined by the international relations originated from the liberal traditions arguing the idea that international regimes or institutions affect the states behavior or behavior of international actors. This theory focuses on the postulation that cooperation within the anarchic system between states is achievable since regimes are by literal explanation instances of international cooperation (Ahmed & Potter, 2006).

Agency Theory reflects the conflicts of interests between people having varying interests in the similar assets. In other words, it highlights the relationship between principals and agents in terms of NGOs (Lan & Heracleous, 2010). The theory is concerned with resolving issues in agency relationships due to different risks such as unaligned goals.

3. RESULTS / KEY FINDINGS

3.1. Theory of Change and Impact of NGOs

The Theory of Change (2015) states a non-profit organization is responsible for promoting quality standards with a consideration of the application in the areas of sustainability, human rights, and social/economic changed. The research conducted by Sadruddin (2012) broadly highlighted the impact of NGOs development in KP. It indicated that NGOs are assisting the beneficiaries in KP in terms of promoting pluralism as well as diversity within and all over the Pakistan. The major contributions of such NGOs are in stressing the human values in the form of increasing liberty, equality, bonding, and brotherhood. In this regard, its social impacts are relatively strong compared to the economic benefits.

As per the Theory of Change, social and economic change is brought by the NGOs through effective initiative. Ayaz (2005) also supported this fact in his research by projecting that currently, the KP/NWFP' NGOs are focusing on improved communication strategies for Afghan refugees/beneficiaries. In opposition, the author stated that it is a complicated method, which may bring social issues in terms of conflicts that reduces the important of NGOs development within the region (Ayaz, 2005).

3.2. Regime Theory and Impact of NGOs

As per Regime Theory, liberal traditions might be helpful in developing international relations, but it requires the need of international institutions/regimes that help in changing the behavior of members (at national and individual levels) (Davies, 2002). Another study presented by Khan H (2006), revealed that NGOs operating in KP are mainly working as the regime of changing behavior of beneficiaries and local people through contributing to the women empowerment, which is included in the socioeconomic status. Thus, the major aim of the NGOs in KP is to make women liberalize and able to fight for their rights. Additionally, the provision of credit facilities and training has been positively affecting the economic activities of women in order to increase their income. However, it can only be successful if proper and regular monitoring are ensured by the NGOs.

3.3 Agency Theory and Impact of NGOs

Agency theory elaborates, foresees, and exerts limitation among the financial parties (Lan & Heracleous, 2010; Douglas, 2010). Considering agency theory, it is necessary that NGOs be provided with sufficient authority in terms of financial resources in order to have a potentially positive impact on the beneficiaries of KP. The research conducted by Khan (2002) highlighted this factor by projecting the case of alleviating poverty from KP. The research indicates that due to the traditional policy that was focused on providing resources to only rich areas resulted in low productivity, unemployment, and migration of workers in rural areas. The situation highlighted an agency problem whereby finances were not equally disseminated. However, after resolving the issues and eliminating traditional policies, NGOs played a significant role in eliminating poverty.

4. DISCUSSION

The findings reflect that the NGOs development in KP is essential since it has a positive socio-economic impact on beneficiaries/refugees in terms of promoting liberty, equality, and brotherhood (Sadruddin M. M., 2012). The findings of another research also identified that communication strategies used by the NGOs in KP/NWFP helps in improving the relationship with Afghan beneficiaries (Ayaz, 2005). These are vital for NGOs to bring change in accordance with the Theory of Change (Centre for Theory of Change, 2015). Mehboob (2011) also stated that the NGOs' development in KP is a prominent feature for social mobilization of beneficiaries that make them liberal to raise the voices. However, these actions of NGOs cannot be always effective in KP, as projected by Talat (2014) that the KP NGOs did not work effectively after the case of 9/11 and demotivated the beneficiaries socially and economically due to the educational and social distortive systems.

Considering the Regime Theory, it has been identified that NGOs in KP are the major regimes of developing international relations through changing the behaviors of beneficiaries and local individuals to be cooperative. Their major focus on women empowerment through launching Aga Khan Rural Support Program (AKRSP) has been the considerable strategy in the NWFP, as per Tahir (2014) illustrated, this not only reduced the gender discrimination through justice and equality, but it also increased beneficiaries/community' participation in different programs. In opposition, several studies have revealed that very few NGOs in KP are working progressively while most of them are not assisting the beneficiaries to grow socially and economically through the division of individual groups of local people and beneficiaries (Wolf, 2001).

According to the agency theory, the dilemmas in the agency exist when a conflict of interest is evident. The same was observed in the research conducted by Khan (2002), which determined that conflict of interest was the key reason that poverty alleviation was not achieved. The theory suggests that this is due to multiple principles conducting the project resulting in different objectives, which culminates the desire of fulfilling all the objectives. However, this is not accomplished and partial fulfilment is observed. According to Khan (2002) in coherence with the agency theory, specific targets should be laid as observed in the project undertaken in his research since this specificity allowed success as observed in the case of village development. In addition, Khan (2002) also indicated that after identifying that traditional policies are developing discrepancies in the objectives, government initiated working with NGOs giving them authority, which resulted in alleviation of poverty and less poor society for KP beneficiaries. NGOs have also been observed to play a significant role in developing KP especially the rural area as evident by agency theory soon after comprehending that traditional policies are a waste of time.

This study reinforces the claim of Talat (2014) and other researchers who have stated that NGOs have both positive and adverse impacts on beneficiaries in KP, which create an ambiguous situation for government either to increase partnership with them or eliminate them to work as alternative. This is because if the situation of ineffective working of the NGOs in KP for beneficiaries is observed then the state government is responsible for making rational decisions. Further, this research is an effort to disclose the greater extent of positive impacts of NGOs development in the case of Afghan refugees that changes the people attitude towards the contribution of these organizations.

5. CONCLUSIONS

The analysis indicated that NGOs have both positive and negative impact on the beneficiaries of KP. For instance, researcher projected that focusing on the theory of change NGOs have observed to be of the causes of promoting pluralism as well in KP. This has been made possible by working on the human values and increasing liberty, equality, bonding and brotherhood. In addition, NGOs have been observed to play a significant role in developing KP especially in rural area especially the rural area as evident by agency theory soon after comprehending that tradition policies are waste of time. regime theory highlight that NGOs have observed to be influential positively in term of economic and social development through the inclusion of changing the behavior of members. In addition theories also identify the role of NGOs in developing the positive relationship with Afghan beneficiaries. However, the research also highlighted the role of the NGOs had declined after the incidents of 9\11. This sudden fall in the passionate endeavors of NGOs has demotivated the beneficiaries of KP both socially and economically.

6. RECOMENDATIONS

It is recommended that researchers willing to conduct research on this topic focus on a quantitative research since a potential lack of numerical analysis have been observed. On the other hand, it is necessary that the opinion of NGOs and beneficiaries should be noted in terms of the attempts made by NGOs and regarding their sudden decline. Besides this, a difference of the role of NGO could also be observed in the context of the new government in KP.

REFERENCES

- [1] Ahmad, M. (2010). Implications of the war on terror for Khyber Pukhtunkhwa, Pakistan. *Journal of Critical Globalization Studies* 3, 102-113.
- [2] Ahmed, S., & Potter, D. M. (2006). *NGOs in international politics*. Bloomfield: Kumarian Press.
- [3] Ayaz, M. (2005). *A Critical Analysis of Communication Strategies of NGOs Working for Afghan Refugees in NWFP*. Peshawar: University of Peshawar.
- [4] Bennett, J. (1998). *Development Alternatives: NGO, Government Partnership in Pakistan*. DEVELOPMENT-ROME- 41, 54-57.

- [5] Bush, T. (2007). Authenticity in research—reliability, validity and triangulation. In *Research methods in educational leadership and management* (p. 91)
- [6] Carman, J. G. (2009). The accountability movement: What's wrong with this theory of change? *Nonprofit and Voluntary Sector Quarterly*.
- [7] Centre for Theory of Change. (2015). Center for Theory of Change. Retrieved November 3rd, 2016, from <http://www.theoryofchange.org/>
- [8] Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications
- [9] Davies, J. S. (2002). Urban Regime Theory: A Normative-Empirical Critique. *Journal of urban affairs* 24(1) , 1-17.
- [10] Douglas, K. P. (2010). Agency Perspectives on Ngo Governance. *Journal of Management Research* , 2 (2), 1-11.
- [11] Frels, R., & Onwuegbuzie, A. (2013). Administering quantitative instruments with qualitative interviews: A mixed research approach . *Journal of Counseling & Development*, 91 (2), 184-194.
- [12] Hafiza, N. S., Shah, S. S., Jamsheed, H., & Zaman, K. (2011). Relationship between rewards and employee's Motivation in the non-profit organizations of Pakistan. *Business Intelligence Journal* 4(2), 327-334.
- [13] Hamayun, K. (2004). NGOs and Gender Development the case of AKRSP in District Chitral NWFP Pakistan. *The Journal of Humanities and Social Sciences University of Peshawar*, 12 (1).
- [14] Jazayery, L. (2003). The migration-development nexus: Afghanistan case study. *The Migration-Development Nexus*, 207-32.
- [15] Khan, H. (2006). NGOs and gender development, the case of AKRSP in district Chitral, NWFP, Pakistan. *The Lahore Journal of Economics* 11(1), 81-98.
- [16] Khan, H. U., Kurosaki, T., & Miura, K. (2011). The Effectiveness of Community-Based Development in Poverty Reduction: A Descriptive Analysis of a Women-Managed NGO in Rural Pakistan. Center for Economic Institutions (CEI) Discussion Paper 4.
- [17] Khan, R. (2002). Assessing the role of government & non-government Organizations (G0's i NGO's) towards poverty alleviation in the rural areas of NWFP (Pakistan). Peshawar: University of Peshawar.
- [18] Lan, L., & Heracleous, L. (2010). Rethinking agency theory: The view from law. *Academy of management review*, 35 (2), 294-31.
- [19] Mehboob, S. R. (2011). Governance and Militancy in Pakistan's Khyber Pakhtunkhwa Province. CSIS.
- [20] Mietzner, M. (2012). Indonesia's democratic stagnation: anti-reformist elites and resilient civil society. *Democratization* 19(2), 209-229.
- [21] Patton, M. Q. (2005). *Qualitative research*. John Wiley & Sons, Ltd..
- [22] Rawls, J. (2009). *A theory of justice*. Harvard university press.
- [23] Sadruddin, M. M. (2012). Study on the Role of Media, NGOs and Civil Society in Promoting Pluralism in Pakistan. *Dialogue* , 7 (2), 161.
- [24] Sungi Development Foundation. (2005, November 19th). The Role of NGOs in Mobilizing the Communities. Retrieved November 3rd, 2016, from world bank. or: <http://siteresources.worldbank.org/INTPAKISTAN/Resources/Pak-EQ-Session3-1.pdf>
- [25] Tahir. (2014, October 29th). List Of NGOs Working In Peshawar KP. Retrieved November 3rd, 2016, from ilm.com.pk: <http://ilm.com.pk/pakistan/pakistan-information/list-of-ngos-working-in-peshawar-KP/>
- [26] Talat, K. (2014, May 13th). NGOs or NO GOOD ORGANIZATIONS - A critical analysis of NGO impact on Pakistan and other countries. An analysis of NGOs modus operandi and their influence.
- [27] Teegen, H., Doh, J. P., & Vachani, S. (2004). The importance of nongovernmental organizations (NGOs) in global governance and value creation: An international business research agenda. *Journal of International Business Studies* 35(6), 463-483.
- [28] Wolf, A. T. (2001). Transboundary waters: Sharing benefits, lessons learned." International Conference on Freshwater (Hrsg.): Thematic Background Papers. International Conference on Freshwater.



Factors influencing Organizational Performance in Public Hospitals of Pakistan

Dr. Asad Afzal Humayon¹, Noor ul ain Ansari², Tariq Umer Khan³, Muhammad Iqbal⁴,
Adiba Latif⁵, Shoaib Raza⁶

^{1,5,6}COMSATS institute of Information Technology, Vehari, Pakistan

²COMSATS institute of Information Technology, Virtual Campus, Pakistan

³Director PCSIR, research laboratory, Skardu, Pakistan

⁴Karakoram International University Gilgit Baltistan

Received: November 2, 2017

Accepted: January 2, 2018

ABSTRACT

This study pondered light on factors influencing organizational performance in South Punjab Hospitals. The purpose of this study was to check the organizational performance and the most significant factors that influence the performance in three districts public hospitals (Vehari, Lodhran, and Khanewal). The researcher used three factors of staff motivation, innovation, and management involvement to analyze the organizational performance in hospitals. This study gathered data from a sample of 90 employees in public hospitals. The results showed that there was a significant positive relationship among variables. The multiple regression results found that innovation and management level were strong significant predictors of organizational performance. However, staff motivation was not a significant predictor of organizational performance. Limitations and future directions were also discussed in this study.

KEY WORDS: Staff motivation, Innovation, Management involvement, Public hospitals, Pakistan

INTRODUCTION

Hospital industry has become a highly competitive and speedily growing service industry around the world. The biggest challenge faced by hospital industry is to measure and retain the organizational performance. Hospitals are now crucial and an effective service system for the health and well-being of the public [30]. Organization demands to lie on employees in hospitals are increasing when the whole industry is restructuring, and reforming their reorganizations at national and regional level[27]. Therefore, in order to achieve the organization performance, there must be engagement of employees from all sides. It will not only allow better hospital patients but also less expensive care of patients.

Pakistan hospitals are facing serious issues in service delivery [24]. There are multiple reasons that contribute to these issues. This sector is bearing from fewer professionals including doctors and nurses[4]. Lack of medicine in hospitals, lack of involvement of employees in their job and spend time in other activities, and absence of management involvement to monitor and evaluation the system is affecting the organization performance [24]. Today administration of employees is a great challenge at organizational levels[27]. Therefore, human resources are well developed in association with the organizational goals and objectives[30]. Hence, success of the organizations depends on the quality of the employees that runs every day affairs of the organizations [25].

Objectives of the study

The objectives of this study are to: (1) observe the relationship between staff motivation and organizational performance; (2) examine the relationship between innovation and organizational performance; and (3) determine the relationship between management involvement and organizational performance.

Research questions

1. Is there any relationship between staff motivation and organizational performance?
2. Does innovation has a relationship with organizational performance?
3. Is there any relationship between management involvement and organizational performance?

*Corresponding Author: Shoaib Raza, COMSATS institute of Information Technology, Vehari, Pakistan.
Email: shoaib.raza.rs@gmail.com

Rationale of the study

Government of Pakistan has been struggling many ways since last decade to make public hospitals more performing. Still there are many failings and challenges which are currently faced by the Public hospitals. Most of the issues are poor administration, shortage of medicine, deficiency of assets, lack of staff, and more motivation in private practice of doctors [18]. These problems give further justification to perceive the issues with the performance of public hospitals. The research has noticed that there is potential research gap to identify the organizational performance in public hospitals.

Problem statement

As now Pakistan is in progress to develop health services in government sector. Pakistan had launched the Pakistan's vision 2025 to provide better performance in the hospitals[20]. It means that this health sector will be failed if they are not taking the aspect of organizational performance seriously. The aim of this study is to inform policy makers about the drivers of organizational performance. In this study, the researcher identified factors that can improve performance of public hospitals. Three factors are focused namely staff motivation, innovation, and management involvement to fill the gaps in the public hospitals that have not yet been studied, within context of hospitals' staff in South Punjab, Pakistan.

Significance of the study

This study is significant in achieving experience and develops more knowledge to identify the strength and weakness of the public hospitals. Public hospitals can get some benefits to improve their performance level for the future. In addition to it can help the organization to ensure the employee motivation and friendly policy to increase performance.

REVIEW OF LITERATURE

Organizational Performance

Organizational performance is a central and fundamental feature that should be focused in details. It is a frequent processes that attended by the organization in order to guarantee the performance of the organization is still succeeding and growing [15]. Organizations performance is a process to increase the effectiveness of an organization and the goodness of its employees through intended planned [7]. Other study said that organizational performance is the outcome that reflects the organization efficiencies or effectiveness in terms of company image or financial performance [17]. Faiz (2015) reported that organizations should estimate their internal and external factors which supports in getting the viable advantage and enhanced performance. Thus, with the purpose of improved organizational performance and sustainable dynamic advantage, it is essential for the organizations to be market-oriented, well positioned and should develop the strong organizational culture [3]. Governments in low income countries have hunted ways for the early decades to make their public hospitals more performing. A comparative study in two provinces of Pakistan resulted that Punjab hospitals are less in human resource management, less in revenue generation and less in negotiating with professionals [11].

Relationship between Staff Motivation and Organizational Performance

Motivation is a fundamental mental process that provokes, strengthens, and directs behaviour and performance. It is a process of inspiring employees to utilize effective motivation, which makes them more satisfied and committed with their services. Similarly, Employee motivation is a tool that managers use in their strategies to excel effective job performance among employees in organizations [28-13]. Every organization wants to be successful in a highly competitive environment. Organizations of multicolour do struggle to retain the best employees, recognizing their work, and impact on the organizational performance[13]. Therefore, organizations should develop a positive and strong relationship with its employees and guide them to organizational objectives. Motivation is an essential for our continuation because when we have high motivation we will work well. A study determined motivation by goal directedness, human aspiration on free will, and sustained actions of individuals in relation to themselves and to the environment[26]. The first hypothesis of the study is:

H₁: Staff Motivation is positively related with Organizational Performance.

Relationship between Innovation and Organizational Performance

Innovation is an important function of organizations in getting a competitive advantage. Innovation refers to the accomplishment of a critical thought or behavior [22]. Organizations can perform into more innovative by

supporting their employees to produce new ideas in a knowledge-intensive setting [21]. The relationship between innovation and performance at different levels of aggregation has been the heart of attention in many studies in last decade [19]. Organizations always demonstrate higher organizational performance towards the new market transformation and innovations [6]. Pakistan is one of the developing countries and moving forward to become a developed country to achieve the Pakistan's Vision 2025. Having said Pakistan's aim of becoming a developed country and a high income economy by the year 2025 can be transformed by highlighting greater performance via innovation [20]. Thus if every employee works optimistically in the direction of the organizational goals then it will direct to innovation and boost performance [10]. The second hypothesis of the study is:

H₂: Innovation is positively related with Organizational Performance.

Relationship between Management Involvement and Organizational Performance

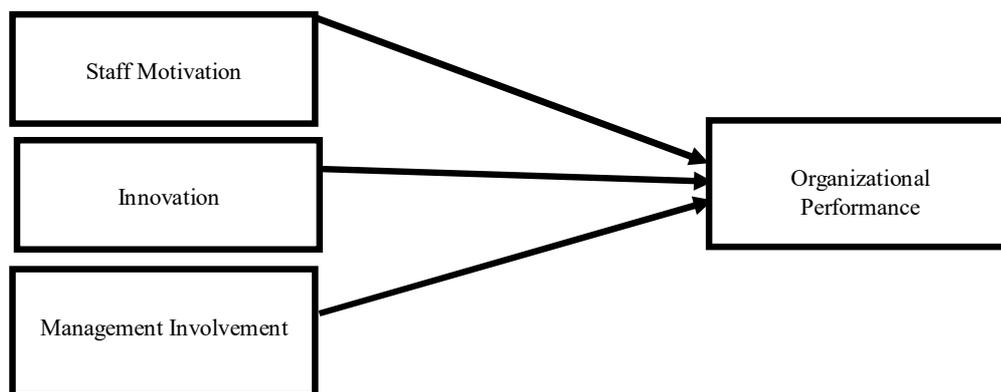
The concept of management involvement was first used by Ed Lawler for an access to management inside on employee involvement. It involves empowering employees with opportunities to make decisions about accomplish of their jobs and to contribute in the organizational performance. A high involvement management practice or engagement is a significant success factor for the organization performance in recent decade [2]. Management involvement consists of practices like indulge employees in performance based work; solve critical problems, training for development, rewards, and empowerment. Presently many organizations including, government sectors, universities, non-profit organizations and other firms think that employee involvement and contribution are crucial to the better organization performance [8]. In a resource based view of an organization a high involvement of management practices are thought to develop diverse capabilities in the workers which is important to superior firm performance [23]. The management should not only participate actively in making physical environment of the job place and making it appropriate for employees, but also changing characteristics like commitment, behaviour, interpersonal relations, ethics, and professionalism in employees for the better both [9]. The third hypothesis of the study is:

H₃: Management Involvement is positively related with Organizational Performance.

Underpinning Theory

In this study, the supporting theory of Resource-Based View is used to relate the relationship between (staff motivation, innovation, and management involvement) and organizational performance. This theory is helpful to find the organization resources in order to get the competitive advantage. It is unique or costly to copy resources that can create competitive advantage. For example physical, technological, intangible, financial, and human can be the resource for competitive advantage. In this study staff motivation, innovation, and management involvement will be the resources to enhance the organizational performance.

Research Framework



METHODOLOGY

This is an exploratory research study. A correlation analysis was performed to estimate variables relationship. These factors later were also analyzed to find their significant influence on dependent variable. Primary data was gathered from the survey questionnaires to the respondents in three district hospitals of South Punjab. The questionnaires

were adopted and adapted of Arnold (1985) for staff motivation, (De Jong et al., 2008) for innovation, and The Eight Universal Management (2002) for management involvement to collect the data[5][12][30]. Convenient sampling technique was used to select sample of 90 staff members because there were difficulties for researcher to get more respondents due to employees work in shift. Five point Likert scale 1=strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=strongly Agree was used in this study. Results were explained and discussed of hypothesis tested.

Analysis

Table1 Analysis of Respondents

Demographic	Classification	Frequency	Percentage (%)
Gender	Male	54	60
	Female	36	40
Age	Less than 20	15	16.7
	20-29	22	24.4
	30-39	34	37.8
	More than 39	19	21.1
Designation	Medical Officer	16	17.8
	Nurses	33	36.7
	Medical Technician	21	23.3
	L.H.V	9	10.0
	Dispenser	4	4.4
	Administration Staff	7	7.8

Table 2 Descriptive statistics, Reliabilities and Pearson Correlation of Variables

Variable	Mean	Standard Deviation	α	1	2	3	4
1. Staff Motivation	3.18	.81	.71	1	.736**	.324**	.213**
2. Innovation	3.32	.65	.75		1	.518**	.487**
3. Management Involvement	3.49	.52	.88			1	.749**
4. Organizational Performance	3.94	.68	.70				1

** Significant Correlation at the $p < 0.01$ level (2-tailed).

Table 3 Multiple Regression Analysis

Variables	Beta	Sig.
Staff Motivation	-.082	.233
Innovation	.231	.014
Management Involvement	.267	.000
R²	.475	
Adjusted R²	.456	
F value	23.561	
P value	.000	

* $p < .05$, ** $p < .01$

RESULTS AND DISCUSSION

Table 1 reports that (54) 60% of the respondents are male and remaining (36) 40% are female. In terms of age group of 30-39 years old are the highest participants in this study. For designation of respondents the 33 (36.7%) nurses participation maximum in this survey data collection. Similarly in table 2 management level has the highest mean = 3.49 with standard deviation = .52. Likewise the lowest mean in this study is staff motivation with (mean = 3.18, S.D = .81). The reliability shows in table 2 of all variables above 0.7 which means that all the variables are reliable. From table 2 correlation value of staff motivation is $r = 0.213$ which means that there is low positive correlation between staff motivation and organizational performance. Innovation has moderate positive correlation ($r = .487$) with organizational performance. While management level has high positive correlation with value $r = 0.749$. The R square value .475 (47.5%) shows variation in organizational performance is due to variation in independent variables. It means that there is need to add more drivers of 52.5 % for explanation of organizational performance.

The model is fit as P value is 0.000, with F value of 23.561. Staff motivation has ($\beta = -.082$) and insignificant, so our first hypothesis is rejected. The next Innovation has ($\beta = .231$) and significant value less than .05. Therefore our second hypothesis is accepted. Finally management level has ($\beta = .267$) and significant. Therefore this study conclude that hypotheses H₁ is rejected and (H₂, H₃) are accepted for this study research.

The current study examined that there is insignificant relationship of staff motivation with organizational performance. Similar finding of Sharipah (2011) supports this study that employee motivate mainly by their on job needs for the long time, quality of work in which they are committed with the organization with consistent energy [16]. On the other hand previous study showed that the significant relationship between motivation and organizational performance [13]. This may cause that hospital employees have different perception about their job according to their needs. Next innovation has significant and positive relationship with organizational performance. This is in line with previous study that innovation is strong predictor of organizational performance [1]. Finally the result shows the significant impact of management level on organizational performance. This result also supports with previous research [28]. As a result this study has proved the importance of management influence in hospitals' organizational performance. When management can share their planned and objectives with staff then it can expand sense of belongingness. As a result it can influence the productivity and performance of the organization.

Limitation of the study

This study had some restrictions because data was collected only from three districts' hospitals. This is clear limitation regarding the generality of the findings. Secondly, the data was collected by survey questionnaires only. A series of interview should also be arranged to get more information because it can affect the results of this study indirectly.

Recommendation for future research

This study can be extended to other industries with the same factors and make comparison of findings such as between public and private hospitals. Further, develop more factors that can influence hospital performance like human resource management practices.

Conclusion

The three factors had shown that staff motivation, innovation, and management level are affecting the organizational performance. These factors explained that the model was moderate satisfactory. Among all the three variables the innovation and management level is found to be the stronger independent variable that influencing organizational performance in public hospitals. Briefly, this study has answered successfully all the research questions.

REFERENCES

- [1] Abbasi, A.S., Mir, G.M., Hussain, M. (2012), 'Islamic Work Ethics: How They Affect Organizational Learning, Innovation and Performance,' *Actual Problem of Economics*, 12 (1): 471-480.
- [2] Ahmad, M., Shahzad, N., Waheed, A., & Khan, M. (2014). High Involvement Management and Employees Performance Mediating Role of Job Satisfaction. *European Journal of Business and Management*, 6(31), 230-243.
- [3] Ahmed, A., & bin Lebai Othman, I. (2017). The Impact of Strategic Attributes on Organizational Performance in Pakistan Banking Sector: A Review and Suggestions for Future Research. *International Journal of Academic Research in Business and Social Sciences*, 7(8), 371-387.
- [4] Ali, R. M., & Wajidi, F. A. (2013). Factors influencing job satisfaction in Public Healthcare Sector of Pakistan. *Global Journal of Management and Business Research*.
- [5] Arnold, H.J. (1985). Task performance, perceived competence and attributed causes of performance as determines of intrinsic motivation. *Academic of management Journal*, 28(4), 876-888.
- [6] Baker, W. E., & Sinkula, J. M. (1999). The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the academy of marketing science*, 27(4), 411-427.
- [7] Balzac, S. R. (2011). *Organizational development*. New York, NY: McGraw-Hill.
- [8] Boxall, P., & Purcell, J. (2011). *Strategy and human resource management*. Palgrave Macmillan.
- [9] Chandrasekar, K. (2011). Workplace environment and its impact on organizational performance in public sector organization. *Internal Journal of Enterprise Computing and Business System*, 1(1).
- [10] Davidson PL, G. J., Sinioris M. (2005). Evidence-Based Leadership Development for Improving Organizational Performance. *Joint Commission Journal on Quality and Patient Safety*.

- [11] De Geyndt, W. (2017). Does autonomy for public hospitals in developing countries increase performance? Evidence-based case studies. *Social Science & Medicine*.
- [12] De Jong, J.P.J & Den Hartog, D. N. (2008). Innovative Work Behavior: Measurement and Validation. *Scientific Analysis of Entrepreneurship and SMEs*, 1–27.
- [13] Dobre, O. I. (2013). Employee motivation and organizational performance. *Review of Applied Socio-Economic Research*, 5(1), 53-60.
- [14] Faiz, G. A. I. (2015). The mediating effect of market orientation on the relationship between total quality management, entrepreneurial orientation and the performance of banks in Libya (Doctoral dissertation, Universiti Utara Malaysia).
- [15] Gavrea, C., Ilies, L., & Stegorean, R. (2011). Determinants of organizational performance: the case of Romania. *Management & Marketing*, 6(2), 285.
- [16] Istvan, H., & Nikolett, N. (2004). Job satisfaction as a key management tool to step up performance. *Problems and perspectives in management*, 4, 149-151.
- [17] Khanderkar, A., & Sharna, A. (2006). Organizational Learning and performance: Understanding Indian scenario in present global context, 48(8/9), 682-692
- [18] Kurji, Z., Premani, Z. S., & Mithani, Y. (2016). Analysis of the Health Care System of Pakistan: Lessons Learnt and Way Forward. *Journal of Ayub Medical College Abbottabad*, 28(3), 601-604.
- [19] Lööf, H., & Heshmati, A. (2006). On the relationship between innovation and performance: A sensitivity analysis. *Economics of Innovation and New Technology*, 15(4-5), 317-344.
- [20] MoPD&R. (2014). Pakistan Vision 2025– One Nation One Vision. Islamabad: Planning Commission, Ministry of Planning, Development and Reform, Government of Pakistan.
- [21] Nödl, B. (2017). *The Influence of Leadership Behavior on Innovative Work Behavior: The Case of a Pharmaceutical Company in Germany* (Master's thesis, University of Twente).
- [22] North, D., Smallbone, D., & Vickers, I. (2001). Public sector support for innovating SMEs. *Small Business Economics*, 16(4), 303-317.
- [23] Pfeffer, J. (1998). *The human equation: Building profits by putting people first*. Boston: Harvard Business School Press
- [24] PHSP. (2018). Punjab Health Sector Plan, *Government of Punjab*.
- [25] Rahman, W. (2012). *The Relationship of Attitudinal and Behavioural Outcomes with Employee Development in the Context of Performance Appraisal in Public Universities of Khyber Pakhtunkhwa*. (PhD Academic), National University of Modern Languages, Islamabad.
- [26] Roseanne, C.M., & Daniel, J.P. (2006). The motivation to care application and extension of motivation theory to professional nursing work. *The Motivation To Care*, 40(1), 15-48.
- [27] Shah, F. A., Hussain, J., & Rahman, W. (2016). The Effect of Training and Development Practices on Employees' Organizational Commitment among the Employees in Private Health Care Sector in Khyber Pakhtunkhwa, Pakistan. *Sarhad Journal of Management Sciences*, 2(01), 17-26.
- [28] Sharipah Azlena Syed Hassan. (2011). *A study on factors that influence the performance of TNB Kota Baharu Sdn.Bhd*. Master thesis, Universiti Technology Mara.
- [29] Sharipah Azlena Syed Hassan. (2011). *A study on factors that influence the performance of TNB Kota Baharu Sdn. Bhd*. Master thesis, Universiti Technology Mara.
- [30] The Eight Universal Management/Leadership Core Competencies. (2002). *Pinnacle-7*
- [31] Yusoff, R. M., Shah, F. A., Ali, A. M., & Bakar, T. B. A. (2013). The Importance of Right Person in the Right Place at the Right Time in Private Healthcare Sector in Pakistan: A Case Study of Rehman Medical Institute (RMI).

The Role of Community Based Organizations (CBOs) in Community Empowerment through Microfinance and Skill Development in Mardan, Pakistan

Dilkash Sapna*, Muhammad Nisar

Department of Sociology and Gender Studies, Bacha Khan University, Charsadda, KP, Pakistan

Received: October 21, 2017

Accepted: January 12, 2018

ABSTRACT

The present study was an “endeavor to figure out the role of Community Based Organizations (CBOs) in the improvement of the rural people of District Mardan through microfinance and skill development. The study zone comprised of three Union Councils from provincial territories of District Mardan. All out 335 respondents were chosen for research through Multi-stage random sampling technique. A nearby finished survey was intended to gather information from these 335 respondents. Chi-square test was used to determine the relationship between the independent variable (Microfinance and Skill Development) and dependent variable (Community Empowerment). The dependent variable was cross-tabulated with the independent variable. The study found a significant and positive association between the profits provided by CBOs and community empowerment ($p=.000$), the commitment of individual reserve funds ($p=.000$), and the role of CBOs in community empowerment, the credit taken by an individual ($p=.000$), utilization of advance ($p=.000$), diverse trainings ($p=.000$), the profits of individual and household utilization or salary and aptitudes level improvement ($p=.000$), and getting any Government job through the skilled development training ($p=.000$).” However, non-significant associations were found between whether credit served to begin their own particular business in the wake of getting the advance with the role of CBOs in community empowerment ($p=.147$) and budgetary increment after aptitude development preparing with role of CBOs in community empowerment ($p=.018$). “The study concluded that the training programs and small individual loans for individuals have been the most common component of the National Rural Support Program (NRSP) in order to improve the socio-economic conditions and capacity building of the rural poor. Small loans given the convenience and low cost to borrowers was generally attractive and much appreciated. The study recommended that CBOs platform, structure must not to utilize only for credit purposes, additionally for determining individual question and other related social issues/ exercises. There is a need to expand the thickness of CBOs including more union gatherings, towns and groups in an area.”

KEYWORDS: Microfinance, Skill Development, CBOs, COs, Community Empowerment.

1. INTRODUCTION

A community is a group of people who have something in common. Usually a community is first thought of as people who share the same district or locality. But it broadly and accurately means people who have things in common with others which involves them living together and sharing their resources. The family is the foundation of any larger community. While it is a community itself, which forms the thread and fabric of any larger community. Some of the qualities of a family that reflect community are: living together, sharing resources, the stronger providing for and protecting the less strong one, working together for a common goal, playing together and experiencing each other high and lows (Corbett, 2001).”

Community empowerment is prominently more than involvement and participation or engagement of communities. It covers up community ownership that distinctly aims for promoting social, economic, and political growth. Renegotiating power for more control over local resources is community empowerment. (Baum, 2008).

“Mayo & Craig (1995) described that international agencies, for example, World Bank have seen community participation as a means for ensuring that developing projects in the developing countries in order to reach the poorest in the most efficient and cost-effective way. According to them the primary objective of community participation for majority of NGOs is empowerment. Empowering the power has become a popular universal slogan. Due to increasing poverty, polarization and social exclusion, community participation and empowerment in the context, both in the North and in the South, have been increasingly widely advocated.

Community Based Organizations (CBOs) or Community Organizations (COs) are non-profitable, associations working at the grass root, neighborhood and national level, supporting consolidate endeavors for improvement of the group. CBOs serves as an administration supplier of micro-credit with the application of participatory focused methodologies of improvement, group strengthening being developed, searches for group fundamental needs like health, education and foundation enhances with time. (Husain, Khattak & Khan, 2008).

National Rural Support Programme (NRSP) through the links it establishes with Government Departments and with the private/ corporate sector through CO attracts funds for new activities (NRSP, 2005).

Since 2005, the NRSP has embraced a strategy of three level structure of social assembly, packing CO at the nearby level, VO at the town level and LSO generally run at the Union Council (UC) Level. This structure is connected as a practical apparatus to both far reaching and stretched efforts. As of June 2001, the NRSP secured 1,945,645 CO parts comprising of 1,023,034 men (53%) and 922,611 1 women (47%) (NRSP 2010-11)."

"Khan (2009) demonstrated that NRSP dispensed Rs. 11.29 billion in 868,573 advances through COs since the beginning of the provincial credit project to the end of 2006. An essential point is that 80-85 percent of CO parts took these advances. Amid the whole period, 15% of the credit sum and 21% of advances were given to the ladies. Provincial credits are given for four reasons: purchase of yield inputs, domesticated animals, interest in little business (shop keeping, and so on) and the little base.

Sehar (2011) stated that concentrating on social monetary states of the country individuals, it is discovered that farming credit is one of the measure which can help the individuals to come and stand with the individuals who are appreciating all the fundamental necessities of life.

The discoveries of the investigation of Njuguna (2013) stated that there exists a relationship between CBO, exercises and monetary strengthening in the country employments. The study prescribes that level of association and techniques for task choice ought to be concentrated as one of the variables for examination when selecting CBOs action; if monetary strengthening is a need.

Khan (2009) described the experience of RSPs and said that the core programs of NRSP works in two ways. In a majority of the districts, its partnership with rural communities involves the delivery of certain services and assistance to the COs in forging linkages with outside agencies. In another district, NRSP works as a contractor or facilitator with other service providers for 'social mobilizations'. In building human capital, NRSP has assisted the rural communities in two ways. First, it has helped them develop new skills and enhance their capabilities to increase the productivity of resources, production levels, options for jobs, new enterprises and income levels. The second front is in basic health care and education both by direct delivery of services and by linkages with other service providers for basic education and health care."

2. MATERIAL AND METHODS

The study was conducted in three Tehsils of District Mardan. There are 75 Union Councils (UCs) in district Mardan with 60 Rural 15 Urban. Out of the 33 UCS, 03 UCs where NRSP worked with CBOs (i.e. Ghala Der, Gumbat, Katlang) were purposely selected for the study.

Sampling Procedure and Sample Size

A multistage random sample was constructed by taking a series of simple random samples in different stages.

Stage 1: A large area was first divided into smaller regions and Random samples of these regions were selected.

Table 1: Tehsil, UCs and CBOs in District Mardan

Name of Tehsil	Union Councils	Name Of CBOs	Total No of CBOs (VOs, COs, LSO)
Mardan-1	GhalaDer,	IDEA	72
Mardan-2	Gumbat	(GDO)	42
Katlang	Babozai	Babozai Welfare org	58

Stage 2: In the second stage, a random sample of smaller areas were taken from each the regions chosen in the first stage.

Stage 3: In the third stage, a random sample of even smaller areas was taken from the areas chosen in the second stage.

The sample size was determined by Sekeran 2003. A sample of 335 was randomly selected from the total population to find out the role of CBOs in the community empowerment through micro finance

and skill development. This sample has been in consideration put forward that a sample size must not be less than 30 or up to 500 (Sekeran, 2003).”

$$n = n \cdot \frac{N_1}{N} \quad \text{Proportional Allocation Method.}$$

Table 2: Breakup of Composite Sample Size

Name of Tehsils	Total No of Union Councils	Total No of CBOs (VOs, COs, LSO)	No of CBOs Members	Sample Size
MARDAN-1(IDEA)	15	72	1080	140
MARDAN- 2(GDO)	10	42	630	83
KATLANG(BABOZAI)	08	58	870	112
TOTAL	33	172	2580	335

Source: NRSP/IDEA (CBOs) Statistical Information Mardan.

“In the light of the objectives of the study a detailed interview schedule was constructed through which the data was collected from the respondents. Before the data collection rational of the study was discussed with the respondents. The data was analyzed through SPSS programme and presented in Uni-Variate and Bi-Variate forms. A Uni-variate analysis was made for the variables, which was consist of frequency distribution and percentage proportions. Percentage of each data classes was calculated by using the following formula,

Percentage of data class = $f/N * 100$
 Where f = frequency of data class
 And N= Number of observations in data set

Bi-variate analysis was carried out to study the association between independent variable (Microfinance and Skill Development) and the dependent variable (Role of CBOs in community empowerment) with the help of chi square test. Taking after the factual strategy was executed to figure the Chi square as imagine by Tai (1978)

Formula of chi-square

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - e_{ij})^2}{e_{ij}}$$

Where χ^2 is a Chi Square

Oij and eij are the observed and expected frequencies corresponding to ith row & jth column of a contingency table respectively.

df is the "degree of freedom" (r-1) (c-1).”

3. RESLUT AND DISCUSSION

Table 3: Do you ever get any personal benefit through the CO?

Statement	Frequency	Percent
Taken loan	58	17.3
Taken Training	235	70.1
Both 1&2	42	12.5
Total	335	100.0

EXPLANATION:

“A member can take individual benefits from / through CO in terms of small loan and skills development training indicates that 235/335 (70.1%) respondents were getting personal benefits through taking training while 58/335 (17.3%) respondents were saying that they had taken loan benefit and the remaining 42/335 (12.5%) responded about taking both loan and training as a personal benefit.

Table 4: Distribution of Respondents Regarding Monthly Saving

Statement	Frequency	Percent
100-500	73	21.8
500 and above	49	14.6
No donation	213	63.6
Total	335	100.0

EXPLANATION:

Saving is one of the features of CO's activities. In this process, CO member donates a certain amount (whatever one can afford) for the development purposes. Table indicates that most of the respondents (63.6%) did not donate any amount as saving in CO. 21.8 % of the respondents donated up to 500 rupees while 14.6% donated 500 and above Rupees. Most of the respondents did not donate any money for COs as a saving, and were of the opinion that there was no development work or project taking place in their community.

Table 5: Distribution of respondents regarding amount of loan taken

Statement	Frequency	Percent
Rs. 10,000-20,000	128	38.2
Rs. 20,000-40,000	207	61.8
Total	335	100.0

EXPLANATION:

NRSP credit system is expanding firmly now-a-days. Credit was also given without the formation of CO, although CO members can take it. These were a small amount of credit, but it still played a very important role in the up-gradation of the life of rural people. People took this loan for agricultural purposes, for livestock purposes and for small businesses like shops, property, etc. These loans increase their income and production level. The table indicates the amount of loan taken by respondent from NRSP through the CO. Out of the total 335 respondents, 207/335 (61.8%) respondents were in the category of 20000 to 40000 rupees, and 128/335 (38.2%) were taken loan approximately calculated 10000 to 20000 rupees.

Table 6: Did the loan used for the same Purpose, for which it is taken?

Statement	Frequency	Percent
Yes	97	29.0
No	209	62.4
Don't Know	29	8.7
Total	335	100.0

EXPLANATION:

Above table indicates that out of the total 335 respondents, majority 209/335 (62.4%) did not use loan for the same purpose, while the other 97/335 (29.0 %) respondents were agreed to use the loan for the same purpose of which it was taken and 29/335 (8.7%) did not know about the use of the loan.

Table 7: Did you become able to start your own business after receiving the loan?

Statement	Frequency	Percent
Yes	70	20.9
No	151	45.1
Don't know	114	34.0
Total	335	100.0

EXPLANATION:

Above table indicates that 151/335 (45.1%) respondents were stated that the loan did not help them to start their own business while 114/335 (34.0%) even did not know the answer of it and 70/335 (20.9%) of them took benefit and started their own business.

Table 8: What is the procedure of paying back of the loan?

Statement	Frequency	Percent
Monthly installment	30	9.0
Six Months Plan	177	52.8
Year Wise Installment	128	38.2
Total	335	100.0

EXPLANATION:

The above table shows the respondents opinion regarding the procedure of paying back of the loan. People used different methods for the payment of the loan. Out of total 335 respondents, 177/335 (52.8%) paid the loan by six-month plan, 128/335 (38.2%) respondents were used annual installment method while others 30/335 (9.0%) used monthly installment method.

Table 9: Are you satisfied with the procedure of loan taking and returning?

Statement	Frequency	Percent
Yes	92	27.5
No	209	62.4
Don't know	34	10.1
Total	335	100.0

EXPLANATION:

The frequency and percentage distribution of the respondents with respect to their view the procedure of the loan stated that most of the respondents (62.4%) were not satisfied from the procedure of loan taking and refunding. Furthermore, 92/335 (27.5%) respondents were appreciated the procedure while the remaining 34/335 (10.1%) respondents don't not the answer.

Table 10: Distribution of respondents regarding taking any training / course through CO:

Statement	Frequency	Percent
Computer and Electrician	60	17.9
Tailoring and Embroidery work	112	33.4
Livestock and Agriculture work	150	44.8
Health and Education Work	13	3.9
Total	335	100.0

EXPLANATION:

The table indicates that the majority of the respondents 150/335 (44.8%) had taken livestock and agriculture related trainings. Besides this 112/335 (33.4%) respondents were also taken tailoring and embroidery training for personal as well as for sale purposes. On the other hand, male respondents had taken mostly computer and electrician related 60/335 (17.9%) and others 13/335 (3.9%) were related to health and education.

Table 11: Distribution of respondents regarding the kind of benefit taken from such Loan or Training

Statement	Frequency	Percent
Income and skill level improve	122	36.4
Personal & domestic Use	213	63.6
Total	335	100.0

EXPLANATION:

The above table shows that 213/335 (63.6%) of the people was given the benefit of personal and domestic use while 122/335 (36.4%) of them used it for income and skills level Improvement purposes.

Table 12: Did you get any Govt. or private sector job by getting any skill development training?

Statement	Frequency	Percent
Yes	178	53.1
No	157	46.9
Total	335	100.0

EXPLANATION:

The above table signifies that out of the total 335 respondents, 157/335 (46.9%) have not got any job while 178/335 (53.1%) respondents were helped by the skills to get a job.”

Table 13: Association between the Role of CBOs in community Empowerment and Microfinance and Skill Development

Attributes	Response	Role of CBOs in Community Empowerment			Total	Chi Square
		Yes	No	Don't know		
Do you ever get any personal benefit through CBOs?	Taken loan	16(4.8)	40(11.9)	2(.6)	58(17.3)	$\chi^2=23.322$ (p=.000)
	Taken Training	24(7.2)	208(62.1)	3(.9)	235(70.1)	
	Both 1&2	14(4.2)	28(8.4)	0(0)	42(12.5)	
	Total	54(16.1)	276(28.4)	5(1.5)	335(100.0)	
Have you ever been contributed your savings to CBO for lending the loans? (If yes, how much per month)	100-300	8(2.4)	62(18.5)	3(.9)	73(21.8)	$\chi^2=37.189$ (p=.000)
	500 and above	22(6.6)	27(8.1)	0(0)	49(14.6)	
	No donation	24(7.2)	187(55.8)	2(.6)	213(63.6)	
	Total	54(16.1)	276(82.4)	5(1.5)	335(100.0)	
How much loan has been taken? Rs. 10,000-20,000	10,000-20,000	40(11.9)	88(26.3)	0(0)	128(38.2)	$\chi^2=37.189$ (p=.000)
	20,000-40,000	14(4.2)	188(56.1)	5(1.5)	207(61.8)	
	Total	54(6.1)	276(82.4)	5(1.5)	335(100.0)	
What is the procedure of paying back of the loan?	Monthly installment	11(3.3)	17(5.1)	2(.6)	30(9.0)	$\chi^2=18.200$ (p=.001)
	Six Months Plan	28(8.4)	147(43.9)	2(.6)	177(52.8)	
	Year Wise Installment	15(4.5)	112(33.4)	1(.3)	128(38.2)	
	Total	54(16.1)	276(82.4)	5(1.5)	335(100.0)	
Are you satisfied with the procedure of loan taking and returning?	Yes	29	63	0	92	$\chi^2=26.407$ (p=.000)
		8.7%	18.8%	.0%	27.5%	
	No	24	180	5	209	
		7.2%	53.7%	1.5%	62.4%	
	Don't know	1	33	0	34	
Total	54	276	5	335		
What kind of training or course you have taken?	Computer and Electrician	19(5.7)	41(12.2)	0(0)	60(17.9)	$\chi^2=21.884$ (p=.001)
	Tailoring and embroidery work	16(4.8)	96(28.7)	0(0)	112(33.4)	
	Lives stock and Agriculture work	16(4.8)	130(38.8)	4(1.2)	150(44.8)	
What kind of benefit you got from such things?	Income and Skill Level Improve	45(13.4)	77(23.0)	0(0)	122(36.4)	$\chi^2=62.845$ (p=.000)
	Personal Domestic Use	9(2.7)	199(59.4)	5(1.5)	213(63.6)	
	Total	54(16.1)	276(82.4)	5(1.5)	335(100.0)	
Did you get any Govt. or private sector job by getting any skill development training?	Yes	49(14.6)	128(38.2)	1(.3)	178(53.1)	$\chi^2=37.934$ (p=.000)
	No	5(1.5)	148(44.2)	4(1.2)	157(56.9)	
	Total	54(16.1)	276(82.4)	5(1.5)	335(100.0)	

“Table 13 shows that a member can take individual advantages from/ through COs as far as little credit and abilities development demonstrates a significant ($p=.000$) relationship between the profits of the advance and trainings with the role of CBOs in community empowerment. It was emphatically accepted that arriving at the poor through the building limit of grouping parts is the best way to get them out of neediness. In this respect, participatory methodology was received. The system was planned in a manner that the groups ought not to be inactive beneficiaries rather be dynamic accomplices in the development process. Similarly saving is one of the gimmicks of CO's exercises. In this methodology, COs part gives a certain sum (whatever one can manage) for the development purposes, here a highly significant ($p=.000$) relationship found between the commitment of individual reserve funds and the role of CBOs in community empowerment. As per Khan "CO parts have spared Rs. 827 million till 2009 in 40 locale of Pakistan" (Khan, 2009). As most of the respondents were unconscious of aggregate sparing of the CO, so the discoveries were very contradictive to those of Khan. As indicated by him, "every CO Member conveys a booklet in which the CO Chief record investment funds and advances, and supervisor the ledger of aggregate funds (Khan, 2009). NRSP credit framework is exhausting immovably now-a-days. Credit was additionally given out without the development of CO, despite the fact that CO parts can take it. These were a little measure of credit; however, despite everything it assumed an essential part in the up-degree of the life of provincial individuals. Individuals took this advance for rural purposes, for animal's purposes and for

little organizations like shops, property, and so on. These credits most likely expand their pay and generation level. A significant ($p=.000$) relationship was found between the credit taken by an individual and the role of CBOs in community empowerment. Khan (2009) demonstrated that NRSP dispensed Rs. 11.29 billion in 868,573 advances through COs since the beginning of the provincial credit project to the end of 2006. An essential point is that 80-85 percent of CO parts took these advances. Amid the whole period, 15% of the credit sum and 21% of advances were given to the ladies. Provincial credits are given for four reasons: purchase of yield inputs, domesticated animals, interest in little business (shop keeping, and so on) and the little base.

A significant ($p=.000$) relationship was found between the utilization of advance for the same reason with the part of CBOs in community empowerment. A non-significant ($p=.147$) relationship was found with, whether credit served to begin their own particular business in the wake of getting the advance with the role of CBOs in community empowerment. A significant ($p=.001$) association found between the methodology of paying once more of the advance. Individuals utilized diverse techniques for the installment of the credit i-e month to month, six-month arrangement and year shrewd portion plan. A significant ($p=.000$) relationship was observed with respect to fulfillment from credit taking strategy and coming back to the role of CBOs in community empowerment. A significant ($p=.001$) relationship was found between diverse trainings of domesticated animals and horticulture, customizing, weaving, machine, circuit tester, wellbeing and training identified with the role of CBOs in community empowerment. Khan (2009) investigates that Capacity building of the people was the principal target of these COs. A definitive motivation behind their exercises was to enhance the financial status of the destitute living in these groups. RSPs (NRSP as its part) have helped a huge number of men and women get new abilities in administration and records, fundamental instruction and human services, administrations of yields and animals, and various different occupations, for example, customizing, sewing, weaving, apples and oranges preparing, mechanical and electrical repairs, and so on.

Besides a highly significant ($p=.000$) association was found between the profits of individual and household utilization or salary and aptitudes level improvement with the role of CBOs in community empowerment. Also, a very significant ($p=.000$) relationship was additionally found of getting any Government job through the skilled development training. Alternately, private segment work of getting any aptitude development, preparing with role of CBOs in community empowerment. Concentrating on social monetary states of the country individuals, it is discovered that farming credit is one of the measure which can help the individuals to come and stand with the individuals who are appreciating all the fundamental necessities of life (Sahar, 2011). However, a non-significant ($p=.018$) association was found between budgetary increment after aptitude development preparing with role of CBOs in community empowerment. The discoveries of the investigation of Njuguna created that there exists a relationship between CBO, exercises and monetary strengthening in the country employments. The study prescribes that level of association and techniques for task choice ought to be concentrated as one of the variables for examination when selecting CBOs action; if monetary strengthening is a need (Njuguna, 2013)."

4. Conclusions and recommendations

"It is concluded from the study that the training programs and small individual loans for individuals have been the most common component of the National Rural Support Program (NRSP) in order to improve the socio-economic conditions and capacity building of the rural poor. Small loans given the convenience and low cost to borrowers was generally attractive and much appreciated. On the other hand, the new or improved skills had made a significant contribution to the well-being of trained individuals, the productive capacity of community assets (e.g. Livestock) resources (land, water, etc.), and basic social services. The results of the study show that the income level or production level increased from one to four thousand per month and ultimately it was a huge achievement. The study recommended that as social assembly is a long-haul wander, so there is a requirement for further financing. Loans given to the people are not sufficient and it must to be expanded at least to one Lac rupees. The legislature, social administration, supplier organizations and other social service provider agencies should provide funds for this purpose. Furthermore, CBOs platform, structure must not utilize only for credit purposes, additionally for determining individual question and other related social issues/ exercises. There is a need to expand the thickness of CBOs including more union gatherings, towns and groups in an area."

REFERENCES

- [1] Baum, F. (2008). Foreword to health promotion in action: from local to global empowerment. <http://www.who.int/healthpromotion/conferences/7gchp/track1/en/index.html>
- [2] Corbett, A. (2001). Living as a Community. The Origins of Community. Legana. Tasmania. Australia.
- [3] Ethnne. (1982). The Scheme Development Process: A Participatory Approach Developed in the FATA project, Pakistan. DHV consultants, Amersfoort, Netherlands. P. 115-122.
- [4] FAO. Food and Agriculture Organization. (1991). Plan of Action for People's Participation in Rural Development. Twenty-sixth session. FAO conference. Rome, 9-28 November 1991. P.20.
- [5] Hussain, A., Khattak, N.R., & Khan, A. Q. (2008). The role of CBOs in rural development (A case study of selected CBOs in District Swat). *Sarhad J. Agric.* 24(4): p 1.
- [6] Khan, M. H. (2009). Participatory Rural Development in Pakistan: Experience of Rural Support Programmes. Oxford University Press. New York. P.199-221.
- [7] Njuguna, S. N. (2013). The Influence of CBOs Activities on Economic Empowerment of Rural Communities – A case of Selected CBOs in Bahati Division, Nakuru County. Kenya. Master Thesis. School of Business. University of Nairobi. URL: <http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/52379>
- [8] NRSP. (2005) – National Rural Support Programme NRSP:http://www.nrsp.org.pk/social_mobilization.htm
- [9] NRSP. 2010-11. Disaster Management and Outreach. 17th Annual Progress Report. 2010-11. P.1
- [10] Sehar, M. (2011). Impact of Agriculture Credit on Poverty Alleviation in Rural Areas of Pothwar. Thesis MS. (Hons.) Agri Economic. University of Arid Agriculture Rawalpindi.
- [11] Sekaran, U. (2003). Research Methods for Business. USA, Hermitage Publishing Services.
- [12] Tai, S W (1978). Social Science Statistics, it Elements and Applications. California, Goodyear Publishing Company, Los Angeles.

Seropositivity, Involvement in Suspected Cases of Chronic Respiratory Diseases and Comparative Efficacy of Various Sero-Diagnostic Tests of *Mycoplasma Gallisepticum*

Nasir Abbas¹, Muhammad Suleman¹, Naveed Muhammad², Sadeeq ur Rahman³, Manzoor Ahmad⁴, Aneela Tariq Niazi⁴, Anwar Khalid⁵, and Faheem Jan^{4*}

¹Department of Microbiology, Hazara University Mansehra, Khyber Pakhtunkhwa, Pakistan

²Department of Pharmacy, Abdul Wali Khan University Mardan KPK, Pakistan

³College of Veterinary Sciences and Animal Husbandry, Abdul Wali Khan University, Mardan

⁴Department of Biochemistry, Hazara University Mansehra, KPK, Pakistan

⁵Student Affairs, COMSATS Institute of Information Technology, Abbottabad, Pakistan

Received: November 2, 2017

Accepted: January 8, 2018

ABSTRACT

Mycoplasma gallisepticum (MG) is considered as one of the most prevalent and major cause of Mycoplasmosis in poultry mainly isolated from cases of chronic respiratory diseases (CRD)— an economically devastating disease of poultry birds. Locally prevailed MG clinical isolates are not characterized and serodiagnosis based on exotic antigens may produce erroneous results that further complicate disease management. The current study was designed to investigate the occurrence rate of MG in suspected cases of CRD (Sus-CRD) and efficacy of available serological diagnostic tests that are routinely implied for the purpose of screening of MG in poultry birds in Pakistan. A total of 846 of poultry- and 22 of pheasantry-birds of Sus-CRD samples were subjected to different serological tests such as serum plate agglutination test (SPAT), ELISA, hemagglutination inhibition (HAI). Our results indicated that out of 846 sera samples, 29.71% (n=251) samples were positive with SPAT, 42.79 % (n=362) were positive with ELISA and 18.94% (n=160) with HAI against MG. Similarly, test results performed on samples obtained from Sus-CRD pheasantry birds indicated that 18.18% (n=4) were positive using SPAT, 27.27% (n=6) by ELISA and 4.55% (n=1) were positive by HAI. A total of 362 ELISA-positive poultry birds samples were processed for isolation and identification of MG by colonial morphology and specie specific PCR. Our results indicated that 152 (41.98%) samples were successfully cultured, of which, 119 isolates (78.2%) were identified as MG isolates. Our study concludes a higher frequency of MG causing CRD infection in poultry in Northern Pakistan and ELISA as sensitive test for screening.

KEYWORDS: Mycoplasmosis, Chronic Respiratory Diseases, Poultry, pheasantry birds

INTRODUCTION

Mycoplasmosis is one of the biggest threats to Poultry industry of Pakistan. Mycoplasmosis is caused by one of the four major species of *Mycoplasma* comprising of *M. gallisepticum* (MG), *M. synoviae* (MS), *M. meleagridis* (MM) and *M. iowae* (MI) [1]. Remarkably, MG is reported as the main cause of chronic respiratory disease (CRD) an economically devastating and long-lasting infection [2, 3 and 4]. As such in Pakistan, precise and an overall countrywide prevalence of MG infection is not known yet mainly due to lack of operational and regular vigilance and coordinated surveillance programmes. Nevertheless, there are reports on random infection as well outbreaks of MG in various parts of Pakistan [5]. Aerosol is one of the main routes for spread of MG infection, which is followed by local spread of the bacterium in the upper respiratory tract. The problem becomes more cumbersome with co-infection of other bacteria such as *E. coli*, Newcastle disease virus and infectious bronchitis virus *etc.* CRD infected flock severely goes down in production with apparent decline in weight gain, decrease in feed efficiency and egg production revealing huge economic losses to the industry.

The gross lesions of Mycoplasmosis include mild sinusitis, tracheitis and air sacculitis. Furthermore, eyelids of infected birds may become swollen with ocular discharge and drainage may be seen from nares. Macroscopic and microscopic lesions comprised of necrosed and swollen tracheal epithelium, loss of cilia and mucous layer that covered whole of trachea. Lungs show congestion, hemorrhages, focal necrosis and leukocytic infiltration particularly lymphocytes and polymorphs nucleated cells. The disease is vertically transmitted resulting poor hatchability and chick quality [6 and 7]. Poultry industry in Pakistan is a vibrant sector with a lion share in the national economy. Since 1984 of the first serological evidence of MG infection in Pakistan [8], a continuous higher incidence rate in different regions of Pakistan has resulted huge economic losses in poultry sector [9, 10 and 5].

Early, quick and efficient diagnostic tools must be available to screen for MG infection. In a given set up, various serological procedures are generally applied for diagnosis of MG infected flocks. These include

*Corresponding Author: Dr. Faheem Jan, Department of Biochemistry, Hazara University Mansehra, KPK, Pakistan.
Tel: +92 333 9337563 Email: drfaheem82@gmail.com.

Serum Plate Agglutination test (SPAT), Hemagglutination (HA) test, Hemagglutination Inhibition (HAI) test and Enzyme Linked Immunosorbant Assay (ELISA) based principally on specificity of antigen antibody reaction. Notably, reports are not available on the antigenic characterization of the local MG isolates, and commercial antigens available in the market for SPAT test and MG-specific-mono-clonal-antibody coated plates for ELISA may produce variable results due to possible slight variation in field isolates. A false positive or negative test thus could further complicate the issue that could extrapolate economic losses due to CRD. So far, local antigen prepared indigenously is not available in the market. Therefore, in order to obtain better outcomes, validation and comparison of different available serological tests in local conditions is crucial. Although PCR is highly sensitive and reliable diagnostic tools, but could be expensive and time consuming. Furthermore, procedures for MG bacterium isolation and culture are enormously tedious and expensive, and on top of that, clinical picture is not pathognomonic in nature and misleading in the case of co-infection. Therefore, knowledge and skills about the most efficient, accurate and sensitive serological test is mandatory. Finally, literature regarding prevalence of MG infection in poultry birds in northern areas is also rare. Thus, the current study, on the one hand provides updated and comprehensive report on the frequency of seropositivity and isolation rate of MG in poultry birds suspected of CRD in the Northern areas of Pakistan, while, on the other hand suggests an efficient serological test for MG infected birds.

MATERIALS AND METHODS

Ethical approval

The current study was approved from the ethical committee of the Hazara University, and all the reported work was carried out according to the local and national guidelines of animal ethics.

Sample collection

The current study was carried out during November 2009 and October 2011. Blood sample and swabs (from organs and nasal swabs) were collected from Hazara division Khyber Pakhtunkhwa Pakistan from different poultry farms and Pheasantries. A total of 846 blood samples were collected from CRD suspected poultry birds from 26 different poultry farms of Hazara Division Khyber Pakhtunkhwa. Of these 846 birds, a total of 226 tracheal/nasal swabs/organs samples were also collected immediately after the SPAT test were found preliminary positive. In parallel, all these 226 samples were also processed for isolation.

Serological tests

Serum samples were then subjected to various serological tests available for screening of MG infection. For serum plate agglutination test we used Nobilis® S-6 Adler Strain of MG antigen. Test procedures and interpretation of the results were followed according to the manufacturer's instructions. HAI test was performed as previously published [11]. Commercial ELISA kits (FLOCKSCREEN™ Mg ELISA Kit) were used for ELISA following the manufacturer's instruction. ELISA plate reader at 550nm was used to record the absorbance according to the instructions.

Bacterial isolation and specie specific PCR

Swab samples collected from tissue or nasal cavity were put in 5 ml tubes containing PPLO broth. These tubes were screwed, labeled, and transported under refrigeration (4°C) to veterinary research and disease diagnostic center, Abbotabad, Khyber Pakhtunkhwa. Modified Hay Flick media was used for MG isolation according to standard protocol as described by [12]. The broth and agar media were prepared as per directions of manufacturer. The examination of culture was carried out on regular basis to check the *Mycoplasma* growth by observing change in color and whirling movement inside the tubes. After 15 days, the tubes with no change in color were considered negative and were discarded from the CO₂ incubator. The positive cultures *i.e.* showing color changes and turbidity were further processed and filtered through 0.45µ syringe filter. The filtrate was streaked onto solid agar medium incubated at 37°C in 5% CO₂ incubator. The Agar plates were examined daily under stereomicroscope or light microscope at (10X) (Olympus) for about 5 days of incubation for observing typical *Mycoplasma* colonies. The isolated colonies were sub cultured up to four times to obtain possibly pure isolates. The identification of organism was made by colonial morphology of fried egg-like appearance, tiny, smooth and 0.1-1 mm in diameter with dense raised centers rooted in the medium were indicative of *Mycoplasma* species. Finally, PCR reaction was applied on chromosomal DNA obtained from purified colonies of mycoplasma as described earlier [13 and 14]. Chromosomal DNA from MG purified colonies and observation of amplified PCR product was performed as described elsewhere [15]. PCR reaction was performed in thermocycler (BioRAD T100). Primers were synthesized by InVitrogen. The expected amplified PCR product was resolved on 1% agarose gel and visualized on gel doc (BioRad, USA). PCR master mix was purchased from Thermoscientific. Furthermore, MG-specie specific PCR reaction was also carried out on clinical isolates as described below. Vaccinal strain of MG-TS11 (Merial Lyon, France) and genomic DNA of confirm clinical

isolate (a generous gift from University Diagnostic Lab, University of Veterinary and Animal Sciences) were used as positive control during PCR.

RESULTS AND DISCUSSION

Seropositivity against MG of sus-CRD poultry and pheasantry birds

Our results indicated that out of 846 sera samples, 362 (42.79%) were found positive by ELISA, 251 (29.71%) samples were declared positive with SPAT and 160 (18.94%) were found positive using HAI suggesting that ELISA was the most sensitive and accurate assay for screening and diagnostic assays (Table 1). Similarly, analysis on the serum samples of pheasantry birds indicated that out of 22 samples 6 were positive by using ELISA, 4 were positive by using SPAT and one sample was declared as positive through HAI (Table 1). Our results indicated an overall 42.79% seropositivity rate determined by ELISA suggesting a significantly higher prevalence rate of 10% as reported earlier from Punjab Pakistan [9]. In agreement with our findings, Mukhtar *et al.*, reported 49.1% seropositivity in Faisalabad, Punjab, Pakistan [5]. Our studies show a lower seropositivity frequency of broiler in all three districts of Hazara division as compared to layers and breeders. This is possibly due to the fact that broiler chicken are kept for shorter period of time before they are marketed thus with minimum period of exposure. Most of the mycoplasma infection is acquired and droplet infection is a common and most crucial route of infection. Interestingly, almost half of the seropositive samples obtained from CRD suspected cases were found positive for MG in this study indicating an active infection. We assume that the infection rate could be even higher than this as MG is highly fastidious and difficult to culture.

Table-1 Seropositivity of MG using different serological tests

Tests applied	Poultry birds		Pheasantry	
	Total number of samples analyzed	Positive + (%)	Total number of samples analyzed	Positive + (%)
SPAT*	846	251 (29.71)	22	4(18.18)
HAI	846	160 (18.94)	22	1(4.55)
ELISA	846	362 (42.79)	22	6(27.27)

*only samples with three positives (+++) and clear-cut positive were taken as positive

Comparative seropositivity of three Districts

A total of 63 blood samples (as well as swabs) were taken from poultry breeder with 40 of them exhibited vaccination history against MG. Interestingly; results indicated that not all serum samples of vaccinated breeders were found positive against MG. Thus, the overall seropositivity (excluding vaccinated birds) was found 42.3% (322/760) by ELISA. The highest seropositivity was shown by layers followed by broiler (Table-2). Hazara Division of Khyber Pakhtunkhwa is comprised of three main districts, and layer birds of District Mansehra were found relatively exposed higher (69.04) as compared to District Abbotabad (63.88) and Haripur (35.71). Serological testing is quite common for flock surveillance against MG, but these are often perplexing and facade intricacy in elucidation due to false positive and false negative results. The multifariousness is essential to be addressed to plan the relevant use of antibiotics in flocks, vaccination schedules and designing bio-security strategies. Several commercial ready to use flock screening test kits with variable sensitivity and specificity have been manufactured and are being used by poultry producers to screen the flock for constant surveillance. Serum Plate Agglutination test also known as rapid slide plate agglutination test has been an established test with rapid results and preferred due to its simplicity and high sensitivity [16]. In line with our findings, Kempf *et al.*, worked on comparison of serological tests including Rapid Slide Agglutination (RSA) Test, HAI and commercially available ELISA test kits [17]. They evaluated the sensitivity and specificity of all these serological tests on sera isolated from specific pathogen free (SPF) chickens infected with MG. In contrary to our findings, their results confirmed that the sensitivity of RSA was superior to ELISA and HAI tests in the capability to identify antibodies formed in early reaction to MG infection [17]. Other studies reported that serum plate agglutination test and ELISA assay could detect antibodies against MG-infections in 69.9% (320/458) and 58.3% (267/458) of the chicken samples, respectively [7]. Similarly, our results corroborate with those reported by Ewing *et al.*, who compared ELISA with HI. They concluded that ELISA is superior to HI in moderate infected flocks but no remarkable difference was found where flocks showed low MG infection prevalence [18]. Altogether, this study indicates that MG is involved in the development of CRD infection screening of which can preferably be carried out with MG specific ELISA.

Table-2 Comparative seropositivity of three Districts using different serological techniques

%	Serology	Broiler (%)	Breeder (%)	Layer/Golden (%)
Mansehra	SPAT positive	25.97	41.26	45.23
	HAI positive	14.59	28.57	35.71
	ELISA positive	34.51	58.73	69.04
Abbotabad	SPAT positive	30.15	52.38	38.88
	HAI positive	17.17	28.57	25.00
	ELISA positive	43.12	66.66	63.88
Haripur	SPAT positive	20.16	25.00	21.42
	HAI positive	9.24	25.00	14.28
	ELISA positive	34.45	37.50	35.71

Incidence of MG in Sus-CRD cases

Nasal swab samples or tissue samples were collected from a total of 362 ELISA positive poultry birds and were directly subjected to MG isolation. Typical purified and suspected colonies of MG were then confirmed by specie specific PCR and results were presented in Table-3. Our results indicated that of 346 samples obtained from ELISA positive poultry birds, 152 (43.3%) could be positively cultured suggesting active infection stage. Of these 152 cultured samples, 119 (78.2%) were identified as MG isolates. Interestingly, most of the clinical isolates (>90%) obtained from poultry breeder were confirmed as MG species suggesting higher infection rate (Table-3). CRD infection caused by MG is economically devastating due to its prolonged nature resulting severe decline in production; and recurrent infection can actually make a farmer out of business. Poultry industry in Pakistan is a huge and vibrant economic sector providing huge employment. CRD infection is a huge challenge for the industry and proper diagnosis of the disease is crucial for control and management. Different serodiagnostic tools such as SPAT, ELSIA and HAI *etc.* are widely used for screening of MG infection in poultry. So far, to the best of our knowledge, literature regarding antigenic characterization of MG field isolates in Pakistan is not available, and therefore, diagnostic test based on the exotic antigen may produce erroneous results. Hence, validation of different diagnostic test is necessary in order to improve diagnosis. In the current study, we have compared three different diagnostic procedures, SPAT, ELISA and HAI, generally used for screening and diagnosis of MG infection in poultry in Pakistan. Further, we also report on the overall seropositivity and isolation rate of MG from CRD suspected birds.

Table-3 Isolation rate (n=346) and identification of MG in sus-CRD birds

	Culture isolates						Total Cultures	PCR + (%)
	Broiler	PCR + (%)	Breeder	PCR + (%)	Layer	PCR + (%)		
Mansehra	28	21 (75)	13	12 (92.30)	31	23 (74.19)	72	56 (77.78)
Abbotabad	31	24 (77.42)	9	7 (77.77)	17	14 (82.35)	57	45 (78.94)
Haripur	14	11 (78.57)	2	2(100)	7	5 (71.42)	23	18 (78.26)
Total	73	56 (76.71)	24	21 (87.5)	55	42 (76.36)	152	119 (78.28)

Conclusion

A total of 846 sera samples of poultry were tested, of which 42.79 % were positive with ELISA, 29.71% samples were positive with SPAT, and 18.94% with HAI suggesting that ELISA is significantly sensitive for screening of MG infection. Almost 50% samples from the ELISA-positive birds could be cultured for MG suggesting active infection. These results have strong implications in the epidemiology, management control of the disease, and proper medication and eradication of MG associated infection such as CRD.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

Acknowledgements

The current study was funded by Higher Education Commission of Pakistan provided under indigenous PhD fellowship programme granted to N Abbas. The authors acknowledge technical support of Veterinary Research and Diseases Diagnosis Center, Abbotabad.

REFERENCES

1. Bradbury J, 2001. Avian mycoplasmosis. Poultry diseases, 5: 178-193.
2. Kleven S, 1998. Mycoplasmas in the etiology of multifactorial respiratory disease. Poultry Science, 77: 1146-1149.
3. Levisohn, S and S. Kleven, 2000. Avian mycoplasmosis (*Mycoplasma gallisepticum*). Revue Scientifique et Technique-Office International des Epizooties, 19: 425-434.
4. Stipkovits, L and I. Kempf, 1996. Mycoplasmoses in poultry. Revue scientifique et technique (International Office of Epizootics), 15: 1495-1525.
5. Mukhtar M., M. M. Awais, M. I. Anwar, Z. Hussain, N. Bhatti *et al.*, 2012. Seroprevalence of *Mycoplasma gallisepticum* among commercial layers in Faisalabad, Pakistan. Journal of Basic & Applied Sciences, 8.
6. Farmer K., G. Hill and S. Roberts, 2005. Susceptibility of wild songbirds to the house finch strain of *Mycoplasma gallisepticum*. Journal of wildlife diseases, 41: 317-325.
7. Osman K., M. Aly, Z. Amin and B. Hasan, 2009. *Mycoplasma gallisepticum*: an emerging challenge to the poultry industry in Egypt. Revue scientifique et technique (International Office of Epizootics), 28: 1015-1023.
8. Shah A, 1984. Occurrence of chronic respiratory disease of domestic fowls in West Pakistan: M. Sc. Thesis. Department of Veterinary Microbiology, University of Agriculture, Faisalabad, Pakistan.
9. Ahmad A., M. Rabbani, T. Yaqoob, M. Shabbir and F. Akhtar, 2008. Status of IgG antibodies against *Mycoplasma gallisepticum* in non-vaccinated commercial poultry breeder flocks. Int. J. Poult. Sci, 18: 61-63.
10. Hanif, A and M. Najeeb, 2007. Comparison of conventional bacterial isolation, rapid slide agglutination and polymerase chain reaction for detection of *Mycoplasma gallisepticum* in breeder flocks. Pak. J. Life Soc. Sci, 5: 1-5.
11. Allan, W and R. Gough, 1974. A standard haemagglutination inhibition test for Newcastle disease.(2) Vaccination and challenge. Veterinary Record, 95: 147-149.
12. Kleven, S and J. Bradbury, 2008. Avian mycoplasmosis (*Mycoplasma gallisepticum*, *M. synoviae*). OIE manual of diagnostic tests and vaccines for terrestrial animals (mammals, birds and bees). Office International des Epizooties. Paris: 482-496.
13. Kleven, S. H and S. Levisohn, 1996. *Mycoplasma* infections of poultry. Molecular and diagnostic procedures in mycoplasmaology, 2: 283-292.
14. Lauerman L, 1998. *Mycoplasma* PCR assays. Nucleic acid amplification assays for diagnosis of animal diseases. LH Lauerman, ed. American Association of Veterinary Laboratory Diagnosticians, Turlock, CA: 41-42.
15. Shah, M. K., U. Saddique, S. Ahmad, Y. Hayat, S. Rahman *et al.*, 2017. Isolation rate and antimicrobial susceptibility profiles of *Mycoplasma mycoides* subspecies capri field isolates from sheep and goats in Pakistan. Small Ruminant Research.
16. Timms, L and G. Cullen, 1972. Comparative efficiency of 4 *Mycoplasma gallisepticum* strains as antigens in
17. Kempf, I., F. Gesbert, M. Guittet, G. Bennejean and L. Stipkovits, 1994. Evaluation of two commercial enzyme-linked immunosorbent assay kits for the detection of *Mycoplasma gallisepticum* antibodies. Avian Pathology, 23: 329-338.
18. Ewing, M., L. Lauerman, S. Kleven and M. Brown, 1996. Evaluation of diagnostic procedures to detect *Mycoplasma synoviae* in commercial multiplier-breeder farms and commercial hatcheries in Florida. Avian diseases: 798-806.



Biosynthesis of Gold Nanoparticles using *Pleurotus ostreatus* (Jacq. ex. Fr.) Kummer Extract and their Antibacterial and Antifungal Activities

Bawadekji¹*, A., Oueslati², M. H., Al Ali³, M., Jamith Basha⁴, W.

¹Northern Border University, Deanship of Scientific Research, P.O. Box 1321, Arar, 91431, Saudi Arabia

²Northern Border University, College of Science, P.O. Box 1321, Arar 91431, Saudi Arabia

³Université d'Angers, Institut Supérieur de la Santé et des Bioproduits d'Angers, Angers 49045, France

⁴Northern Border University, Faculty of Applied Medical Sciences, Arar, P.O. Box 1321, Saudi Arabia

Received: November 12, 2017

Accepted: February 25, 2018

ABSTRACT

The present work reports the green chemistry synthesis of gold nanoparticles (AuNPs) and the evaluation of their antibacterial and antifungal activities. AuNPs were synthesized by using an aqueous extract of *Pleurotus ostreatus*. AuNPs were characterized by UV-Vis-spectrophotometer, Infra-red (IR), spectroscopy, transmission electron microscopy (TEM). TEM studies showed the particles to be spherical in shape with an average size ~22.9 nm with a SD of ~ 6.6 nm ranging from 10.3 to 38.7 nm. In addition, the synthesized AuNPs were evaluated for their antibacterial and antifungal activities against *Enterococcus faecalis* ATCC 29212, *Escherichia coli* ATCC 25922, *Klebsiella pneumonia* ATCC 700603, *Pseudomonas aeruginosa* ATCC 254992 and *Staphylococcus aureus* ATCC 254996, while antifungal activity was investigated toward *Candida albicans* ATCC 10231. Obtained results showed that the functionalized AuNPs exhibited an important antimicrobial activity, respectively only toward *C. albicans*, *P. aeruginosa* and *S. aureus*. Results were discussed from the effectiveness point of view of gold nanoparticles, of *P. ostreatus* (Jacq. ex. Fr.) Kummer extract toward some microbial organisms.

KEY WORDS: AuNPs, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Candida albicans*, *Pleurotus ostreatus*

INTRODUCTION

Recently, Metallic nanoparticles (NPs) are used in many research areas such as medical and environmental research [1, 2, 3] because they have unique biophysical properties, mainly because of the large accessible surface [4]. Nanoparticles can be synthesized by chemical routes such as the methods of [5, 6] but their main disadvantage is the production of toxic products for human health and the environment. For this reason it is necessary to develop environmentally friendly biosynthetic pathways. Green nanoparticles production using biological molecules have demonstrated advantages over chemical methods such as biomolecules produced by fungi include amino acids, polyphenols, carbohydrates and lipids [7, 8]. Having in fact a multiple role as they possess functional groups which can reduce Au³⁺ salt to Au⁰ and capped to the AuNPs resulting in very stable colloids. The biomolecule-based method can be used to overcome the side effects of the chemicals investigated for the manufacture of AuNPs. *Pleurotus ostreatus* is a commercially important edible fungus, reported to be anticancer, antiviral, anti-inflammatory and cholesterol lowering agents [9, 10, 11, 12]. In recent research, silver nanoparticles (AgNPs) syntheses using liquid mycelium culture of *P. ostreatus* have been reported as antibacterial, antifungal and anticancer factor [13, 14]. The aim of this study was to synthesize AuNPs using a simple, efficient and environmentally friendly method using the aqueous extract of *P. ostreatus* as a reducing agent. AuNPs have been tested against human pathogens microorganisms; antibacterial activity was achieved against *Enterococcus faecalis* ATCC 29212, *Escherichia coli* ATCC 25922, *Klebsiella pneumonia* ATCC 700603, *Pseudomonas aeruginosa* ATCC 254992 and *Staphylococcus aureus* ATCC 254996, while antifungal activity was investigated toward *Candida albicans* ATCC 10231.

MATERIAL AND METHODS

1. Obtaining of *Pleurotus ostreatus* basidiocarps

Technique of obtaining *P. ostreatus* basidiocarps was adopted from [15].

*Corresponding Author: Abdulhakim Bawadekji, Northern Border University, Deanship of Scientific Research, Arar, P.O. Box 1321, Kingdom of Saudi Arabia. Phone: +966557528348 E-mail: hakimbawadekji@gmail.com

2. Microorganisms used

The American Type Culture Collection (ATCC) strains used in this study were purchased from Becton Dickinson (BD). These strains were isolated on Cystine Lactose Electrolyte Deficient Deoxycholate Agar (CLED media). In total 5 bacterial strains (*Enterococcus faecalis* ATCC 29212, *Escherichia coli* ATCC, 25922, *Klebsiella pneumonia* ATCC 700603, *Pseudomonas aeruginosa* ATCC 254992, *Staphylococcus aureus* ATCC 254996 and one fungal strain *Candida albicans* ATCC 10231) were tested.

3. Preparation of Extract

20 g of *P. ostreatus* basidiocarps were powdered and placed in 250 mL of deionized water in a 500 mL conical flask and boiled for 15 min with continuous stirring using a magnetic stirrer. The aqueous *P. ostreatus* extract was then cooled to room temperature, filtered through Whatman No. 1 filter paper and stored in a sterilized bottle at 4°C until further use.

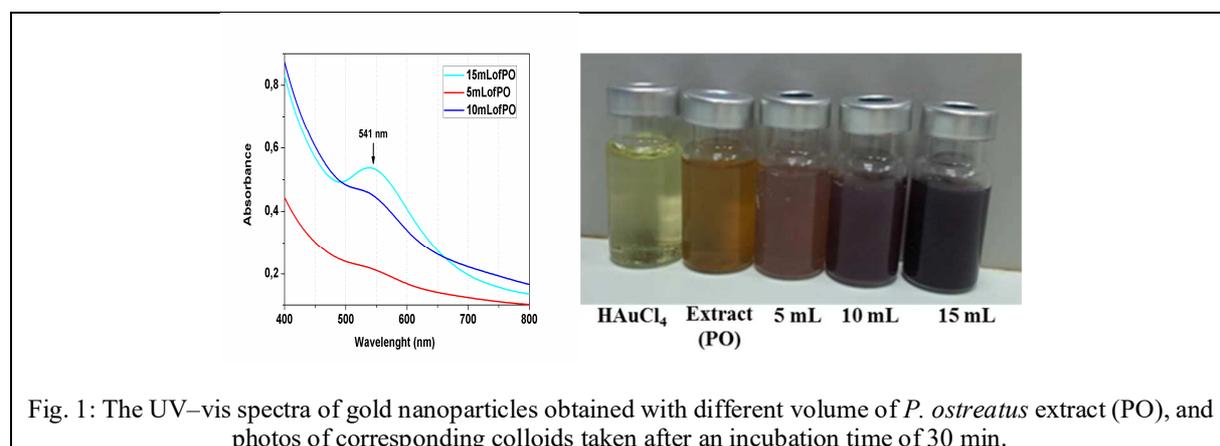
4. UV-Vis spectroscopy analysis: UV-Vis spectral analysis was done by using UV-Vis spectrophotometer (Jasco V-670) covering a wavelength range from 190 to 800 nm and equipped with 1 cm wide quartz cells. The reduction of pure Au³⁺ ions was monitored by measuring the UV-Vis spectrum of the reaction medium at 24 hrs, after diluting a small aliquot of the sample into distilled water.

FTIR analysis of Au-NPs. FTIR analysis was done using Thermo Scientific Nicolet iS5 Infrared Spectrometer using the KBr pellet method over the range 400–4000 cm⁻¹ with a resolution of 4 cm⁻¹.

TEM analysis of Au-NPs. Sample for TEM analysis was prepared, as mentioned in IR sample preparations. The sample was first sonicated (Vibronics VS 80) for 5 minutes. Au-NPs were loaded on carbon-coated copper grids, and solvent was allowed to evaporate under Infra light for 30 minutes. TEM measurements were performed on Phillips model CM 20 instrument, operated at an accelerating voltage at 200 kV.

5. Synthesis of Au nanoparticles using *P. ostreatus* Extract.

Gold nanoparticles were synthesized by the reduction of HAuCl₄ 3H₂O solution by *P. ostreatus*. Briefly, 5, 10 and 15 mL of this extract was slowly added to 50 mL of 1 mM HAuCl₄ in a 100 mL conical flask with continuous stirring at room temperature. The reduction of Au³⁺ to Au⁰ nanoparticles by *P. ostreatus* extract was monitored visually by the change in color of the solution from brown to reddish purple (Fig. 1). The synthesized nanoparticles were collected by centrifugation (16,000 rpm) for about 20 min., washed with Milli-Q water, air dried and stored in a clean dry small bottle at 4 °C until further use and used for further analysis.



6. Screening for antibacterial and antifungal activities

Agar well Diffusion:

The ATCC microorganisms were activated on CLED media. The 0.5 Macfarland standards were used to adjust the turbidity to prepare inoculum from overnight grown bacteria. Muller Hinton Agar (MHA) and Sabouraud Dextrose agar (SDA) media were prepared according to standard aseptic technique; the first media used to test antibacterial activity, while the second one used to test antifungal activity. Four Wells of 6 mm were made aseptically, in these two media, by using sterile cork-borer and the sterility test was performed before inoculating. Bottoms of wells were

sealed by pouring molten Agar in sterile conditions. The plate containing MHA were swabbed with 24 hour culture of standard ATCC bacterial strains. Dispense 50 μ l, 100 μ l, 150 μ l and 200 μ l of the obtained AuNPs in the wells, the fifth well is the positive control which received 15 μ g of tetracycline (CAS Number: 60-54-8) dissolved in distilled sterile water. The plates were incubated aerobically at 37° C for 24 hours according to Clinical and Laboratory Standards Institute (CLSI) guidelines. The results obtained were recorded when the zone of inhibition was greater than 6mm and compared with the positive control Tetracycline. Antimicrobial activities were measured by taking the diameter of clear inhibition zone around each well and calculated mean and standard deviation for the three reading. Concerning antifungal activity, same procedures have been done with the second medium (SDA), except positive control which was Fluconazole (CAS Number: 86386-73-4) dissolved in DMSO and the control well was received 25 μ g of Fluconazole.

RESULTS AND DISCUSSION

The biosynthesis of gold nanoparticles (AuNPs) was realized out by adding hydrosol extract of *P. ostreatus* into HAuCl₄ solution with 1mM. The phytochemicals in the *P. ostreatus* extract acted as both reducing and stabilizing agents. The reduction of ionic gold Au³⁺ to gold metal Au⁰ lead to a change in the color of the solution from yellow to pink then violet, color within 30 min of reaction [16, 17, 18]. Previous studies [19, 20, 21, 22, 23] show that this *P. ostreatus* contains considerable amounts of amino acids, polysaccharide glycoproteins, eritadenine, L-ergothioneine, phenolic substances, alkaloids, lactones, terpenes and ceramides. The OH of the polyphenol group reduced the Au³⁺ ions to Au⁰ while the polysaccharide and amide group in amino acids stabilized the AuNPs. The formation of AuNPs was studied by UV-visible spectroscopy by measuring the surface plasmon resonance (SPR) of the wavelength range from 400 to 700 nm. More study shows that AuNPs synthesized by natural extract display a SPR band at around 500 - 550 nm, according to its size and shape [16, 17]. The band characteristic of surface plasmon resonance (SPR) of AuNPs was observed at 541 nm (Fig. 1). The TEM images provide size and morphology of the synthesized AuNPs (Fig. 2). The images depict that the AuNPs are spherical in shape with an average size ~22.9 nm with a SD of ~ 6.6 nm ranging from 10.3 to 38.7 nm (Fig 3).

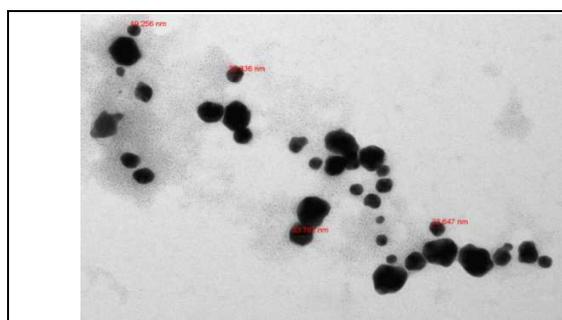


Fig. 2: A selected TEM image of AuNPs

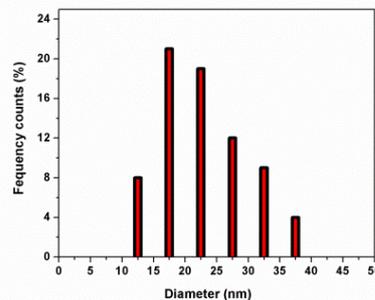
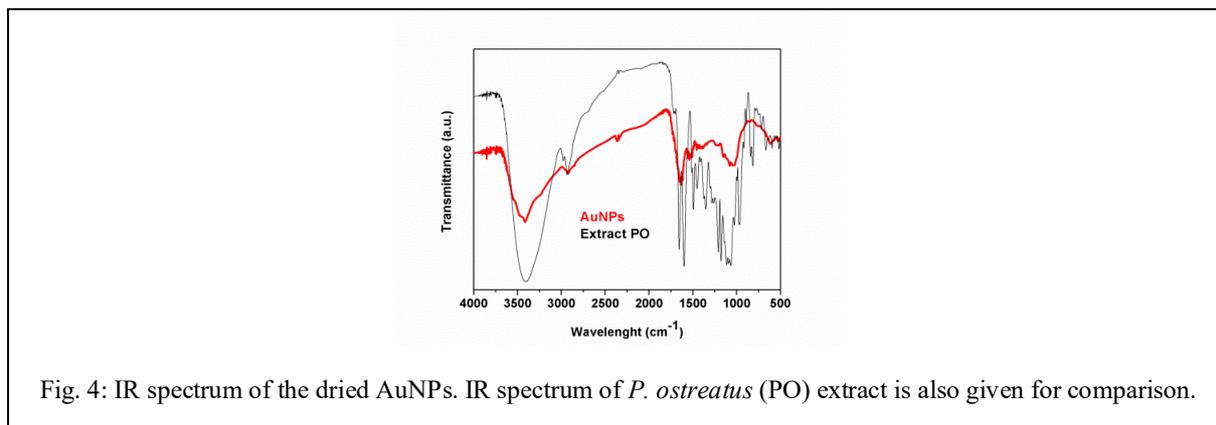


Fig. 3: Particle size distribution histogram

In order to study the synthesis of AuNPs, FTIR measurements were performed. Figure 4 shows the FTIR absorbance spectra of biosynthesized AuNPs with *P. ostreatus* extract. The spectrum confirms the presence of functional groups of some biomolecules such as carbohydrate, proteins, polyphenol, capping the AuNPs.



The hydroxyl (OH) of polysaccharide and phenols, carbonyl of the polyphenols and amide group of proteins, C–N of the amines and alkaloids were identified. In the synthesized AuNPs, the broadness of the bond assigned to the hydroxyl (OH) stretching vibration shifted from 3405 to 3414 cm^{-1} . In addition, the C=O of the amide which observed at 1654.8 cm^{-1} in the (*P. ostreatus*) was shifted to 1636 cm^{-1} . Furthermore, the bands at 1600, 1492 cm^{-1} assigned to the C=C of aromatics ring, C–N of amides, C–N of amines and C–O of ester stretching vibrations in the *P. ostreatus* shifted to 1440.06, 1396.95, 1278.89, 1192.51, respectively. This further confirmed the reduction and capping of the AuNPs by the *P. ostreatus* extract. Thus, the reduction and stabilization of the AuNPs could be attributed to the presence of polyphenols carbohydrates and amino acids in this extract. Many scientists reported that *Pleurotus ostreatus* have significant antibacterial effect towards Gram-negative and gram-positive bacteria [24, 25]. Our obtained results showed that the functionalized AuNPs exhibited varied antimicrobial activity on the tested bacteria and fungi. These activities have been manifested, respectively in importance point of view, only on *C. albicans*, *P. aeruginosa* and *S. aureus*. While no effects observed of these AuNPs toward *E. faecalis*, *E. coli* and *K. pneumonia*. Antimicrobial activity may be demonstrated by the diameter of zone of inhibition; this zone becomes more important with augmentation of the quantity of AuNPs from 50 to 200 μl , table 1.

Table 1. Zone of Inhibition induced by Gold nanoparticles of *P. ostreatus* extract.

Organisms	Method	Quantity of AuNPs			
		Zone of inhibition (mm) \pm S.D.*			
		50 μl	100 μl	150 μl	200 μl
<i>Candida albicans</i> ATCC 10231	Well diffusion	21.66 \pm 1.527	23 \pm 1	26.33 \pm 1.527	32.33 \pm 2.081
	control	40.66 \pm 0.577			
<i>Pseudomonas aeruginosa</i> ATCC 254992	Well diffusion	19.33 \pm 1.527	23.66 \pm 0.577	26.33 \pm 1.040	29.33 \pm 1.258
	control	23.33 \pm 0.577			
<i>Staphylococcus aureus</i> ATCC 254996	Well diffusion	0	8.77 \pm 0.608	10.88 \pm 0.692	12.44 \pm 0.346
	control	29.33 \pm 0.577			

* n= 3 (0) = no inhibition zone

Using 50 μl of AuNPs gives zone of inhibition for *C. albicans* and *P. aeruginosa* but not for *S. aureus*. If we compare this zone with a previous study for the same author [15] in which he used hydro crude extract of the same species of fungi, and same strains of bacteria, we can notice that AuNPs have positive effect on *C. albicans* and *P. aeruginosa* for the mentioned quantity of extract. While *S. aureus* was affected by 100, 150 and 200 μl for prepared AuNPs and hydro crude extract obtained previously [15]. Inversely to this behaviour, it's very important to demonstrate that for the three tested bacteria (table 1), AuNPs in this study have less effect as antimicrobial agent than hydro crude extract of the same species in our previous study for 100, 150 and 200 μl of extract [15].

CONCLUSION

Saprophytic edible fungi *P. ostreatus* may constitute a source of bioactive compound. It is possible to synthesize AuNPs of *P. ostreatus* extract and is confirmed by UV, IR and TEM analysis. AuNPs can be used as an inhibitory agent against human pathogenic fungi and resistant human pathogenic bacteria.

ACKNOWLEDGMENTS

The authors wish to acknowledge the approval and the support of this research study by the grant No. 6945-SCI-2017-1-7-F from the Deanship of the Scientific Research at Northern Border University, Arar, KSA.

REFERENCES

1. Jain, P.K., X. Huang, I.H. El-Sayed and M.A. El-Sayed, 2008. Noble metals on the nanoscale: optical and photothermal properties and some applications in imaging, sensing, biology, and medicine. *Acc. Chem. Res.*, 41: 1578-1586.
2. West, J.L. and N.J. Halas, 2000. Applications of nanotechnology to biotechnology. *Current Opinion in Biotechnology*, 11: 215.
3. Yazid, H., R. Adnan, M.A. Farrukh and S.A. Hamid, 2011. Synthesis of Au/Al₂O₃ Nanocatalyst and its application in the reduction of p-Nitrophenol. *J of the Chin Chem Soc.*, 58: 593-601.
4. Zandonella, C., 2003. Cell nanotechnology: the tiny toolkit. *Nature*, 423: 10-12.
5. Brust, M., M. Walker, D. Bethell, D.J. Schiffrin and R.J. Whyman, 1994. Synthesis of thiol-derivatized gold nanoparticles in a two-phase liquid-liquid system. *J. Chem. Soc. Chem. Commun.*, 7: 801-802.
6. Martin, M.N., J.I. Basham, P. Chando, and S.K. Eah, 2010. Charged gold nanoparticles in non-polar solvents: 10-Min synthesis and 2D self-assembly. *Langmuir*, 26(10): 7410-7418.
7. Jegadeesh, R., G. Rajasekhar Reddy, L. Hariprasath, S. Veerapandian, G. Babu, N. Raman, et al., 2015. Mycosynthesis and characterization of silver nanoparticles from *Pleurotus djamor* var. *roseus* and their in vitro cytotoxicity effect on PC3 cells. *Process Biochem.*, 50: 140-147.
8. Mustafa, N.O., R. Jegadeesh, L. Hariprasath, S.A. Sajid Salem, S. Vikineswary and A.A. Idham, 2015. Mycosynthesis of silver nanoparticles by *Pleurotus cornucopiae* var. *citrinopileatus* and its inhibitory effects against *Candida* sp. *Mater. Lett.*, 153: 186-190.
9. Bobek, P., 1991. Cholesterol-lowering effect of the mushroom *Pleurotus ostreatus* in hereditary hypercholesterolemic rats. *Ann. Nutr. Metab.*, 35 (4): 191-195.
10. Shamtsyan, M.M., V.G. Konusova, A.M. Goloshchev, Y.O. Maksimova, A.V. Panchenko, N.N. Petrishchev, et al., 2004. Immunomodulating and anti-tumor effects of basidiomycetes *Pleurotus ostreatus* (jacq.: fr.) P. Kumm. and *P. cornucopiae* (Pau. Ex Pers.) Rollan. *J. Biol. Phys. Chem.*, 4, pp. 157-161.
11. Attia, W.Y., A. Bawadekji and Al Ali K., 2016. Antioxidant and Immunomodulating Activities of Mycelial Extract from the Edible Mushroom *Pleurotus ostreatus*. *South Asian J Exp Biol.*, 6 (3): 83-91.
12. Wang, H. and T.B. Ng, 2000. Isolation of a novel ubiquitin-like protein from *Pleurotus ostreatus* mushroom with anti-human immunodeficiency virus, translation-inhibitory and ribonuclease activities. *Biochem. Biophys. Res. Commun.*, 276 (2): 587-593.
13. Ramy, S.Y. and H. Al-Sheikh, 2014. Biosynthesis and characterization of silver nanoparticles produced by *Pleurotus ostreatus* and their anticandidal and anticancer activities. *World J. Microbiol. Biotechnol.*, 30: 2797-2803.
14. Al-Bahrani, R., R. Jegadeesh, H. Lakshmanan, A.A. Hassan and V. Sabaratnam, 2017. Green synthesis of silver nanoparticles using tree oyster mushroom *Pleurotus ostreatus* and its inhibitory activity against pathogenic bacteria. *Materials Letters*, 186: 21-25.
15. Bawadekji, A., M.A.U. Mridha, M. Al Ali and W. Jamith Basha, 2017. Antimicrobial Activities of Oyster Mushroom *Pleurotus ostreatus* (Jacq. ex Fr.) Kummer. *J. Appl. Environ. Biol. Sci.*, 7(10): 227-231.
16. Chandran, S.P., M. Chaudhary and R. Pasricha, 2000. Synthesis of gold nanotriangles and silver nanoparticles using *Aloe vera* plant extract. *Biotech. Progr.*, 22(2): 577-583.

17. Das, R.K., N. Gogoi and U. Bora, 2011. Green synthesis of gold nanoparticles using *Nyctanthes arbortristis* flower extract. *Biopro. Biosys. Eng.*, 34(5): 615- 619.
18. Mukherjee, P., S. Senapati, D. Mandal, A. Ahmad, M.I. Khan, R. Kumar and M. Sastry, 2002. Extracellular synthesis of gold nanoparticles by the fungus *Fusarium oxysporum*. *Chem Bio Chem.*, 3: 461-463.
19. Mattila, P., K. Könkö, M. Euroola, J.M. Pihlava, J. Astola, L. Vahteristo, et al., 2001. Contents of vitamins, mineral elements, some phenolic compounds in cultivated mushrooms. *Journal of Agricultural and Food Chemistry*, 49: 2343-2348.
20. Rabinovich, M., D. Figlas, S. Delmastro and N. Curvetto, 2007. Copper-and zinc enriched mycelium of *Agaricus blazei* Murril: bioaccumulation and Bioavailability. *Journal of Medicinal Food*, 10:175-183.
21. Silva, M. C. S., J. Naozuka, P.V. Oliveira, M.C.D. Vanetti, D.M.S. Bazzolli, N.M.B Costa, et al., 2010. In vivo bioavailability of selenium in enriched *Pleurotus ostreatus* mushrooms. *Metallomics*, 2: 162-166.
22. Jayakumar, T., P.A. Thomas, J.R. Sheu and P. Geraldine, 2011. In-vitro and in-vivo antioxidant effects of the oyster mushroom *Pleurotus ostreatus*. *Food Research International*, 44:851-861.
23. Mattila, P., K. Könkö, M. Euroola, J.M. Pihlava, J. Astola, L. Vahteristo, et al., 2001. Contents of vitamins, mineral elements, some phenolic compounds in cultivated mushrooms. *Journal of Agricultural and Food Chemistry*, 49: 2343-2348.
24. Vamanu, E., 2012. In Vitro Antimicrobial and Antioxidant Activities of Ethanolic Extract of Lyophilized Mycelium of *Pleurotus ostreatus* PQMZ91109. *Molecules*, 17(4): 3653-3671.
25. Pauliuc, I. and D. Botău, 2013. Antibacterial activity of *Pleurotus ostreatus* gemmotherapeutic extract. *Journal of Horticulture. Forestry and Biotechnology*, 17(1): 242-245.



Relationship between Psychological Capital and Teachers' Job Commitment

Fazal Rehman¹, Dr. Arshad Ali²

¹PhD Scholar, Institute of Education Research, University of Peshawar, Khyber Pakhtunkhwa, Pakistan

²Institute of Education Research, University of Peshawar, Khyber Pakhtunkhwa, Pakistan

Received: August 7, 2017

Accepted: November 18, 2017

ABSTRACT

The basic aim of this article is to probe the association amid Psychological Capital (PsyCap) and the teacher's job commitment with a particular reference to University of Peshawar KP of Pakistan. The main objectives of the study were to find out the impact of PsyCap on teachers' Job Commitment and to explore the level of PsyCap of Teachers at university level. All male and female faculty members of University of Peshawar KP were the population of this study. Sampling is a procedure to select adequate amount of elements from the whole population. For understanding the characteristics of the sample, the researchers simplify these properties to the entire population. For data gathering from all the teaching faculty of university. The probability sampling technique i.e. stratified random sampling was used. In statistical surveys when sub-populations within an overall population vary, it is advantageous to sample each sub-population (stratum) independently. In the final sample, there were Twenty seven(27) male professors out of 71 and 07 female professors out of seventeen(17) were taken in the study survey. Similarly, Thirteen (13) male Associate Professors out of Thirty three (33) and 06 Female Associate professors out of Fifteen (15) were selected, whereas Fifty (50) male Asstt: Professors out of 131 and twenty Nine (29) Female Asstt: professors out of 76 from different departments of the University of Peshawar were taken in the study survey. There were 148 Male lecturers and 146 female lecturers in different departments of the University of Peshawar and 57 Male and 56 Females lecturers out of 148 and 146 were selected. The total number of population of the study was 637 and the sample size of the study was 245. The researcher used proportionate allocation method for sampling fraction in each of the strata that is proportional to that of the total population. The questionnaire was administered to collect the data from the respondents. The questionnaire of Teachers' Job Commitment was developed by Meyer and Allen, (1990). Appropriate statistical tool was used for tabulation, analyzing and interpretation of collected data. The validity of the instrument, i.e. (questionnaire) was checked by expert scholars and they validated questionnaire. For the purpose of construct validity, the research study's model was verified through SEM and CFA Usluel, et al. (2008). The study found a significant relationship amid variables. A significant difference was depicted amid the male and female faculty members of the University of Peshawar on PsyCap and teachers' job commitment by the paired sample t test.

KEYWORDS: Psychological Capital, Job Commitment, Hope, Efficacy, Resilience

INTRODUCTION

A developmental state of an individual is known as Psychological Capital (PC). Hope, Efficacy, Resiliency and Optimism (HERO) are four main elements (Luthans, 2000). The desirable outcomes may get by the institution if all these four elements of (PC) are used simultaneously during the time of work (Luthans, et al. (2007). The function and performance of the human beings can be enhanced by using the four elements of PsyCap (Luthans et al., 2007). Commitment is the involvement of an individual in his job. An employee who shows more interest in his work is said to be committed one (Reichers, 1985). Affective, Normative and Continuance commitment are three types of commitment Meyer and Allen (1991).

Psychological Capital (PsyCap)

It is the developmental position of a person. Hope, Efficacy, Resilience and Optimism are the four facets of PsyCap (Luthans et al., 2007). An individual can be more augmented through PsyCap by using the above all four elements at a time. On the other hand, PsyCap deeply affects the commitment (Luthans, Alolio and Walumba, 2005). Hope.

It is the first element of the PsyCap. The aim of this facet is to make a path towards the targeted and desired aims. It is ascertained a beneficial explainer in the direction of profession commitment in different contexts (Luthans

*Corresponding Author: Fazal Rehman, PhD Scholar Institute of Education Research, University of Peshawar KPK, Pakistan.

et al., 2005; Peterson and Luthans, 2003). The expectant employees are more committed in an organization Peterson and Luthans (2003).

Self-Efficacy

It is second construct of PsyCap. It is a self trust of someone on his individual talent and potential. Bandura (1997) Confident workers are good performers in an organization. According to Bandura (1997) the workers' who have high self-viability are always

Resilience

It is the third element of (HERO) It means to rebound in a worst situation. When a worker is stuck in his work, the resilience invokes him to jump back like ball and control the situation. Master and Reed (2002). A resilient worker has an intention of more realistic in his group. Positive feelings always upgrade Resilience of a person (Tugade, et al., 2004).

Optimism

To make an optimistic approach regarding succeeding at present and in future is called optimism. The individuals who think positively is always optimistic. They always look at the bright side of a thing. They never lose his hearts for the best. They always depend on logical assumptions (Carver and Scheier, 2005; p. 231).

Commitment

The involvement of a worker in his work is said to be commitment. It is the duty of an institution to enhance the level of commitment the employees. The commitment of the workers is directly proportion to the product of the institution. Following are the main parts of commitment.

Affective Commitment

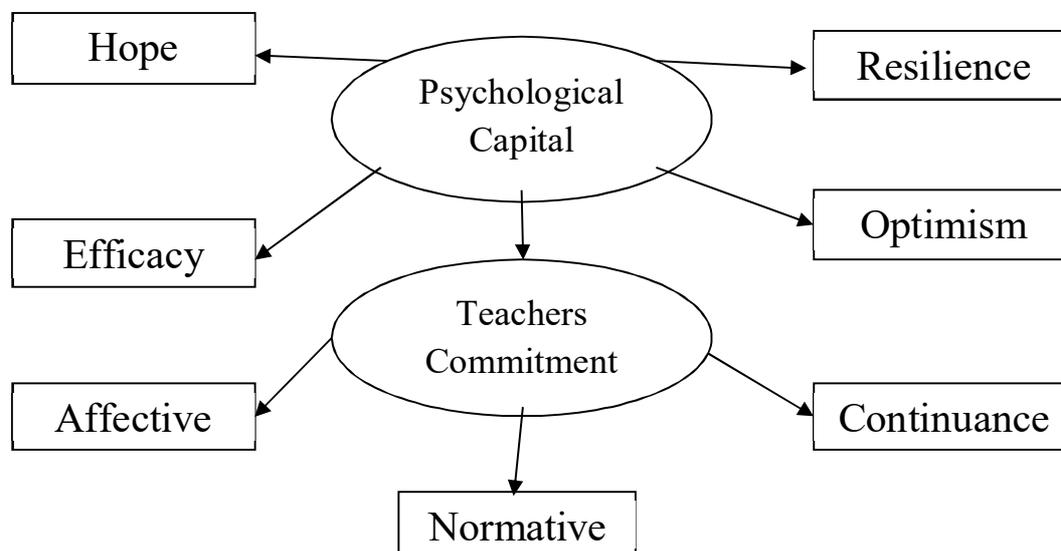
It is an emotional attachment of the workers towards his organization. The employees always work hard for the achievement of the desired goals due to this facet of commitment. They want to be a part of the organization. If a teacher wants to be a part of his institute, he will try his best to be devoted and committed to his job and profession.

Normative Commitment

It is the second arm of commitment. The employees are forced by this kind of commitment to be a part of his parent department. This type of commitment is belonging to the norms and values of an institution. Values are the indication of normative commitment. Such sort of values is created through family or other socialization.

Continuance Commitment

It is the final variable commitment due to which a member of staff is committed to an institute. He believes that if he misplaces his job, he will lose pay which will influence him economically, this is the actual cause and the member of staff stays as an employee in the workplace as he/she wants to continue there.



Hypotheses:

H₀₁: The Teachers' Psychological Capital has no significant effect on their job commitment.

H₀₂: There is no significant difference of psychological capital and teachers' job commitment (M, F) on students' academic achievements.

METHOD AND MATERIAL

A survey research methodology was used in this study. The aim of this was to collect information from respondents by using questionnaires.

Population/Sample Size:

The male and female teachers of the Peshawar University, KP were the whole population of the study. There were forty six departments, five colleges and two main Libraries in this university. There were six hundred and thirty seven faculty members and this (637) were the total population of the study. The sample size was Two hundred and forty five only. It was determined by a Yamane, 1967 formula. The sample size was randomly selected through stratified random process.

Research Instruments:

A questionnaire was used to collect the data for the study. They were administered and collected personally from the respondents. The questionnaire regarding Teachers' Job Commitment was consisted of 23 items. They were developed by Meyer and Allen, (1990) and the reliability of them is well documented. The Cranach's Alpha values lie between .82 and .93 (Mowday et al., 1992). Similarly the questionnaire of Psychological Capital was comprised of 12 items constructed by Luthans, Yousaf and Avolio, (2005). The coefficients of internal consistency were measured by Cronbach's alpha and test-retest reliability suggested that the PCQ presented a lower stability than personality factors. Convergent validity assessed with average variance extracted, revealed problems in the optimism subscale. The data collected were tabulated, analyzed and interpreted, the findings and conclusion were drawn on the basis of an inferential statistical tool and Hierarchal Linear Regression Model and T-test.

RESULTS AND DISCUSSION

According to aforementioned statistics, psychological capital doesn't exist in 85 teachers and out of 85, Sixty one be not devoted to their jobs & Twenty four were found committed. On the other hand, psychological capital was found in 160 teachers in which 23 were not committed to their jobs and 137 were found committed to their jobs

Table 1: PsyCap & on the whole Teacher's Commitment

Responses	Commitment		Total
	Committed	Not Committed	
PsyCap Exists	24 (28%)	61 (72%)	85 (35%)
PsyCap Not Exists	137(86%)	23 (14%)	160 (65%)
Total	161(66%)	84 (34%)	245

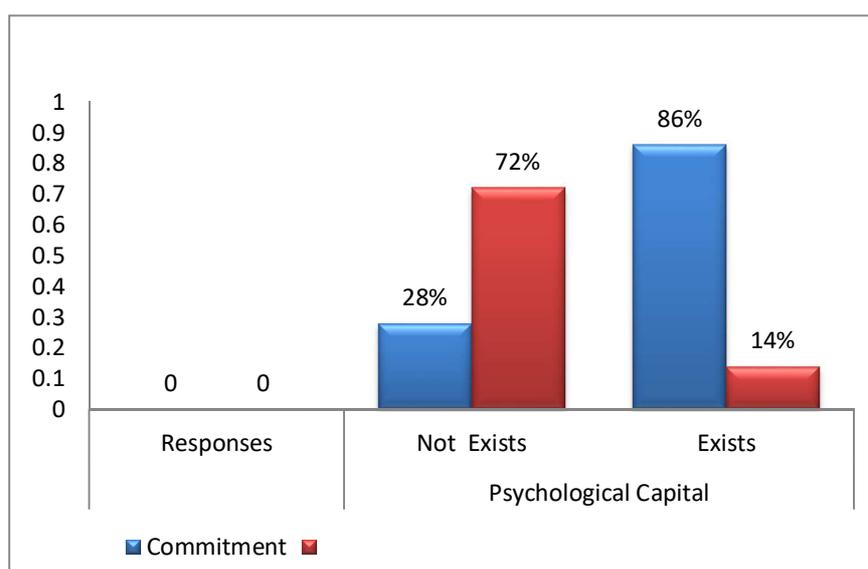


Figure 1. Psychological data information.

According to aforementioned statistics, psychological capital doesn't exist in 85 teachers and out of 85, Sixty one be not devoted to their jobs & Twenty four were found committed. On the other hand, psychological capital was found in 160 teachers in which 23 were not committed to their jobs and 137 were found committed to their jobs

Table 2: Goodness of fit for overall Models

Models	NFI	AGFI	RMSEA	GFI	RMR	CFI	χ^2/df
Standard Value (Usluel et al., 2008)	>.9	>.8	<.08	>.9	<.1	>.9	<.3
Psychological Capital and Affective Commitment							
Model 1 (Hope and AC)	.98	.96	.07	1.0	.04	.99	2.4
Model 2 (Optimism and AC)	1.0	1.0	.06	1.0	.01	1.0	2.1
Model 3 (Efficacy and AC)	1.0	1.0	.07	1.0	.01	.99	2.8
Model 4 (Resilience and AC)	.92	.97	.06	.94	.01	.96	2.4
Model 5 (PC and AC)	.91	.97	.07	.91	.03	.93	2.9
Psychological Capital and Continuance Commitment							
Model 5 (Hope and CC)	.93	.87	.06	1.0	.03	.96	2.3
Model 6 (Optimism and CC)	.97	.92	.07	.99	.01	.99	2.2
Model 7 (Efficacy and CC)	.95	.90	.06	.93	.03	.94	2.8
Model 8 (Resilience and CC)	.93	.88	.06	.96	.01	.93	2.3
Model 9 (PC and CC)	.92	.84	.07	.98	.02	.95	2.3
Psychological Capital and Normative Commitment							

Model 10 (Hope and NC)	.91	.88	.07	.97	.03	.97	2.4
Model 11 (Optimism and NC)	.96	.94	.06	.98	.05	.94	2.1
Model 12 (Efficacy and NC)	.94	.93	.08	.94	.06	.93	2.8
Model 13(Resilience and NC)	.92	.86	.07	.92	.04	.91	2.4
Model 14(PC and NC)	.93	.89	.06	.96	.02	.90	2.9
Psychological Capital and Job Commitment							

$\chi^2 = \text{chi-sqr}$, $df = \text{degree of freedom}$, $GFI = \text{goodness of fit index}$, $AGFI = RMR = \text{root mean error of residuals}$, $RMSEA = \text{root means sq error of approximation}$, $CFI = \text{comparative fit index}$, $NFI = \text{normal fit index}$

Seven fit aforementioned indices i.e. ($\chi^2/d.f$, GFI, AGFI, NNFI, CFI, RMSR, RMSEA) were used for checking the goodness of fit for all alternative models. The result of CFA’s analysis exhibits the uniqueness of variables. The result of all the alternative models depicted that all values have their own significant loadings and all alternative models are good fit.

Table.3: Matrix Correlation

Variables	1	2	3
1. PsyCap	1		
2. Job Commitment	.667**	1	

**P<.01(two-tailed)

The Pearson Correlation Coefficient was used to observe the association amid the 02 variables. The outcome of relationship amid PsyCap aspects i.e. (HERO), job commitment constructs i.e. (CAN) reveal that ($r = .667, p<.01$), ($r = .714, p<.01$) and ($r = .614, p<.01$) correspondingly, that indicates that a significant constructive correlation amid all variables exists.

Mean Difference

Paired Sample T-test

In the field of statistics when two sets of measurements are compared to assess the means difference of population, the above cited test (Paired Sample T-test) is used. The paired samples t-test was utilized to verify the data for the mean difference. The (test statistic) is as follows.

$$t = \frac{d}{s_d \sqrt{n}} \text{ (Chaudhry and Kamal, 2004)}$$

Where

d is sample mean change.

n is numeral of sample variance and

S_d is the standard deviation of di

Formulations for d and S_d are as follows:

$$d = \sum d_i/n$$

$$S_d = \sqrt{\sum (d-d_i)^2/n-1}$$

Table 4: Paired Samples Statistics for Male and Female Teachers, Psychological Capital, Teacher Job Commitment and Student result

Pair	Mean	N	Std. Deviation	T	Sig
Male and Female Teacher-Psychological Capital	1.29	245	.4564	47.16	.000
	3.92	3245	.759		
Male and Female Teacher-Job Commitment	1.29	245	.4564	65.21	.000
	4.28	245	.561		
Male and Female Teacher-Student result	1.29	245	.4564	42.47	.000
	3.91	245	.857		

The result of the t-test which was used to calculate the genders ‘views regarding PsyCap. The mean score of both (male and female teachers) is 1.29 and the PsyCap is 3.92. The value of the t-test found 47.16 and the P. value was found .000. So a significant difference between male and female teacher’s views about psychological capital was found.

The result of the t-test which was used to calculate the genders 'views regarding job commitment. The mean score of both (male and female teachers) is 1.29 and the PsyCap is 4.28. The value of the t-test found 65.21 and the P. value was found .000. So a significant difference between male and female teacher's views about job commitment was found.

The result of the t-test which was used to calculate the genders 'views regarding job commitment. The mean score of both (male and female teachers) is 1.29 and the PsyCap is 3.91. The value of the t-test found 42.47 and the P. value was found .000. So a significant difference between male and female teacher's views about students' result was found.

DISCUSSION

1. The study found that PsyCap was existed in (160) 65% faculty members of University of Peshawar KP, Pakistan. Out of 160 teachers, ninety eight (98) were lecturers, twenty six (26) were assistant professors, thirteen (13) were associate professors and twenty three (23) were professors.
2. 34% teachers were found not committed to their professor .Where as 66%were found committed.
3. Confirmatory factor analysis the result of the revealed that matchlessness among the variable.
4. The study explored that a positive correlation existed among the facets of PsyCap and job commitment.
5. It is depicted from the findings of the study that male and female teacher have a different point of view regarding the presence PsyCap and job commitment.
6. The findings of the study reveal that there is a significant difference between male and female teacher's views about the existence of psychological capital.
7. The findings of the study reveal that there is a significance difference between male and female teacher's views about job commitment.

CONCLUSION

The impact of PsyCap on teachers' job commitment is found by the study. The result of the study depicted that PsyCap is a significant predictor of the attitudes of the teachers. The two main variables i.e. PsyCap and the teacher's job commitment were assessed and examined through several other models. The confirmatory factor analysis values are in the range which is acceptable. The result of CFA and SEM shows that a positive correlation is existed among PsyCap and teacher job commitment. The result of the paired t- test reveals that there is a significant difference amid the male and female teaches regards in PsyCap.

RECOMMENDATIONS AND SUGGESTIONS

1. It is the duty of the administration to develop the PsyCap of the teachers and try to enhance the commitment of the teachers towards their job and Professor.
2. To create a sense of performance in the teacher, the level of commitment must be developed among them.
3. It is essence of the effective commitment and can force the teacher to perform their duty in a befitting manner. To encourage the teacher's towards their program by this facet of commitment, the university should play its role to encourage the teachers.
4. Continues commitment plays a vital role in making a person committed. But most of the teachers are in the position to quit their organization due to inadequate incentive from the university end.
5. The teacher's do not perform their duty in a good way due to unsatisfactory level of normative commitment of teacher's. All the stake holders must pay attention towards it.
6. Due to inadequate continuance commitment in the profession, most of the teacher's leave their profession. Therefore, university should facilitate good teaching-learning environment by involvement of positive psychological capital practices by giving teachers (hope, optimism, resilience and self-efficacy). This helps teachers' stay in their profession and committed in job.
7. Unsatisfactory level of normative commitment of teachers in the job resulted in low moral responsibility of teachers in the profession. Therefore, universities and other concerned bodies should maximize teacher' levels of professional moral responsibility in the job by facilitating attractive teaching learning environment in universities in collaborates with community, governmental and non-governmental organization. This promotes encouragement of teachers in the job.

8. It is recommended and suggested that the in male and female lecturers, assistant professors, associate professor and professor of University of Peshawar all the facets of psychological capital i.e. (hope, efficacy, resilience and optimism) must be enhanced through training intervention.
9. It is recommended and suggested that, at University of Peshawar, the competent authority must implement such training interventions in which all the faculty members must be motivated to employee for their job commitment including i.e. (normative, affective, continuance) commitment.

REFERENCES

- Carver, C. S. & Scheier, M. F., (2005). Optimism. Handbook of positive psychology (pp. 231-243). New York: Oxford University Press.
- Luthans, F. & Avolio, B. J., (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior*, 23, 695-706.
- Luthans, F., and Avolio, B. J., Avey, J. B., and Norman, S. M. (2007). Psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, 60: 541–572.
- Luthans, F., and Youssef, C. M. (2007b). Positive workplaces. In C. R. Snyder and S.J. Lopez (Eds.), Handbook of positive psychology (2nded.). Oxford, UK: Oxford University Press.
- Luthans, F., and Youssef, C. M., (2004). Human, social, and now positive psychological capital management: Investing in people for competitive advantage. *Organizational Dynamics*, 33(2): 143-160.
- Luthans, F., and Youssef, C. M., (2007a). Emerging positive organizational behavior. *Journal of Management*, 33: 321-349.
- Luthans, F., and Avolio, B. J., Avey, J. B., Norman and Combs (2006) Journal of organizational Behaviour: Psychological Capital Development towards a micro-intervention. Department of Management Gallup Leadership Institute, University of Nebraska USA.
- Luthans, F., Vogelgesang, G. R., and Lester, P. B., (2006). Developing the psychological capital of resiliency. *Human Resource Development Review*, 5(1): 25-44. 1
- Masten, A. S., and Reed, M. G., (2002) Resilience in development. In C. R. Snyder, and S. J. Lopez (Eds.), *Handbook of positive psychology*. London, England: Oxford University Press, 74-88.
- Meyer, J. P., and Allen, N. J., (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61-89.
- Reichers, A.E., (1985). A review and re-conceptualization of organizational commitment. *Academy of Management Review*, 10(3), 465-476.
- Sh.Ghaffaripour, (2015). Prediction of Affective organizational Commitment based on Employee Characteristics and Psychological factors among Oil Personnel, 5(4), 337-350
- Tugade, M.M., Fredrickson B.L., (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, 86, 320–333.



Teachers' Perspective on the Need and Practices of Guidance and Counseling at the Secondary Level in Khyber Pakhtunkhwa, Pakistan

Nadeem Khan¹, Amjad Reba²

¹Lecturer, Institute of Education and Research, University of Peshawar, Pakistan.

²Assistant Professor, Institute of Education and Research, University of Peshawar, Pakistan.

Received: December 23, 2017

Accepted: February 3, 2018

ABSTRACT

The study is about the teachers' perspective on the need and practices of guidance and counselling at the secondary level in Khyber Pakhtunkhwa, Pakistan. The main objectives of the study are to explore the perceptions of teachers regarding guidance and counselling; problems of teachers and students in connection with guidance and counseling and to suggest a model of guidance and counseling services/networks. The study is quantitative in nature. Stratified-random sampling technique was used for the allocation of sample size to each stratum. Ten male and ten female secondary schools were selected on a random basis. Questionnaire (Likert scale) was used for the collection of factual information from the teachers. The quantitative data were tabulated and then analyzed through mean and percentages. The main conclusions are: guidance and counselling is really beneficial at the secondary school level because this is the right time where students are looking for their career opportunities/career selection, where they should work/practice and to select their subjects. The key recommendations are: there should be mutual cooperation of the students, teachers, the principal, vice-principal, administrators, parents and the counselor; proper guidance and counseling can make students well-adjusted in society; posts of certified counsellors are needed to be created at the secondary school level and a proper structure of guidance and counselling is needed to be there at the secondary school level.

KEY WORDS: Guidance and Counselling, Need and Practices, Teachers' Perspective, Secondary School Level, Pakistan

INTRODUCTION

Guidance is the major application of psychology in the educational field. The meaning of guidance is a kind of help, assistance or suggestions for development. Guidance refers to the process of helping an individual for developing his body, mind, personality, character and also to assist him in achieving optimum educational, personal, psychological and vocational adjustments (Shahid, 2004). Counseling is such a part of the guidance process in which the counselor helps an individual having a problem. It is face to face interaction in which a trained and skilled individual (counselor) helps a client (counselee) to solve his problem (Ali, 2008). If the activities and experiences of pupils have the advantage of teacher's guidance, many of the mistakes, attempts and unpleasant experiences will be avoided (Anuradha, 2009). It is realized that counseling job is not the job of any ordinary educated individual. It is the job of an expert. We are in need of specialists to counsel the students (Srinavasa, 2009). The teacher cannot take the place of a professional counselor but if he is trained, he can effectively counsel the students in the class in most of the situations (Arbuckle, 1950). Chisholm (1950) has mentioned four steps that will be considered for the actual planning of a guidance programme; such as, the significance of careful planning and the nature of beginning programme, local conditions or problems and the needs in a given school, developing and orientation in guidance on the part of the faculty of the given school and procedures which should be followed in working out the parts of guidance programme for a given school.

"The comprehensive school programme includes four components; such as, curriculum, individual standard students planning, responsive services and system support. The components are designed to explore that every student receives the programme benefits. Licensed school counselors implement these programmes in collaboration with the teachers, administrators, parents and students and the community members maintain students' progress" (Padma, 2009).

There is a complex situation for the student as an adolescent to learn a new situation and must make decisions. Guidance services can aid him by helping to choose those courses and activities most appropriate to him. The whole school team administrator, teacher, guidance specialist and student are involved in this effort with his area of responsibilities (McDaniel, 1956).

*Corresponding Author: Nadeem Khan, Lecturer, Institute of Education and Research, University of Peshawar, Pakistan. Email: nicekhan1976@yahoo.com; nadeemkhan2000@uop.edu.pk

Guidance functions consist helping individual make intelligent choices and suitable decisions. Even when there is no choice possible, guidance may help individual understand and accept the situation. Guidance may also operate when the individual is not conscious that a choice can be made by exploring new avenues (Arshad, n.d). It is essential to remove the problems related to the subject matter and to develop the abilities and skills according to the changing capacities of pupils for the academic growth of pupils. It is desirable for the teacher to understand the pupil first for this purpose, only then he can teach a subject effectively (Kumar, n.d).

At secondary and upper secondary levels, a career guidance and counselling service shall be introduced at least for school clusters, if not in each school. There shall be an involvement by it of the local employers in order to provide information about the openings of jobs and as well the nature of work requirements (GoP, 2008). It is visualized that in order to have proper guidance services, the entire staff of the schools has to be oriented in the use and outcomes of the guidance services which can be achieved only through taking the training facility to the schools rather than having them come for in-service training one by one as done traditionally (GoP, 1979).

Shahid (2004) stated that secondary level is termed as the mainly critical phase for the development of an individual because it is the phase of stress and strain, storm and strife, heightened emotionality and hyper-sensibility, anxieties and worries, conflicts and frustrations. For achieving these purposes, individual guidance at this level consists of appropriate lectures on physical education, discussions, interviews, sympathetic and affectionate attitude, assigning tasks of responsibility, involving the pupils in various co-curricular activities and giving moral and religious education. In Pakistan guidance and counseling which is crucial in the field of education especially and no one can deny its importance as per National Educational Policies but is ignored (Khan, 2012). Guidance and Counseling Services is formally a missing component at all Educational Institutes, Schools, Colleges and Universities—throughout the country. The students/ teenagers face a lot of problems about their personality. They also have to select different areas/subjects but they choose an inappropriate career by selecting the subjects which do not match their attitude, interest, mindset, personality type and the needs of the hour. The students are also having social, emotional and personal problems. Since secondary school level is a terminal, transitional and crucial stage, it is essential to select a problem relating with Guidance and Counseling that could benefit the country in solving the problems of teachers and especially of students at the secondary school level. So, the paper in hand is: Teachers' Perspective on the Need and Practices of Guidance and Counseling at the Secondary Level in Khyber Pakhtunkhwa, Pakistan".

OBJECTIVES OF THE STUDY

- To point out the problems of students and teachers in connection with guidance and counseling;
- To explore the teachers' perspective about the need and practices of guidance and counseling services;
- To suggest a model of guidance and counseling services/network.

SIGNIFICANCE OF THE STUDY

This study will be helpful to understand the perceptions of teachers about guidance and counseling. The problems of teachers and students regarding guidance and counseling will be pointed out which will help to solve these problems. Guidance and counseling in a practical shape will help to solve the problems of stakeholders in this regard. It will also help the planners and policy makers for further implementation.

METHODS AND PROCEDURE

Nature of the Study

It is a quantitative descriptive research study. It involves research activities, ranging from wide review of the related literature and the collection of data through questionnaire from teachers.

Population

The population of the study is comprised of teachers at secondary schools in district Peshawar. There are total 140 secondary schools in district Peshawar i.e. 85 male and 55 female schools (EMIS, 2014-15). The entire population is divided into various strata in such a way that the basic characteristics of the participants within each stratum remained homogenous and that a small sample from each stratum fairly represented the whole population.

Sampling

Stratified-random sampling technique was used for the allocation of sample size to each stratum. Ten male and ten female secondary schools were selected on a random basis. The sample of 100 teachers was distributed among these sub-strata. Thus, 05 teachers from each male and female school were chosen randomly. The total sample size was including 100 teachers.

Instrument Used

A five-point questionnaire (Likert scale) was used for the collection of factual information from the respondents; i.e. teachers.

Data Collection

The quantitative data were collected by researcher while distributing the questionnaires among the teachers. All the questionnaires were duly filled by the respondents and then collected by the researcher. The quantitative data were collected through likert scale five points questionnaire.

Data Analysis

The data was put into tables and then analyzed through mean and percentages. Each item/question was put in the Likert scale table. Strongly agree = 5, agree = 4, undecided = 3, disagree = 2 and strongly disagree = 1 as such points were given to each category. The number of total responses in connection with strongly agree, agree, undecided, disagree and strongly disagree in relation with each item were multiplied by 5, 4, 3, 2 and 1 respectively, then added and after that divided by the total number of respondents to get the mean value \bar{x} . Value 3 was treated as the midpoint. After multiplying, adding and dividing, the score above value 3 represented that the respondents were agree with the statement; but below value 3 showed that they were not agree. After that percentages were also counted. Strongly agree and agree were taken for agree whereas, disagree and strongly disagree were treated as disagree. Then the analysis was made accordingly.. After that discussions were made and then recommendations were given.

Limitation of the Study

The study is delimited to;

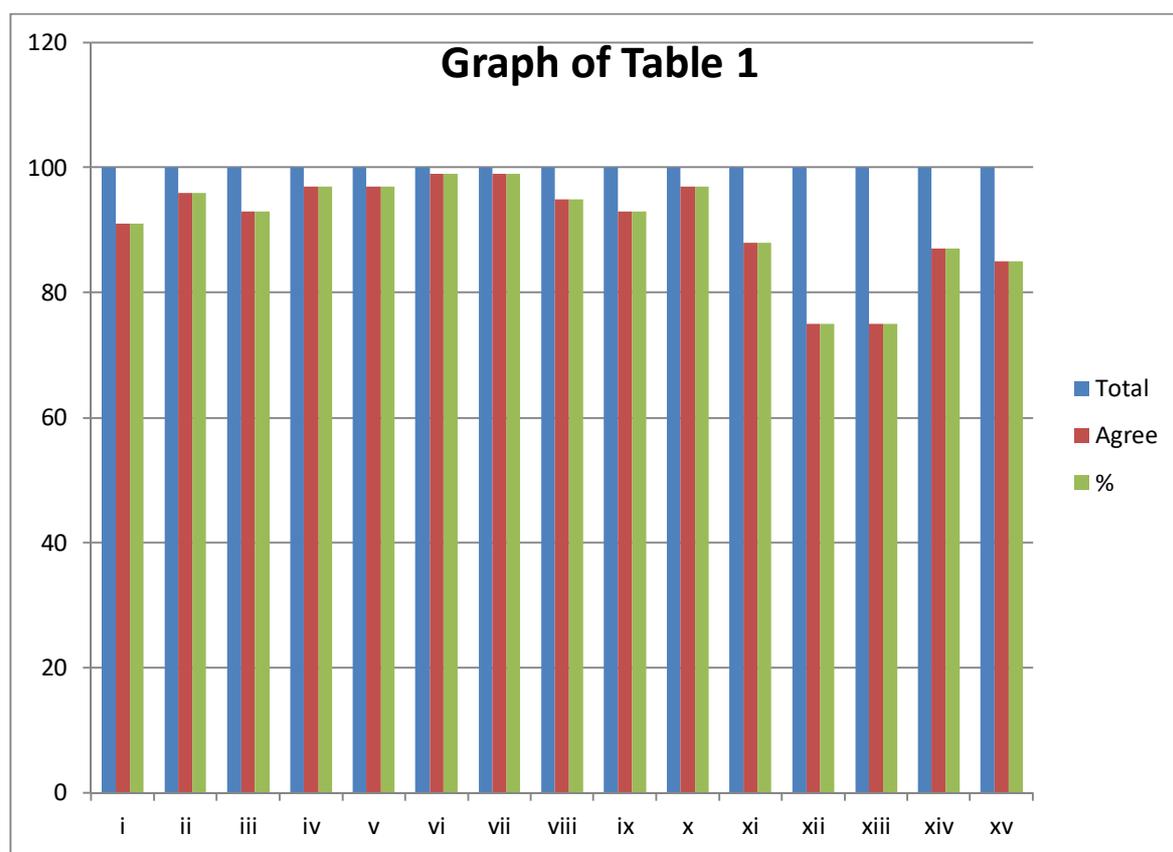
- Secondary Schools
- Male and Female Teachers
- Guidance and Counselling
- District Peshawar

RESULTS AND EXPLANATION

Table-1 Responses of Teachers about Problems of Students and Teachers in Connection with Guidance and Counseling

N = 100

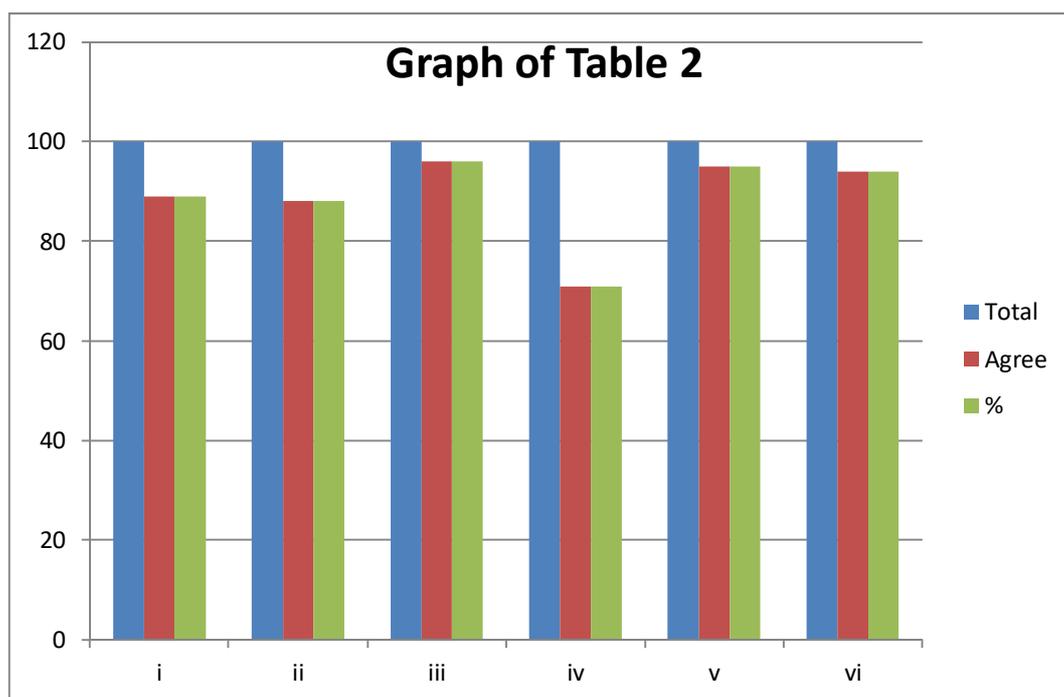
	Teachers Scales	Male Teachers					Mean Value (X)	Female Teachers					Mean Value (X)
		5 %	4 %	3 %	2 %	1 %		5 %	4 %	3 %	2 %	1 %	
i	The need of guidance and counseling should be highlighted at the secretariat/secretary level	22 44	20 40	3 6	5 10	00 00	4.38	31 62	18 36	00 00	1 2	00 00	4.58
ii	Every school should have a guidance and counseling committee	22 44	25 50	2 4	1 2	00 00	4.56	29 58	20 40	1 2	00 00	00 00	4.56
iii	All members of teaching and support staff should be actively involved in guidance and counseling programmes	17 34	26 52	4 8	2 4	1 2	4.12	25 50	25 50	00 00	00 00	00 00	4.5
iv	Confidence level of students can be improved through guidance and counseling	27 54	20 40	3 6	00 00	00 00	4.48	32 64	18 36	00 00	00 00	00 00	4.64
v	Learning problems of students can be solved through guidance counseling	25 50	22 44	2 4	1 2	00 00	4.42	30 60	20 40	00 00	00 00	00 00	4.6
vi	Self-awareness in students through guidance and counseling can be developed	27 54	22 44	00 00	1 2	00 00	4.5	28 56	22 44	00 00	00 00	00 00	4.56
vii	Proper guidance and counseling can make students well-adjusted in society	31 62	18 36	1 2	00 00	00 00	4.6	31 62	19 38	00 00	00 00	00 00	4.62
viii	Development of students interest will lead to the selection of vocational and educational courses	22 44	23 46	5 10	00 00	00 00	4.34	31 62	19 38	00 00	00 00	00 00	4.62
ix	Guidance and counseling help in solving psychological problems of students	18 36	27 54	5 10	00 00	00 00	4.26	34 68	14 28	2 6	00 00	00 00	4.64
x	Guidance and counseling assist the students for the solution of their personal and social problems	21 42	28 56	1 2	00 00	00 00	4.4	25 50	23 46	2 4	00 00	00 00	4.46
xi	Budget allocation may be increased for the establishment of guidance and counseling program	12 24	28 56	10 20	00 00	00 00	4.04	28 56	20 40	1 2	1 2	00 00	4.5
xii	Teachers have some psychological problems at the secondary school level	9 18	23 46	10 20	8 16	00 00	3.66	15 30	28 56	3 6	5 10	2 4	4.16
xiii	Maladjusted students are difficult to be handled by secondary school teachers	6 12	27 54	10 20	5 10	2 4	3.6	18 36	24 48	2 4	6 12	00 00	3.58
xiv	Teachers are depressed due to work at the secondary school level	19 38	22 44	3 6	6 12	00 00	4.08	28 56	18 36	3 6	1 2	00 00	4.46
xv	Secondary school teachers have personal and social problems	20 40	23 46	2 4	3 6	2 4	4.12	21 42	21 42	3 6	4 8	1 2	4.14



The first statement states that the need of guidance and counseling should be highlighted at the secretariat/secretary level, as the mean score is 4.48 and the percentages are 91(91%).The second statement elaborates that every school should have guidance and counseling committee, the mean score is 4.47 and the percentages are 96(96%).The third statement clarifies that all members of teaching and support staff should be actively involved in guidance and counseling programmes, the mean score is 4.31 and the percentages are 93(93%).The fourth statement shows that confidence of students can be improved through guidance and counseling, the mean score is 4.56 and the percentages are 97(97%). The fifth statement elaborates that learning problems of students can be solved through guidance and counseling, the mean score is 4.51 and the percentages are 97(97%).The sixth statement states that self-awareness in students through guidance can be developed, the mean score is 4.53 and the percentages are 99(99%).The seventh statement shows that proper guidance and counseling can make students well-adjusted in society, the mean score is 4.61 and percentages are 99(99%).The eighth statement states that development of students interests, will lead to the selection of vocational and educational courses, the mean score is 4.48 and the percentages are 95(95%),The ninth statement reveals that guidance and counseling help in solving psychological problems of students, the mean score is 4.45 and the percentages are 93(93%). The tenth statement shows that guidance and counseling assists the students for the solution of their personal and social problems, the mean score for this statement is 4.43 and the percentages are 97(97%). The eleventh statement elaborates that budget allocation may be increased for the establishment of guidance and counseling program, the mean score for this statement is 4.27 and percentages are 88(88%).The twelfth statement tells that teachers have some psychological problems at the secondary school level, the mean score is 3.91 and the percentages are 75(75%), which shows that most of the respondents supported that statement but not as emphatically as other statements. The thirteenth statement elaborates that maladjusted students are difficult to be handled by the secondary school teachers, the mean score is 3.72 and the percentages are 75(75%), which indicates that most of the respondents are agreed with this statement. The fourteenth statement explains that teachers are depressed due to work load at the secondary school level, the mean score is 4.27 and the percentages are 87(87%).The last and fifteenth statement in table-1 shows that secondary school teachers have personal and social problems, the mean score is 4.13 and the percentages are 85(85%), which explains that most of the respondents are agreed with that statement.

Table-2 Responses of Teachers about the Implementation and Practices of Guidance and Counselling
N=100

Teachers Scales	Male Teachers					Mean Value (X)	Female Teachers					Mean Value (X)
	5 %	4 %	3 %	2 %	1 %		5 %	4 %	3 %	2 %	1 %	
i Posts for counselors at the secondary school level should be created	18 26	24 48	5 10	2 4	1 2	4.12	34 68	13 26	00 00	2 4	1 2	4.54
ii A teacher among the teachers can be given guidance and counseling responsibilities	15 30	30 60	1 2	3 6	1 2	4.1	24 48	19 38	2 4	3 6	2 4	4.2
iii Teachers can be trained as master trainers and then they can be providing training to other teachers regarding guidance and counseling	26 56	23 46	1 2	00 00	00 00	4.5	23 46	24 48	1 2	1 2	1 2	3.94
iv Some students should be appointed as peer counselors	7 14	30 60	9 18	3 6	1 2	3.78	9 18	25 50	7 14	2 4	7 14	3.54
v School based in-service courses on guidance and counseling for all staff is required to be organized	22 44	24 48	4 8	00 00	00 00	4.36	28 56	21 42	00 00	1 2	00 00	4.52
vi Teacher and other members of counseling team should go for counseling supervision	14 28	32 64	2 4	2 4	00 00	4.16	30 60	18 36	00 00	2 4	00 00	4.48



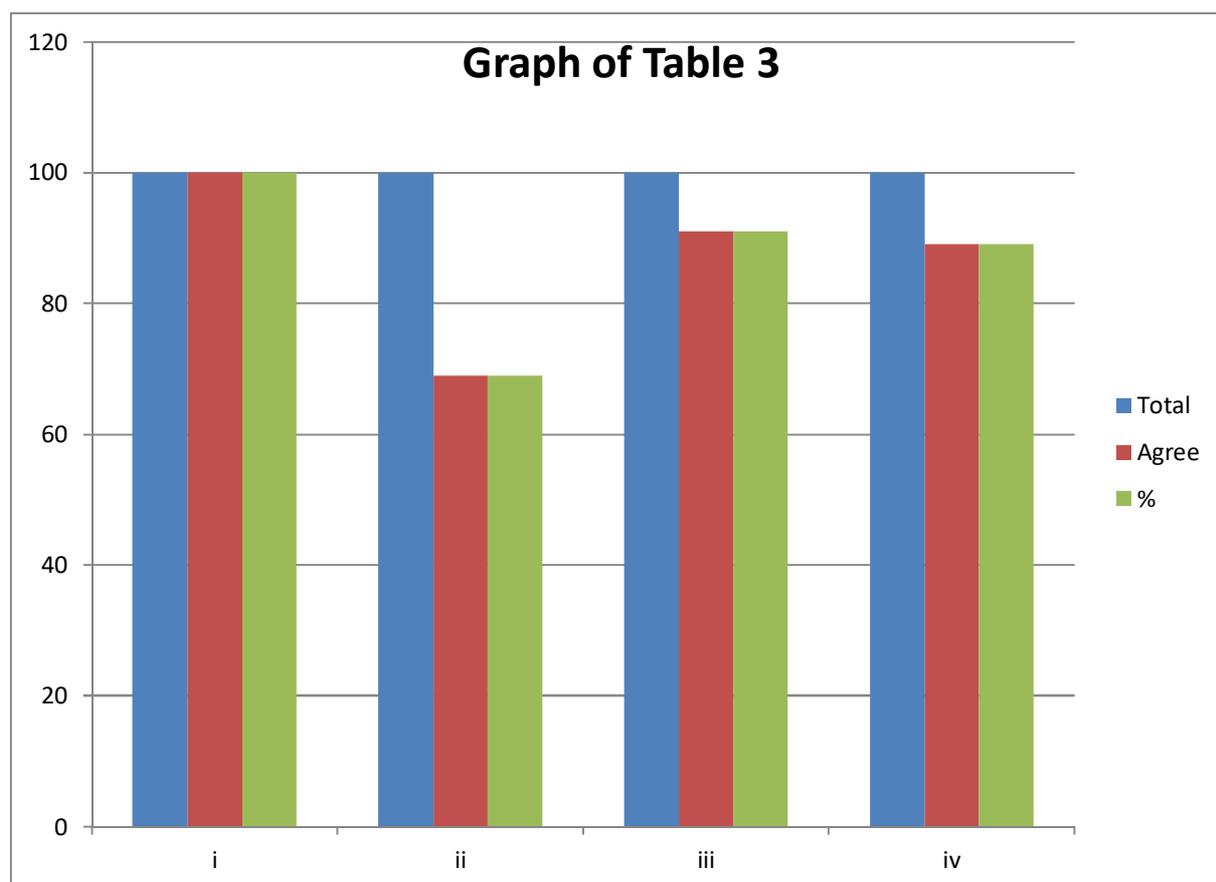
The first statement of table-2 states that posts for counselors at the secondary school level should be created, the mean score is 4.32 and the percentages are 92 (92%), The second statement in table-2 indicates that a teacher among the teachers can be given guidance and counseling responsibilities, the mean score is 4.1 and the percentages are 88(88%), which shows that most of the respondents supported that statement. The third statement in table-2 reveals that teachers can be trained as master trainers and then they can be providing training to other teachers regarding guidance and counseling, the mean score is 4.22 and the percentages are 96(96%), which shows that majority of the respondents supported that statement. The fourth statement in table-2 indicates that some students should be appointed as peer counselors, the mean score is 3.66 and percentages are 72(72%), which clarifies that most of the respondents supported that statement. The fifth statement in table-2 states that school based in-service courses on

guidance and counseling for all staff is required to be organized, the mean score is 4.44 and the percentages are 96(96%), which clarifies that majority of the respondents are agreed with that statement. The sixth and last statement in connection with table-.3 elaborates that teacher and other members of counseling team should go for counseling supervision, the mean score is 4.32 and the percentages are 94(94%), which shows that majority of the respondents supported that statement.

Table-3 Responses of Teachers about a Model of Guidance and Counseling Services

N = 100

Scales						Mean Value (X)						Mean Value (X)
	5 %	4 %	3 %	2 %	1 %		5 %	4 %	3 %	2 %	1 %	
i For better academic performance of students in secondary schools, a proper structure of guidance and counseling is needed to be there	32 64	18 36	00 00	00 00	00 00	4.64	34 68	16 32	00 00	00 00	00 00	4.48
ii Cluster system of guidance and counseling may work at the secondary school level, e.g. every ten schools situated nearby	14 28	29 58	3 6	4 8	00 00	4.06	13 26	13 26	3 6	18 26	3 6	3.3
iii In every school, at least there may be a small unit with the logistics and facilities, where there will be files and profiles of the students having problems	20 40	28 56	2 4	00 00	00 00	4.36	25 50	18 36	5 10	2 4	00 00	4.32
iv Students should participate in designing programs for guidance and counseling	20 40	25 50	3 6	3 6	00 00	4.3	21 42	23 46	1 2	3 6	2 4	4.16



The first statement regarding table-3 states that for better academic performance of students in secondary schools proper structure of guidance and counseling is needed to be there, the mean score is 4.56 and the percentages are 100(100%). The second statement in relation with table-3 reveals that cluster system of guidance may work at the secondary school level, e.g. every ten schools situated nearby, the mean score is 3.68 and the percentages are 68(68%), which indicates that most of the respondents are agreed with that statement; the disagreement of some of the respondents with that statement may be due to the reason that most of the schools in Peshawar city are heavy and the cluster system may not work over there. The third statement in connection with table-3 indicates that in every school, at least there may be a small unit of guidance and counseling with the logistics and facilities, where there will be files and profiles of students having problems, the mean score is 4.34 and the percentages are 92(92%). The fourth and last statement in table-4 states that students should participate in designing programs for guidance and counseling, the mean score is 4.23 and the percentages are 90(90%).

DISCUSSION

1. Problems of Students and Teachers in Connection with Guidance and Counseling:

- i. According to the data, the need of guidance and counseling should be highlighted at the secretariat/secretary level, a very large number of teachers favoured it. Ngamun and Bobga in their research paper (2016) said that there is need for serious enlightenment on the part of the public to accept guidance and counseling. This will help strategies for administrators to achieve a realistic perception of students in their school environment.
- ii. According to the data, every school should have guidance and counseling committee, a very large number of teachers agreed with it. Florida Department of Education (2001) stated that an advisory committee for the development of students has been established and is active. The chief purpose of the advisory committee is to set program goals, provide support, offer advice, review present activities, and encourage new activities to meet up the goals of the comprehensive program.
- iii. As far as the data is concerned, all members of teaching and support staff should be actively involved in guidance and counseling programmes, a very large number of teachers agreed with it. Springfield Public School (2009) stated that the comprehensive school counseling program guide revision team believes that all stakeholders in the Springfield Public School System should be notified and instructed in connection with the comprehensive school counseling program so that it can be fruitfully and efficiently instituted with everyone support and assistance.
- iv. According to the data, confidence of students can be improved through guidance and counseling, a very large number of teachers favoured it.
- v. The data elaborates that learning problems of students can be solved through guidance and counseling, a very large number of teachers favoured it. Hutchinson and Nancy (1995) said that making developmental career counseling focus in secondary schools contributes to the success of youth with learning disabilities
- vi. The data stated that self-awareness in students through guidance can be developed, all the teachers agreed with it.
- vii. The data stated that proper guidance and counseling can make students well-adjusted in society, all the teachers agreed with it. Egbo (2015) said that counselors make use of school guidance programmes that include orientation counseling, information, appraisal, placement, referral, evaluation, follow up, research and community services to bring about excellent well-being and optimal adjustment of secondary school students in and outside schools.
- viii. According to the data, development of students interests, will lead to the selection of vocational and educational courses, a very large number of teachers favoured it.
- ix. According to the data, guidance and counseling help in solving psychological problems, a very large number of teachers favoured it.
- x. According to the data, guidance and counseling assist the students for the solution of their personal and social problems, a very large number of teachers agreed with it.
- xi. According to the data, budget allocation may be increased for the establishment of guidance and counseling program, a large number of teachers favoured it. According Karp (2013) in large part, community colleges have not been able to implement an ideal model of guidance and counseling due to structural constraints; such as, limited budgets, limited staffing and organizational divisions.
- xii. The data stated that teachers have some psychological problems at the secondary school level, most of the teachers favoured it.
- xiii. The data elaborates that maladjusted students are difficult to be handled by the secondary school teachers; most of the teachers favoured it.

xiv. The data explains that teachers are depressed due to work load at the secondary school level, most of the teachers agreed with it. Bolton (2015) said that time management and work-load stress were the main stressors.

xv. The fifteenth statement shows that secondary school teachers have personal and social problems, most of the teachers and students agreed with it.

2. Ways and Means about the Implementation and Practices of Guidance and Counseling Services:

i. According to the data, posts for counselors at secondary school level should be created; a very large number of teachers favoured it. Anuradha (2009) stated that posts of counselors are important in schools because they administer tests, interpret the results of psychological tests, give information about different types of courses and various occupations, give individual counseling to the students, assist teachers with pupils problems which the teachers find difficult and take the follow-up work with a view to assess the outcome of guidance services.

ii. The data indicates that a teacher among the teachers can be given guidance and counseling responsibilities, a large number of teachers favoured it. Thomas (1990) said that as far as the professional training of counsellors is concerned, the teachers may be deficient in this respect but the school teachers are having a long convention for giving help to the students having personal problems. Quantitative data showed that teachers can be trained as master trainers and then they can be providing training to other teachers regarding guidance and counseling, a very large number of teachers agreed with it.

iii. The data indicates that some students should be appointed as peer counselors, most of the teachers agreed with it. The data elaborated that there can be exchange visits of students of one school to another. So, the students can learn what the other students of secondary school should have got the knowledge or guidance and counseling from their respective teachers or principals; i.e. peer counseling .summer camp is an excellent opportunity for such activity.

iv. According to the data, school based in-service courses on guidance and counseling for all staff is required to be organized, a very large number of teachers favoured it.

v. The data elaborates that teacher and other members of counseling team should go for counseling supervision, a very large number of teachers favoured it.

3. A Model of Guidance and Counseling:

i. The data elaborated that for better performance of students in secondary schools proper structure of guidance and counseling is needed to be there, all the teachers agreed with it. Chaudri (2015) in her research paper stated that every school should have proper guidance unit and its proper functioning should be there to help the students for their diverse problems, which will help in promoting the overall quality of education.

ii. According to the data, cluster system of guidance may work at the secondary school level, e.g. every ten schools situated nearby, most of the teachers favoured with it. Chikoko (2007) stated that the grouping of schools within the same geographical location for the sake of economic, pedagogic, administrative and political purpose is the school clusters and the idea has come out as one possible solution for developing countries in order to achieve qualitative as well as quantitative improvements in the systems of their education within the framework of financial scarcity.

iii. The data indicated that in every school, at least there may be a small unit of guidance and counseling with the logistics and facilities, where there will be files and profiles of students having problems, a very large number of teachers favoured it. Hammons (n.d) said that the school counseling centre should be situated in a place separate from administrative suite. Ideally, the head of the guidance department's office and school counselor's offices set up in a part of the school that is easily-reachable and has a positive connection for students.

iv. According to the data, students should participate in designing programs for guidance and counseling, a very large number of teachers favoured it. Scotia (2010) stated that in order to develop and implement the comprehensive guidance and counseling programme in a school, all the stakeholders in the educational process have a role to play.

RECOMENDATIONS

i. Guidance and counseling can be there in every school in Pakistan on emergency basis as secondary school level is termed as the most critical, terminal, transitional and crucial stage of individual development.

ii. PTC should be active in solving the guidance and counseling problems of students.

iii. As guidance work requires mutual cooperation of all the staff; especially the teachers, the head teacher and the counselor. So, the cooperation of all the staff is required to be there for the success of guidance and counselling in a school.

iv. There should be a planned programme /structure of guidance and counseling and that it should be provided on regular basis; i.e. daily and monthly basis for the immediate solution of problems.

v. Several factors which affect the provision of effective counseling services; such as, lack of resources include finance, counseling room (located in a private and quiet part of the school) lack of time and traditional (cultural) belief should be covered.

REFERENCES

- ALI, M. (2008). *A Guide for Prospective Headmasters*. Peshawar: University Publishers.
- Anuradha J. (2009). *Educational Guidance and Role Played by Teachers and Administrators. Guidance and Counseling in Shaping the Destiny*. New Delhi: APH Publishing Corporation. 73-80.
- Arbuckle, D. S. (1950). *Teacher Counseling*. Cambridge: Addison-Wesley Press.
- Arshad, M. (n.d.). *An Educational Persona*. Lahore: Z.A. Printers.
- Bolton M. (2015). Workload Related Among Secondary Level Teachers in Ireland. Unpublished Thesis.p.66
- Chaudri P. (2015). Need of Guidance Programme at Secondary School Level. *International Education and Research Journal*. 2 (5). 47-50.
- Chikoko, V. (2007). The school cluster system as an innovation: Perceptions of Zimbabwean teachers and school heads. *Africa education review*, 4(1), 42-57.
- Chisholm, L. L. (1950). *Guiding Youth in the Secondary School*. American Book Co.
- Egbo J. (2015). Guidance and Counseling: A Creativity for Providing Sustainable Well Being and Adjustment of Secondary School Students in Nigeria. *British Journal of Education*. (3), 10. 49-57
- Florida Department of Education. (2001). Florida's School Counseling and Guidance Framework: A Comprehensive Student Development Program Model
- Govt. of Khyber Pakhtunkhwa. (2014-15). Annual Statistical Report of Govt Schools: EMIS-Educational Management Information System: Elementary & Secondary Education, Khyber Pakhtunkhwa.
- Govt. of Pakistan. (1979). *National Education Policy and Implementation Programme*. Islamabad: Ministry of Education.
- Govt. of Pakistan. (2008). *Draft National Education Policy*. Islamabad: Ministry of Education.
- Retrieved from: <http://writing.wikinut.com/importance-of-guidance-and-counseling-schools>
https://en.wikipedia.org/wiki/parent-teacher_association.
- Hutchinson, N. (1995). *Career counseling of youth with learning disabilities*. ERIC Clearinghouse on Counseling and Student Services.
- Karp M, M. (2013). Helping Students Make Academic and Career Decisions: Working Paper. Teachers College, Columbia University: Community College Research Center.
- Khan, N. (2012). *Career/Vocational Guidance/Counseling at Secondary School in Pakistan: The Role of Secondary School Teacher in Students' Guidance*. Lambert Academic Publishing, Germany.
- Kumar. (n.d.). *Guidance and Career Counseling*. New Delhi: APH Publishing Corporation.
- McDaniel, H. B. (1956). *Guidance in the Modern School*. New York: Dryden Press.
- Ngamun T, Bobga J. (2016). An Appraisal of Effective Provision of Guidance and Counseling Services Cameroon States Universities: To Ends and Challenges. *International Journal of Humanities, Social Sciences and Education*. 3(9). 75-90.
- Padma, J. (2009). *Guidance and Counseling-USA Needed Services in School System*. New Delhi: APH Publication. 42.
- Scotia N. (2010). *Comprehensive Guidance and Counseling Programme*. Department of Education.
- Shahid, S.M. (2004). *Guidance and Counseling*. Lahore: Majeed Book Depot.
- Springfield Public School Working Document. (2009). Comprehensive School Counseling Program Guide
- Srinavasa. (2009). *Student Counseling*. New Delhi: APH Publication.
- Thomas E. (1990). Counselors and Teachers as Student Advisors. Source: ERIC Clearinghouse on Counseling and Personnel Services Ann Arbor MI.



A Scholastical Research of the Status of Women Witness in Islam its Misdemeanors and Social Impacts

Ali Said¹, Dr. Muhammad Naeem²

Department of Islamic Studies Abdul Wali Khan University Mardan Khyber Pakhtunkhwa Pakistan

Received: December 26, 2017

Accepted: February 3, 2018

ABSTRACT

This research has carried out to elaborate the status of women witness in various transactions as well as to explain misdemeanors over it and its social implications. The main objectives of the study is to define evidence, status of women evidence and analyze misdemeanors and its social impacts critically. Evidence means, "The information which is used in a court of law try to prove something through documents, objects or statements".

A witness is a person who testifies what he has seen of a matter or an event. The witness of women is justified by Quran, Hadith Consensus and even by Common sense. Judiciary is the milestone of peace alieving in society while witness is the back bone of every judicial system. Without witness never justice could be done nor can any right be proved or protected in the court of law. Therefore Islam has given the status of trust to witness and direct the witnesses to deliver it in the court with full honesty and integrity without fear and apprehension.

The women witness plays a pivotal role in all evidential proceedings. It is unanimously admissible in women related matter like: Menses, Delivery, Virginity, Pregnancy, Marital Status Chorale, Clearance of Womb etc. while in financial matters like Sale Purchase, Confession, Mortgage, Usurpation, Marriage, Divorce, Eddatt (Stay-at-home), Pedigree, Bequest, Attorneyship, Freedom of Salves, Inheritance, Reconciliation, Gift and Will, agreements are also admissible without gender discrimination with the condition that if she would hobble during evidence recording in court, may be associated and assisted by another woman to avoid hesitation.

According to Majority opinion of the jurists in Fornication and Boundaries (Haddood) cases her evidence may not be accepted because in Haddood the benefit of doubt goes to the accused while according to Imam Ibn -e -Hazam Al-Zahiri, her witness is admissible in all transactions.

Bases verse No. 282 of Surat-al-Baqara, the Orientalists misdemeanors and assertion that Islam has discriminated women while halting her witness half to men but it is their misconception because in Islamic point of view in women relating matters her sole witness is acceptable while in irrelevant matters she had given relief and exemption which does not mean her inferiority to men. It is just the variation of responsibilities. It is a universal truth that women are very abashed and do not like to see adultery or to be the witness of it. Therefore Islam has reduced her burden by exempting her evidentiary liability in fornication cases.

KEYWORDS: Witness, Misdemeanors, Social Impacts, Implications, Evidence, Statement, Information, Testifies, justified, Consensus, Judiciary, Milestone, Alieving, Integrity, Apprehension, Pivotal role, Evidential proceedings, Admissible, Menses, Delivery, Exempt Virginity, Pregnancy, Marital Status, Chorale, Clearance of Womb, Sale Purchase, Will, Confession, Mortgage, Usurpation, Marriage, Divorce, Eddatt (Stay-at-home), Pedigree, Bequest, Attorneyship, Freedom of Salves, Inheritance, Reconciliation, Gift, Agreements, Discrimination, Fornication, Boundaries, Transactions, Orientalists, Assertion, Halting, Misconception, Inferiority, Responsibilities, Adultery, Evidentiary.

INTRODUCTION

In this World Allah the Al-Mighty has necessitated human being reciprocally for each other. It always happens that one claims right over other but his sole claim has no value in the eye of law, not because of his trustworthiness but if just due to claim and statement of the claimer the right is to be proved it would cause to left peace from

¹ : Ph. D Scholar, Department of Islamic Studies, Abdul Wali Khan University Mardan, Khyber Pakhtunkhwa Pakistan.

² : Assistant Professor, Department of Islamic studies, Abdul Wali Khan University Mardan, Khyber Pakhtunkhwa Pakistan.

*Corresponding Author: Ali Said, Ph. D Scholar, Department of Islamic Studies, Abdul Wali Khan University Mardan, Khyber Pakhtunkhwa Pakistan

society and lives of the human beings would be complicated and disastrous. So for claim proving the statement of a witness should be produced in the court of law which is called evidence recording.

Lexical meaning of evidence: Lexically evidence is the decisive information about an event as narrated by Imam al Lughavi. In Arabic language word “Shahadat” is derived from “ش، ه، د” which means presence or seeing.

Technical Meaning of Evidence: Technically its means the righteous information about a matter which may be recorded in the court of law. According to Allama Ibn Nujaim the corporal information about an event or an object. While mistrust and incorporeal information is not the evidence.

According to Allama Shami, “Evidence is the true information stated in the court of law for proving of right”.

Justification of women’s witness: God has permitted evidence for protection of rights and obligations. Evidence uses as a tool in courts for proving of claims without any gender discrimination. Therefore it has justified by original sources of Islamic law like Al-Quran, Sunnah, Consensus and Analogy.

1: Evidence justification from Quran: The Holy Quran permits the evidence and states, “واستشهدوا شهيدين من رجالكم فإين لم يكونا رجلين فرجل وامرأتان ممن ترضون من الشهداء

“Do appoint two male as witness on your transactions and if there is no man than appoint two women as witness from whom you like”

It is commanded another place by Al-Mighty Allah, “واشهدوا ذوي عدل منكم”

“Do appoint two credible witnesses among thou”

2: Justification of evidence from Hadith: It is narrated “التبينة على المدعى واليمين على من انكر”

“Producing of witness is laden on plaintiff while oath bearing lies on defendant”

Another place it is stated by the Holy Prophet that “الليس شهادة المرأة مثل نصف شهادة الرجل”

“Does evidence of a woman not equal to half of man?”

3: Routine of companions: From era of the Holy Prophet (SAW) till date, the whole Umma Islamiyah unanimously agreed on the legitimization of woman witness without any contradiction, bases on the aforementioned Quranic Verses and Ahadithes with the following sagas: e. g:

1: During the reign of Hazrat Umar Ibn Khatab (Allah may be pleased with him) an intoxicant divorced his wife thrice at once, which was witnessed by four women merely. He accepted their evidence and ordained seclusion among them.

2: It is also firmed from Hazrat Ali that in a lawsuit He (Allah may be pleased with him) implemented blood money by the witness of women.

3: From Hazrat Ayesha Siddiqh (Allah may be pleased with her) alone, 2210 Ahadithes have been narrated which are authenticated and coincided.

4: In a fosterage lawsuit a woman claimed the spousal her suckling. The Holy Prophet Ordained seclusion of the couple while informing woman was the alone informer.

5: In a lawsuit of coercive fornication, the accused was reluctant to confess the offence, but the Prophet of Allah ordained death to stones the accused by lonely statement of the victimized women.

It is evident from the aforementioned sayings that basically women has the capability to be the witness in each and every transaction except where there contrary would found and it is also the importunity of wisdom.

Importance of women evidence: For establishment of justice judiciary is very important while evidence is the back bone of every judicial system across the world. Without evidence neither right of anyone can be proved nor justice can be done. Therefore in Islamic code of justice evidence has the status of trust. In Islamic judicial system if someone knows about an event it is his obligation to record it with full truth, integrity and honesty in the court of law. About this importance the Holy Quran stating “ولا تكتنوا”

“الشهادة ومن يكتنمها فإنه أثم قلبه”. “And do not conceal evidence and those who conceals it, surely his heart is sinful.

In those matters where none can be witnessed without women their evidently value increases more and more, like: women imperfections, delivery, virginity, marriage hood, choruses etc.

Proving of an offence in Shariah depends upon the course and statement of witnesses while in some cases keeping in view circumstances the statement of accused itself may be trustworthy to be decided upon it. The jurists of Islam have based on verse No. 282 Al- Baqara in evidence recording in which cause and course of evidence has been prescribed. The Holy Quran says:

“فإن لم يكونا رجلين فرجل وامرأتان ممن ترضون من الشهداء ان تفضل احدا هما فتذكر احدا هما الاخرى”.

Translation: “If there would not two men than one man and two women from those whose thou like to be witness if one of them would forget the other one will remind”

In this verse the witness of woman declares half to man due to which many questions arises, either Islam has given half status to woman than man while in the eye of Islam except natural and generatic diversity both of them have equal rights which has removed misdeems about her status in Islam.

According to Islam woman is not merely knuckle to man rather she has her own independent status and personality. She had her own existence towards Here and Hereinafter. She can be witness as a man but due to some species weaknesses Sharia has given her some special leniency in all walks of life. It does not means that man is better than women rather it means that men's responsibilities are different than women. If verses of the Holy Quran and Ahadithes of the Holy Prophet could observe keenly it would be revealed that in common circumstances no difference has kept among evidence of them.

Woman witness has a great value in Islamic Judicial system and according to Jamhoor Fuqha woman can be appointed in financial transaction as witness because these matters are frequent and dispute is dreadful in it.

Secondly it is easy to appoint woman as witness in these matters. To avoid fatigue the lawgiver articulately ordained women witness.

Imam Ibn Hazam Zahiri and his followers on the base of the aforementioned verse permitted women witness in Hadood and Qisas also. The Holy Quran guided appointment of witnesses in the following social transactions like: Consignment orphans property, Will, Divorce and Marriage contracts women can be appoint as a witness without any gender discrimination and this is the demand of wisdom and analogy also that women can be appointed in all transaction except where contrary to it existed.

Evidence and information depends upon observation of a thing and onwards narration with confidence and authenticity. Acceptance of women witness with confidence in all transactions irrespective of gender discrimination is also the demand of logic. Witness has a key role in establishment and maintenance of peace and justice in society.

Therefore Sharia has especially emphasized at the course and accomplishment of evidence. Evidence commandments have mentioned eight time in Holy Quran out of which in seven places there is no gender specification while in one verse i. e: 282 of Surah al Baqara it has been ordained that if there would not two men then one man and two women could be appointed as witness.

The Prophet of Allah Said, “لا نكاح إلا بولي وشاهدين”. “No validity of marriage contract except in the presence of legal heir and two witnesses”.

These sources indicates permissibility of women witness in Sale, Holding, Acknowledgment, Mortgage, Usurpation, Marriage, Divorce, Return, Staying Period, Clarity of womb, Delivery, Lineage, Endowment, Reconciliation, Gift, Advocacy, Releasement, Inheritance, Will, Pregnancy etc. equal to men without any gender discrimination. In the aforementioned transactions one women witness is equal to man so whenever she would come to court for evidence recording she may be associated by another women that if she would forget or confused the second will assist her in reminding.

Viz the second woman in the court is not as a witness rather she is the assistant of the evidence recorder. It is an extraordinary concession with women in Sharia Islamiyah during evidence recording otherwise if one would hesitate in statement during evidence recording his evidence consider weak.

Except Islam rest of the judicial systems do not permit any one to take help from other during evidence recording while Islam had given this special reprieve to women by permitting to consult her colleague during fidgety for rectification in statement. The other systems has left woman on the petty of lawyers during evidential proceedings. As per Islamic teachings in religious liabilities there is no gender discrimination among man and woman e.g.: Al-Ahzab 35, Al-Imran 195, Al-Nisaa 135 and Al-Tauba 71.

In fornication the Lawgiver permits only male evidence with the reason that in Hadood offences the intent of Lawgiver is the elimination and dispelling of punishment. Therefore in fornication cases the women have been exempted from witness while men would be the only legitimize witness. This limitation has restricted proving of fornication which is the implied intention of Lawgiver.

In common circumstances any event can be proved by the statement of two witnesses but the jadish pretext of fornication could only be proved by the evidence of four witnesses. It is impossible for witnesses to see this heinous offence explicitly at a time simultaneously. The incumbent of four witnesses in fornication is the further concealment of this felony while avoiding recitation of this obscenity the women have not been bothered to be witness in it at all.

In fact evidence is a necklace responsibility which's accomplishment is not affable for a common man than how a Muslim domestic woman could describe its ingredients in courts. When a woman appears before the family

court in a suit she faces a lot of pattering and cross examining while due to natural modesty it is very difficult for her to replicate.

Secondly naturally every woman in the world when saw any sexual offence due to modesty she walkway her face while whenever all ingredients of fornication could not be seen it may not be witnessed. Due to natural modesty physical sighting of fornication is impossible for woman and if it would see by woman than Islam does not bothered them to describe this abominable pretext to avoid their erring wandering court. Islam has adopted the tool of circumstantial evidence for the punishment of this heinous offender.

Keeping in view this rapprochement all the four jurisprudential thoughts have approved imposition of Had in fornication only on the evidence of men. They approached that although evidence of the woman is comprehensive but due to aforementioned expediency it may not be accepted in fornication cases. In rest of Hadd and Retaliation cases it is preferable that its witness may be two male while some jurists have contrary contention like Ibn Hazam Zahiri and Ibn Qayyum. According to them the witness of two women is equal to one man and their evidence should be equally accepted in all transactions of rights and duties either Hadd, Qisas, Marriage or Divorce etc.

In their opinion women evidence may be accepted in all criminal offences because in criminal offences one can be witnessed auto involuntarily. Similarly Atta Ibn Abi Arbah also accepted their evidence in fornication and other offences without any gender discrimination He elaborated that if three man and two women witness in fornication it would be accepted or if eight women witnessed of anyone adultery he / she may be death to stone. They arguments basis on Quranic verses and Ahadithes.

Like: "And appoint witness either one man or two women" لقوله تعالى: "فرجل وامرأتان"

The Holy Prophet Saallaho Alihi wasalam had also said in an occasion during conversation with a woman "ليس شهادة المرأة نصف شهادة الرجل؟ قلنا بلى يا رسول الله"

"Does evidence of a woman not half to man? We had said why not?"

The conceders argued, that here the modus operandi is common and no discrimination between man and woman even in Hadd, Qisas or other offences.

The status of women witness in feminine transactions

Almost all Islamic Jurists have conceded that the woman witness shall be accepted in all feminine transactions without any injunction.

According to Ahanafs usually feminine transactions are those which are usually keep conceal from men and not permissible to be seen by them. So their evidence shall not be accepted in it.

According to Ahanafs and Hanbala in women related transactions although the evidence of two women is better but the evidence of a single Muslim woman is also sufficient. In women delitescent transactions like Virginity, Pregnancy, Delivery, Chorusness, Menses, Neatness etc. likewise at the time of delivery the baby gave birth alive or died just after animation or gave birth lifeless. All these can be proved by the witness of alone woman.

The Holy Prophet SAW said "شهادة النساء جائزة فيما لا يستطيع الرجال النظر فيه"

"The witness of women is admissible in all those things where men glancing is restricted".

Another place it is narrated from Abu Khuzeefa (Allah may please be upon him) that

"اجاز رسول الله شهادة القابلة". "The Prophet of Allah permitted the witness of midwife in delivery cases. Concisely the witness of women is unanimously acceptable in feminist transactions.

Review of misdeems upon women witness.

The main objection of some orientalist upon women witness is: that Islam declared women witness half to men which is the greatest injustice with them and it degrade woman status rather to men based on Quranic verse of 282/2 where it is has been ordained that if there would not two men than appoint one man and two women from those you like as witness in your mutual transactions.

" لقوله تعالى: واستشهدوا شهيدين من رجالكم فان لم يكونا رجلين فرجل وامرأتان ممن ترضون "

But if the teachings of Islam could deeply be studied it would evident that neither woman witness is half nor her identity decreased and never this verse inference upon her half evidence as well her evidence never remains problem.

Furthermore indeed evidence is not a right. It is an astriction and in its fulfillment some difficulties are to be faced.

As per the Holy Verse No.282/2 is concern, it does not stated that their statement may be recorded one after other to add two evidence and make equal to one man witness rather stated that "ان تضل احدهما فتذكر احدهما الاخرى" Means that if one them forget the evidence the second will remind her. It may be interpreted that if someone of them due to frightening get confused or puzzled the other one will remind her. Imam Kamal Ibn Humam the prominent

Hanafi Jurist and Imam Malik have contended that without any cause the evidence of two women cannot be declared equal to man because the witness of one woman is itself a complete course of evidence. Her evidence shall be cogent to those transactions where due to lack of experience there is apprehension of mistake, inattentiveness and lack of self-control.

Allama Ibn Hazam Zahiri and Imam Jaffar Al-Sadiq have also accorded woman evidence in all transactions including fornication.

Similarly Hazrat Ali (Allah May be pleased with Him) had accepted women witness in a murder case.

According to majority of the jurists the evidence of woman shall be divided into four categories as follows.

1: Fornication offences: According to Jamhoor Jurists in all fornication and bawdy offences the evidence of women shall not be accepted while only four men's evidence will be valid. Their arguments based on the following verse of the Holy Quran.

“أقولہ تعالیٰ: والأتی یاتین الفاحشۃ من نساءکم فاستشهدوا علیہن اربعۃ منکم”

“And those women who misdeed amongst thou produce four witnesses on their misdeed amongst men.

2: Other Hadoods (Boundaries) Offences: According to Jamhoor jurists in rest of Hadoods like and Assertion (Hadd Qazaf), Lush Drinking (Hadd Shrub), Extortion Hadd Al-Hrabah, Theft or Hadd -Sarqa and Qisas (Retaliation) without any exigency the women witness will not be accepted while the proven of these litigation could be done by the evidence of two witnesses. Stated by the Holy Quran, “واستشهدوا شہدین من رجالکم” “Appoint two men as witness amongst thou”.

3: Rights and transactions other than Hadoods: In rights and transactions other than Hadoods two women can be witnessed with a man if two men would not be available.

4: Specifically women related matters: In women particularized matters the evidence of a single woman can be accepted because the women specified matters are a little bit different from the rest. In it the course of evidence will be completed by one woman. E.g.: Delivery, some hidden imperfections of women, Virginity, Cohabitation (intercourse) etc.

It is stated by Imam Showkani in his famous book “Al-Fath al-Qadir” that those transactions in which none can be aware except women, their evidence is admissible without any altercation while in rest of the matter the evidence of two women would be deemed equal to one man.

According to Imam Ibn Tamiya and his disciple Imam Ibn Qayyum the logic of appointment of two women instead of a man is itself mentioned by Holy Quran that “if one of them forget the statement the second will remind it, which is clearly indicated that it is just a precaution for parties. It has no concern with Court and Judgment. If in front of Judge in Court even a single woman recorded her evidence with reliable way the Court can issue judgement on the basis of it.

As far this contention concerns that witness of the woman is half because of her abortive wisdom. It has deducted from the Holy Hadith but it is not common and embodied to everyone. According to Hazrat Imam Ahmad Bin Hanbal it was specific only to wife of Hazrat Abdullah Ibn Masood (Allah May be pleased with him) who conversed with the Holy Prophet alone. The same has narrated by Sunan Al-Darmi also. Who stated that this conversation was not taken place amongst the Holy Prophet with a woman rather in fact it is the saying of Hazrat Ibn Masood (Allah may be pleased with him). Whereas it has been mentioned by ancestors and many incidents are exist, from which it is evident that the Prophet of Allah has ordained punishment in Hadoods on the bases of a single woman evidence.

Such as: narrated by Imam Bukhari that in the era of the Holy Prophet one of the Jewish stoned a girl for jewelry seizing. The girl disclose the assassinator and cause of killing at her dying declaration in front of the Holy Prophet SAW. On her indication the assassinator was arrested and knocked off.

Same in the case of fosterage proving and nullification of Marriage, narration of 2210 Ahadithes from Hazrat Aisha Siddiqh (Allah May be pleased with her) alone, the first witness of His Prophet hood was Hazrat Khadija al Kubra, the alone witness of Third Khilifa Hazrat Usman Bin Affan assassination was his wife Hazrat Naila (Allah May be pleased with her) and on the basis of Hazrat Naila's evidence the seniors Companions like Hazrat Ayesha and others demanded his retaliation.

From it, this is blatant that Islam permit in every transaction the witness of woman even in the narration of Ahadithes, imposition of retaliation and seclusion among spouses etc.

Social implications of women witness:

The following social implication are compiled from the woman witness on society.

1: To admit women witness in transaction equal to men will make ease availability of witnesses on transactions for parties.

- 2: It will get up courage and self confidence among women.
- 3: It will establish women esteem and will cross examine orientalist's objection upon Islam, "That Islam degraded women status half to men for being given half right of evidence which is injustice with them.
- 4: By giving they free and full right of witness there will be ease in complaints and judgments acquiring. But as in Hadood cases especially in fornication the intent of Lawgiver is elimination and averting of the evil therefore their burden has deducted and to avoid it's easily proving. This is the entire intent of Shariah as the benefits of doubt goes to the accused.
- 5: To get escape from distress in transactions.
- 6: It will amplify sense of responsibility in women.
- 7: It will create a sense of security and competitive predilection among women.
- 8: If there will any personal interest of women involves the sole can altercate about. In the consequential of which will be prevention of sexual harassment and coercive adultery etc.
- 9: From it the sense of intermingling will be established among the both genus which enhance women competencies.
- 10: It will bring out the comprehension of each other understanding and gender equality.

Summary: It is concise that Islam never declared women witness half to men. It has decreased her burden in some cases as compare to men by giving secondary status to her witness while in those transactions which are especially related to women they have complete liability and freedom to record evidence in it. It has been mentioned that according to Islam men and women are equal in respect of wisdom. Both have equal rights and duties.

Consequences: The following consequences shall be deducted from the above debate.

- 1: According to all judicial systems witnesses have key role in all complaints and judgments.
 - 2: The commandments of evidences have been mentioned eight times in the Holy Quran out of which only one place i.e. 282/2 has specified two women appointment as witness with a man while in rest of the seven there is no specification among both genus.
 - 3: It is unanimously agreed among the jurists that women evidence is admissible in all those transactions which are related to them and concealed from men.
 - 4: In women imperfections order can be issued on the basis of single woman witness.
 - 5: According to Islamic teachings the woman is not the mere henpecked of man rather she has her own independent status to religion and worldly affairs. So she can be witness as man in all transactions.
 - 6: It is the demand of wisdom and analogy both that the woman can be witness in every transaction as equal to man except the existence of contrary argument.
 - 7: In case of aspersion the woman witness would be preferred over man.
 - 8: In fiscal transactions the woman witness is equal to man.
 - 9: If at court during evidence recording the woman forgets and affrights in statement, her second assistance will remind. The second woman is not there to record evidence rather she is her assistant. It is an extraordinary relief to women during evidence recording.
 - 10: If at the time of evidence recording the woman did not forget or bewildered than there is no need of remembrance. The evidence of one woman would be sufficient for judgement.
 11. According to Majority Jurists in Hadood cases witness of men is preferable.
 12. As per Jamhoor Jurists, in fornication offence the witness of woman is untrustworthy. Because any woman of the world can't bother to see sexy crimes and if suddenly her glance falls on it, she returns her face due to modesty. It is impossible for her to see its all ingredients which is the key requirement. It is difficult for woman to face sturdy exam, cross exam and rubbish questions of lawyers in courts regarding this heinous offence.
 - 13: While Imam Ibn Hazam Zahiri, Allama Ibn Qayyum and their school of thought have given equal status to women with men in all walks of life and their evidence will be acceptable in every transaction including Hadood, Retaliation, Marriage and Divorces cases.
- In net shell it is repeated that Islam does not declare women's witness half to men nor de-grade or reduces her stature and status then men rather minificated her responsibilities in some chronic transactions.

REFERENCES

- 1: Al- Quran Al Karim
- 2: Asaan Tarjama aaz Tafseer Usmani, Maulana Shabir Ahmad Usmani.
- 3: Lisan- al- Arab, Abu Al-Fazal Jamal Uddin Muhammad bin Maktoom Ibn Manzooq, Al-Afriqee (died 1312 H) V.3P.239, Dar Ihya Alturas Al-Arbi, Berut Lebnan 1955.
- 4: Al-Qamoos Al-Muheet wa Al-Qaboos Al-Waseet Al-Jamee lima Zahaba min Kalam Al-Arb, Abi Tahir Muhammad bin Yaqoob Al-lughavi, V.1,P.316, Publisher Moasayat Al- Risala Berut Lebnan 2010.
- 5: Al Bahra al-Rayaq Sharh Kanz al-Daqayiq, Zinuddin bin Ibrahim Al-Marroof balbin Nujaim al-Hanafi (died 970H), V. 7, P. 55, Cairo Egypt, Dar Al-Kutab Al-Ilmia 1997.
- 6: Rad al Mukhtar Ala Dur Al Mukhtar Al-Marroof ba-Alshami, Muhammad bin Umar bin Abdul Aziz Ibn Abiddin Al Hanafi (died: 1252) V.4, P.411, Damascus Dar Al-Kutab Al Ilmia 2003.
- 7: Aljami Al Saheeh Al Bukhari, Abu Abdullah Muhammad Bin Ismail Al Bukhari Bin Mugheera Al Bukhari (died: 870) V.1 P.363, Maktaba Rahmania Lahore 1992.
- 8: Al Muhalla bil Asaar, Abu Muhammad Ali Bin Saeed Ibn Hazam Al-Zahiri (died: 1064) V. 10 P. 572, Dar Al-Kutab al-Ilmi Birut Lebnan 2015.
- 9: Al-Kitab Al-Musanf fil Ahadith Alasaar Abu Bakar Abu Abdullah Muhammad Bin Abi Sheba (died: 235H) V.6 P. 187, Al-Farooq Al-Haithia for Publishing Cairo Egypt 2008.
- 10: Al-Sunan al-Kubra, Abu Bakar Ahmad bin Husain bin Ali Al-Behiqee (died: 1066) V.9 p. 213, Dar-Al-Kutab al Ilmia Berut Lebnan 2003.
- 11: Fathul Al-qadir Sharha Al Hidaya Ibn Al -Humam Qazi Zada Shams Uddin bin Muhammad Al-Hanafi (died: 861) V.7P. 303, Dar Al-Kutab Al Ilmi Berut Lebnan 2013.
- 12: Nail Al Awtar min Asrar Mantqee Al Akhbar Abu Ali Muhammad Bin Abdullah Bin Muhammad Alshawkani (died: 1834) V.6 P. 279, Dar Ibn Aljawzi Damam Al-Saudia 1427H.
- 13: Islami Qanoon eik Tarooif, Dr. Shehzad Iqbal Sham, v. 2.p.198-99, Publisher Idara Tahqeeqat Islami Islamabad 2010.
- 14: Al Badia Al Sanaia fi Tarteeb Al Sharia, Allaoddin Abu Bakar bin Ahmad Al-Kasani Al Hanfi (died: 1191) V.6 P. 802, Dar Al-kutab Al Ilmia Berut Lebnan 2003.
- 15: Ewrat Islami Muashira mein, Syed Jalal Uddin al Ansari (died: 1935) P. 18, Islamic Publishers Lahore Pakistan 1982.
- 16: Al Muhgani, Abu Muhammad Abdullah bin Ahmad bin Qudama Al Hanbali (died: 1223) V.10 P.29, Publisher Dar alkutab Al Ilmia Eygpt 1334H
- 17: Ialam Al-Mauqaeen en Rabbi Al-Aameen, Abu Abdullah Muhammad bin Abi Bakr bin Al-Qayyum Al-Jawzi (died: 1350) V.4 P. 83, Dar Ibn Al-Jawzi Damam Al-Saudia 1427H.
- 18: Tehzeeb Al-Ahkam, Abu Jafar Muhammad Bin Hassan AlToosi (Died: 1067) V.10, P.26, Dar Al-Tauroof Lil-Matbooaat, Berut Lebnan 2004.
- 19: Al-Toruq Al Hukmia fi Siasyat al Sharia Hafiz Shams Uddin Abu Abdullah Muhammad bin Muhammad bin Abu Bakar Ibn Al Qayyim Al Jawzi (died: 1350) P135, Dar Elalam al-Nubala Damascus 2003.
- 20: Tabqaat ibn Saad, Abu Abdullah Muhammad Ibn Saad Al-Hashami Al-Marroof bh Katib alWaqidi (died: 230H) V.8 P. 367, Publisher Al-Khanjee Cairo Egypt 2003.

INSTRUCTION TO AUTHORS

Manuscript Submission:

Send your manuscript with attachment by mailing it to info@textroad.com, textroadjournals@gmail.com along with [covering letter](#).

Manuscript Preparation:

- * Title
- * Author names and addresses
- * Abstracts (Not more than 300 words)
- * Key words
- * Introduction
- * Materials and Methods
- * Results and Discussions
- * References (Use numbering in the text instead of full references).
Give full references at the end of the file
- * Photographs should be of high quality (Minimum 300-600 dpi)
- * Graphs should be in clearly visible form so that it may become easy to redraw
- * The manuscript must be submitted in MS-WORD file format.

INSTRUCTIONS TO AUTHORS

Submission

Submit manuscripts as e-mail attachment to the Editorial Office at:

textroadjournals@gmail.com or info@textroad.com along with [covering letter](#). A manuscript number will be mailed to the corresponding author same day or within 48 hours. The authors may also suggest two to four reviewers for the manuscript (JBASR may designate other reviewers). There is no page limit. The submitting author takes responsibility for the paper during submission and peer review.

Terms of Submission

Papers must be submitted on the understanding that they have not been published elsewhere (except in the form of an abstract or as part of a published lecture, review, or thesis) and are not currently under consideration by another journal. The submitting author is responsible for ensuring that the article's publication has been approved by all the other coauthors. All enquiries concerning the publication of accepted papers should be addressed to editor@textroad.com.

Review Process

All manuscripts are reviewed by an editor and members of the Editorial Board or qualified outside reviewers. Decisions will be made as rapidly as possible, and the journal strives to return reviewers' comments to authors within one or two weeks. The editorial board will re-review manuscripts that are accepted pending revision. It is the goal of the JBASR to publish manuscripts within 4 weeks after submission.

Style of Manuscripts

Manuscripts should be written in clear, concise and grammatically correct English (with 10 font size and Times New Roman font style) so that they are intelligible to the professional reader who is not a specialist in any particular field. Manuscripts that do not conform to these requirements and the following manuscript format may be returned to the author prior to review for correction. The entire manuscript, including references, should be typed single spaced on one side of the paper. All pages should be numbered consecutively in the bottom centre starting from the title page. The manuscript should be presented in the following order.

Title and Authorship Information

The title should be a brief phrase (capitalize first letter of each word in the title) describing the contents of the paper. The Title Page should include the authors' full names and affiliations, the name of the corresponding author along with phone, fax and E-mail information. Present addresses of authors should appear as a footnote.

Abstract

All manuscripts should not exceed 250-300 words and should describe the scope, hypothesis or rationale for the work and the main findings. Complete sentences, active verbs, and the abstract should be written in the past tense. Standard nomenclature should be used and abbreviations should be avoided. No literature should be cited.

Keywords

Key words (5-7 words) should be provided below the Abstract to assist with indexing of the article. These should not duplicate key words from the title.

Introduction

This section should include sufficient background information, provide a clear statement of the problem, the relevant literature on the subject, and the proposed approach or solution. The aims of the manuscript should be clearly stated. The introduction should not contain either findings or conclusions. It should be understandable to colleagues from a broad range of scientific disciplines.

Materials and Methods

This should be complete enough to provide sufficient detail to allow the work to be repeated by others. However, only truly new procedures should be described in detail; previously published procedures should be cited, and important modifications of published procedures should be mentioned briefly. Capitalize trade names and include the manufacturer's name and address. Subheadings should be used. Methods in general use need not be described in detail.

Results

Results should be presented in a logical sequence in the text, tables and figures; repetitive presentation of the same data in different forms should be avoided. The results should not contain material appropriate to the Discussion. It should be written in the past tense when describing findings in the authors' experiments. Results should be explained, but largely without referring to the literature.

Discussion

The discussion should consider the results in relation to any hypotheses advanced in the Introduction and place the study in the context of other work. Results and Discussion sections can be combined.

Conclusions

If an optional conclusion section is used, its content should not substantially duplicate the abstract.

Acknowledgment

The acknowledgments of people, grants, funds, etc should be brief.

References

Bibliographic references in the text appear like [1, 2, 5, 6], using square brace in superscript. References should be numbered consecutively, with style:

Journal paper:

1. Hadjibabaie, M., N. Rastkari, A.Rezaie and M. Abdollahi, 2005. The Adverse Drug Reaction in the Gastrointestinal Tract: An Overview. Intl. J. Pharmacol., 1 (1): 1-8.

Books:

1. Daniel A. Potter, 2002. Destructive turfgrass insects: Biology, diagnosis and control. Wiley Canada Publishers, pp: 24-67.

Chapters in Book:

1. Bray R.A., 1994. The leucaena psyllid. In: Forage Tree Legumes in Tropical Agriculture (eds R.C. Gutteridge and H.M. Shelton) pp. 283-291. CAB International, Oxford.

Titles of journals should be given in full. 'In press' can only be used to cite manuscripts actually accepted for publication in a journal. Citations such as 'manuscript in preparation' or 'manuscript submitted' are not permitted. Data from such manuscripts can only be mentioned in the text as 'unpublished data'.

A Report:

1. Makarewicz, J.C., T. Lewis and P. Bertram, 1995. Epilimnetic phytoplankton and zooplankton biomass and species composition in Lake Michigan, 1983-1992. U.S. EPA Great Lakes National Program, Chicago, IL. EPA 905-R-95-009.

Conference Proceedings:

1. Stock, A., 2004. Signal Transduction in Bacteria. In the Proceedings of the 2004 Markey Scholars Conference, pp: 80-89.

A Thesis:

1. Strunk, J.L., 1991. The extraction of mercury from sediment and the geochemical partitioning of mercury in sediments from Lake Superior, M. S. thesis, Michigan State Univ., East Lansing, MI.

Tables and Equations

Tables and equations should not be submitted in a format exceeding the A4 page size (in portrait form). **All tables should be embedded within the manuscript, and must be captioned and numbered sequentially.** Each table should be on a separate page, numbered consecutively in Arabic numerals and supplied with a heading and a legend. Tables should be self-explanatory without reference to the text.

Figures / Illustrations / Photographs

Graphics should be supplied as high resolution (at least 300-600 dp.i.) electronic files. Digital images supplied only as low-resolution print-outs cannot be used. Graphs, diagrams, chromatograms, photos, etc. should be prepared as clear, original positives, suitable for reproduction. **All figures should be embedded within the manuscript, and must be captioned and numbered sequentially.**

Proofs

Proofs will be sent via e-mail as an Acrobat PDF file (e-mail attachment) and should be returned within 3 days of receipt. Page proofs are considered to be the final version of the manuscript. With the exception of typographical or minor clerical errors, no changes will be made in the manuscript at the proof stage.

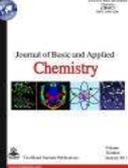
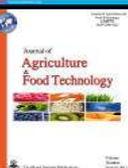
Check List

We recommend that you ask a colleague to read over your paper prior to submission to ensure it is of a high standard and conforms to a high level of scientific writing.

Before submission of your manuscript, please check that:

- All references cited in the text are included in the reference section.
- All figures and tables are cited in the text.
- Figures are at least 300 d.p.i.
- The pages are numbered.



	Journal of Basic and Applied Scientific Research		Journal of Social Sciences and Humanity Studies
	Journal of Basic and Applied Chemistry		Journal of Basic Sciences and Applied Research
	Journal of Applied Environmental and Biological Sciences		Journal of Computer Sciences and Communication
	Journal of Pharmaceutical and Biomedical Sciences		Journal of Engineering and Higher Technology
	Journal of Agriculture and Food Technology		Current Economics and Management Research

