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Determining the Relationship between Symptoms of Post Traumatic Growth and Post Traumatic Stress Disorder in Three Groups of Pulmonary Patients with Cancer, Their Families and Pulmonary Patients without Cancer

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ABSTRACT

Many pulmonary patients, cancer patients and their families experience post traumatic stress disorder (PTSD) and post traumatic growth (PTG). Since no study has been conducted with such an objective, this study designed to compare the relationship between PTSD and PTG in three groups of pulmonary patients, cancer patients and their families.

Methods: In this case-control study, 180 samples in three mentioned groups selected by accessible method. The study population consisted of three mentioned groups referred to Massih Daneshvari Hospital (2013). Data collected by PTSD, PTG and demographic questionnaires. Anova, Tukey, independent T tests and SPSS-21 used for analysis.

Results: Mean age was 44.92. Patients encounter the most psychological trauma during the first year of diagnosis. Cancer patients and their families had a higher level of PTG. The more ambiguous and hopeless views they had, the higher was PTSD. A negatively significant correlation was seen between PTSD and PTG in cancer patients. There was a significant difference in PTG between males and females.

Conclusion: Results show the relationship between variables and their difference in three groups. It is important to provide psychological care beside medical treatment, after studying psychological factors which affect the cope way with the disease.

KEYWORDS: cancer, pulmonary disease, post traumatic stress disorder (PTSD),post traumatic growth (PTG)

INTRODUCTION

Chronic somatic diseases can induce mental disorders. Nowadays, cancer is known as one of the most important health problems worldwide. New cases of cancer in 2008 accounted for 12.7 million throughout the world, 5.6 million of which reside in developed countries, and 7.1 million are in developing countries. 21.4 million new cases of cancer and more than 13.2 million deaths are expected to occur by 2030. According to a report provided by the WHO in Feb., 2011, cancer was the most important cause of death worldwide, which led to 7.6 million deaths (13%) in 2008 (Jemal et al, 2011). Recent studies on patients being treated in out-patient clinics of cancer have shown that 40 to 50% of them experience some degrees of stress (Spiegel and Riba, 2011). Cancer is associated with many negative physical and mental complications in daily life of patients (Gurevich et al, 2002). Data of cancer in Iran follows the aforementioned pattern. Most of the patients diagnosed with cancer experience a period of mental pressure through treatment course (initiated from diagnosis),which can induce a large number of disorders. For instance, patients often experience adverse psychological effects such as anger, stress or anxiety more severely than physical side effects such as hair loss and nausea. Even some patients quit chemotherapy for the same reason (White, 2010). Studies show that 50 to 85% of patients with cancer suffer from one psychological disorder (Zabora et al, 200; Akechi et al, 2001; Palmen and Fisch, 2005), mainly anxiety and mood disorders. One to 58% of patients with cancer are reported to have PTSD (Carroll et al, 1993; Derogatis, 1986; Lynch, 1995; McDaniel and Nemeroff, 1993; Vant Spijker et al, 1997). This wide range of variation in terms of the prevalence depends on a

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large number of factors including the type of the cancer, its stage and prognosis, medical complications (pain, limited physical performance and status of hospitalization), social support, diversity of assessment methods and diagnostic tools (McDaniel et al, 1995; Jeffrey, 2012). Pulmonary patients including asthmatic ones show high degree of psychological symptoms like anxiety and depression (Fallah Tafti, et al., 2013). Prevalence of depression is up to 65.4% in asthmatics (Tafti, et al., 2011).

Many research studies have focused on psychological outcomes of cancer and its treatment. Diagnostic and statistical manual of mental disorders (DSM-IV) and American Psychiatric Association (APA) (2000) have referred to cancer as a life threatening disease and a stressor which can accelerate PTSD. Thus, cancer has been considered as a long-term and constant trauma (Jackson et al, 2007; Sukantarat et al, 2007; Tedstone and Tarrier, 2003; Plagi et al, 2011) in the field of intensive care for diseases. Post traumatic stress disorder is a combination of symptoms which can be experienced at the exposure of stressful events in life depending on personality features. According to DSM IV-TR, a traumatic event is defined as a real death, a serious trauma or a threat to the physical integrity of oneself or others which is responded as fear and desperation. This type of event is constantly pictured in mind, although, at the same time one tries to avoid remembering that, since it causes severe arousal (Merecz et al, 2012). This is known as a subgroup of anxiety disorders, but the symptoms have to be lasted at least one month, during which one's life is seriously affected in terms of social, family and occupational aspects (Sadock and Sadock, 2007).

Although trauma is accompanied by heavily negative consequences, positive psychological changes known as PTG often occur secondary to trauma which is defined as an individual growth (Bostock et al, 2009; Helgeson et al, 2006; Liney and Joseph, 2004; Prati and Pietrantoni, 2009; Zoellner and Maercker, 2006). Post Traumatic Growth (PTG) was first invented by Tedeschi and Calhoun (1996) to define all positive psychological changes in an individual with near death experience as a result of confronting stressful events in life (Palgi et al, 2011). Once one is losing something of great importance in life, it will sound to be very valuable for him, but what if the life itself is threatened?

According to Calhoun et al (2000), a traumatic event is a huge challenge for human. Although thinking about a miserable life experience and constantly analyzing it in mind is really painful, it may lead to amazingly positive changes in terms of main self-schema, beliefs and goals in life. Some changes occur during this process including: reviewing priorities in one's life, deep understanding of life as a unique opportunity and passionate gratitude for the things which used to be unimportant in his view, simply such as enjoying a pleasing sunset.

This challenge helps individuals to find their resources and induces the feeling of competence to start everything over more strongly. Thus, they feel more flexible and eager to pursue their lives, which is more meaningful than it used to be. Sometimes they ask essential questions in terms of religion and philosophy to interpret the meaning of the event happened to them. Also, they develop more intimate relationship with others (Merecz et al, 2012).

Tedeschi and Calhoun (1996) emphasize the vital role of these changes and social support as the two supportive resources in confronting mental distress and interpreting traumatic events. PTG is of paramount importance in health psychology approach which can have a constructive role in distress management induced by a stressful event (Zoellner et al, 2008).

Kangas, Henry and Bryant (2005, 2005) conducted a prospective study to evaluate post traumatic stress disorder, anxiety, depression and physical disorders on 82 cases of cancer (head, neck and lungs). They reported that 14% of patients experienced PTSD, 20% had acute anxiety, and 20% suffered from depression. Also, they revealed that PTSD is more probable to occur within the first year of diagnosis. Results of this study are indicative of the need for appropriate treatment intervention particularly in terms of psychiatry and social support in the first year of diagnosis.

Jeffery et al (2012) performed a clinical trial study on 289 cases of cancer to determine the rate of PTSD, evaluate the difference of demographic variables in patients with PTSD and without PTSD, mood modes, status of performance and quality of life, as well as personality features predictive of PTSD. 45% (78) of cases had severe PTSD diagnostic criteria. Patients with PTSD in comparison with other patients had weaker performance, more mood disorder and lower quality of life. It is also demonstrated that families of patients with chronic diseases undoubtedly develop problems in their psychological interactions over time and as the result, their quality of life will decrease (Safa, et al. 2012).

Studies on cancer have been designed to determine negative effects of cancer on health and quality of life, but recently researchers have begun to study the growth and cancer-induced positive changes (Stanton et al, 2006). Yallom (2003), an existential psychotherapist, is convinced to admit that after many years of working with incurable cases of cancer, most of them interpret the crisis as an opportunity for big changes in life and internal transformation which could be defined as an individual growth. He states that cancer treats neurosis and causes some big transformational changes as follows:

1- Resetting priorities in life; underestimating unimportant issues
2- The feeling of freedom; not to do the jobs they have never liked to

3- Deeper understanding of life at present instead of postponing the joy of living to retirement or any other time in the future
4- Passionate gratitude for essential life realities; change of seasons, good relationship with others
5- Developing a deeper relationship with their beloveds
6- Less inter-personal fear, less worry about being rejected, more tendency to accept risk, more internal courage rather than before (incidence of crisis)

It is recommended that future studies concentrate on different aspects of PTG, since on the one hand, studying literature shows that other aspects of post traumatic growth may exist and on the other hand, such type of studies are culture and ethnicity dependent. Thus, inter-cultural studies can be effective in this regard.

Psychological disorders, in particular mood and anxiety disorders, and adaptability have a strong effect on the course of the disease, efficiency of the treatment and quality of life. Therefore, such studies focus on cancer-related psychological issues from the very initial stages of treatment, and provide the opportunity of early psychological intervention, which undoubtedly would result in early and positive results.

However, due to various points of views, further studies should be conducted in order to clarify the issue. Although PTG and PTSD are both the result of exposure to the same stressful event, the relationship between the two is not clear. Therefore, it is necessary to design more clinical research studies on such patients, particularly in Iran where such studies have never been conducted. It seems that correct understanding of mental complications associated with cancer can help to provide patients with better treatment services. In addition, families of such patients experience a fragile condition due to the heavy cost of treatment, the difficulty of permanent care and exposure to a psychological crisis. Death threat or expecting it to happen puts the family in an unbearably difficult condition and induces psychological crisis. Having explained the importance of the issue, few studies have been performed in terms of the psychological effect of cancer on family. Therefore, the necessity of a comprehensive study in this regard is seriously felt.

MATERIAL AND METHOD

This case-control study aimed to compare three groups of patients with cancer, families of such patients and control group (pulmonary patients without cancer) in terms of symptoms of PTSD and characteristics of PTG in the year 2013.

At first stage the project was approved by the research committee and university ethics committee. Then, necessary arrangements were made with the cancer ward of the hospital, and Samples were selected according to the accessible sampling method. Having made sure of patients ‘consent and tendency to cooperate, data were collected by expert interviewers in a peaceful and stress-free environment. Patients received guidance on filling out the questionnaire. Every subject was given a separate answer sheet. Finally, subjects were thanked for their cooperation with the research team.

The study population consisted of patients with cancer, their families and pulmonary patients without cancer referring to Masih Daneshvari Hospital.

All patients gave informed consent before participation in the test and the project was confirmed in the ethical committee of the hospital.

Sample size and sampling method:

Samples were selected according to the accessible sampling method. First, patients admitted to the cancer ward during the period of the study (group 1, patients with cancer) were selected along with a first degree family member (preferably the permanent caregiver). Afterwards, the control group, i.e. pulmonary patients without cancer, with identical eligible demographic characteristics, who were accessible to researchers (in other wards of the hospital) entered the study.

Sample size was performed achieved by the following formula:

$$n=\frac{[P_1(1-P_1)+P_2(1-P_2)](Z_{1-\alpha/2}+Z_\beta)^2}{(P_1-P_2)^2}$$

$\alpha= 0.05$ $\beta= 0.2$

$P_1= 0.4$ ratio of families with PTSD

$P_2= 0.13$ ratio of PTSD in patients with cancer

Ratio of PTSD in pulmonary patients was 0.46. First, the sample size was calculated to see the difference between 0.46 and 0.4.Due to the big discrepancy between the two figures, and use of pilot, it seemed that there was no

difference between the two groups. Therefore, for the ratio of 0.4 vs 0.13, a sample size of 38 cases was selected for each group.

Having estimated a minimum sample size of 38 cases in each group, a total of 180 participants ,60 per group, entered the study.

Inclusion criteria for the patients with cancer are as follows:

1- Tendency to cooperate in the study
2- To have the ability to understand and reply to questions regarding the level of consciousness
3- No history of substance abuse
4- No history of psychiatric disease requiring medication
5- To be diagnosed with cancer which is recorded in patient's medical file for the first group of the study
6- To have a first degree family member with cancer for the second group of the study
7- To have a pulmonary disease without cancer for the third group of the study
1- Use of medication affecting the patient's level of consciousness
2- History of substance abuse
3- History of psychiatric disease requiring medication
4- Lack of tendency to cooperate in the study

Method of data collection:

1- The scale of PTSD symptom: this scale identifies the PTSD symptom based on DSM-IVTR criteria, and assesses the severity of symptoms (Vant Spijker et al, 1997). Weathers et al (1993) conducted two studies on this scale. They, in the first study, reported the internal consistency coefficients and retest coefficient for the total scale to be 0.97 and 0.96 respectively. Convergence validity was reported by Mississippi scale(0.93) and PK scale related to MMP-I2 (0.77) (Weathers et al, 1993). Reliability and validity of this scale was studied on 117 cases by Goudarzi, and its chronbach's alpha coefficient was 0.93. Also, validity coefficient by bisection was 0.87, and concurrent validity correlation coefficient was reported to be 0.37 (Gudarzi, 2004).
2- PTGI questionnaire: this questionnaire was first developed by Tedeschi and Calhoun (1996) to assess positive changes in individuals confronting stressful conditions. Reliability and validity of this index was satisfactory. Internal consistency for PTGI and index components was reported to be 0.90 and 0.67- 0.85 respectively. Retest reliability of the total scale was 0.71 (Taku et al, 2008). Also Tedeschi and Calhoun reported that PTGI has shown some evidence on the validity of questionnaire structure; individuals who had experienced a traumatic event obtained a higher score in PTGI in comparison with those who had not (Tedeschi and Calhoun, 1996).

Data analysis:

Descriptive statistical methods were initially applied for data analysis (e.g. frequency calculation, percentage, mean, standard deviation and distribution tables). ANOVA was used for analysis of variance to compare PTSD and PTG in three different groups of the study. Tukey's post hoc test was used to compare group differences. Independent T-test was applied to compare PTSD and PTG between females and males. Data analysis was done by SPSS v.16.

Ethical considerations:

- The researcher was introduced to all research departments, and they were informed about the purpose of the project.
- All of the contributing departments and study participants were ensured about confidentiality of data, and that data will be used only for research purposes.
- Subjects were informed about the research purposes, and participants gave informed consent to enter the study.
- Subjects were allowed to unsubscribe at any stage of the study.
- And finally, all of the people who contributed to the research project were acknowledged respectfully.

RESULTS AND FINDINGS

The mean age of participants (58.9% male, 41.1% female) was 44.92±15.55 years. 18.3% were single, 2.8% were divorced, 5.6% were widowed and 73.3% were married. In terms of degree of education, 11.7% were illiterate, 20% had primary school education, 13.3% had finished secondary school, 35% had high school diploma and 20% had a university degree. In terms of occupation, 30% were housewives, 14.4% unemployed, 14.4% simple workers, 11.7% civil servants, 23.3% self-employed, and 6.1% were retired. Regarding the place of residence, 46.9% of patients live in Tehran, 49.7% reside in other cities of Iran, and 3.4% are rural dwellers. 23.3% have no child, 63.3% have one to four, and 13.4% have five to six children.

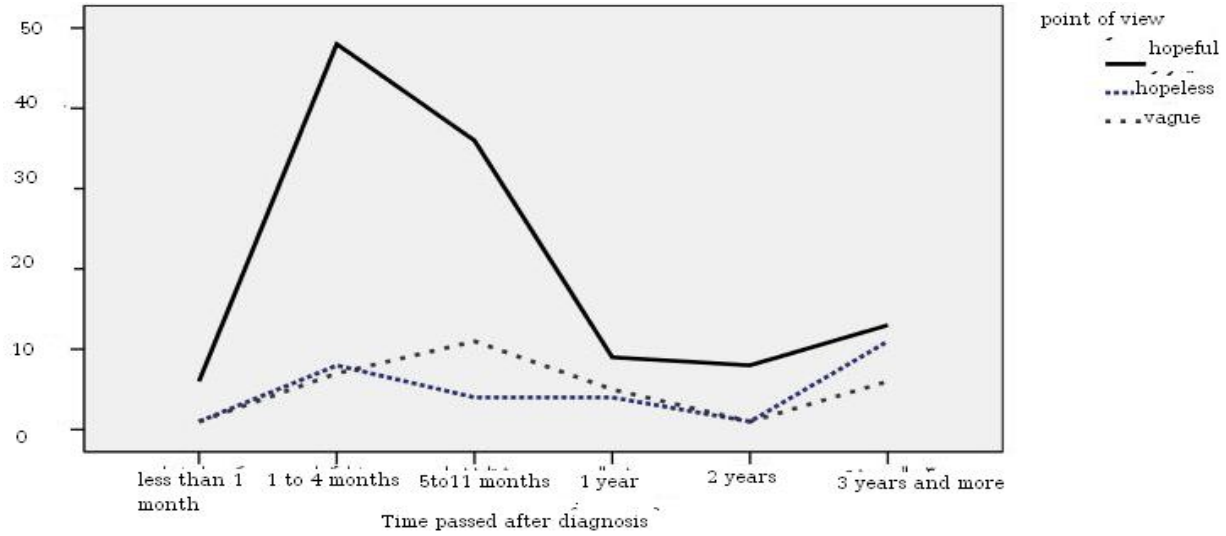
In terms of the time of the diagnosis, 1.7% of patients were diagnosed with cancer less than one month ago, 38.3% of them from one to four months ago, 35% from five to nine months ago, 11.7% one year ago, 5% two years ago, 8.3% three years ago or more. In terms of patients' attitude towards future, 81.7% were hopeful, 6.7% were

hopeless, 11.7% had a vague view about the future. 8.3% of pulmonary patients without cancer were diagnosed less than one month ago, 25% one to four months ago, 21.7% from five to eleven months ago, 8.3% one year ago, 6.7% two years ago, and 30% of them received diagnosis three years ago or more. In terms of their attitude towards future, 50% were hopeful, 30% were hopeless, and 20% had a vague view. 68.3% of the families with a cancer patient were hopeful about the future, 11.7% were hopeless, and 20% had a vague view. Time of disease diagnosis also was determined (table 1).

Table 1: frequency distribution and percentage of clinical variables

		Group characteristics						
		Cancer patients		Families with cancer patients		Pulmonary patients		total
		n	%	n	%	n	%	%
Time of disease diagnosis ((month/year)	Less than one month	1	1.7	2	3.3	5	8.3	4.4
	1 to 4 months	23	38.3	25	41.7	15	25	35
	5 to 11 months	21	35	17	28.3	13	21.7	28.3
	1 year	7	11.7	6	10	5	8.3	10
	2 years	3	5	3	5	4	6.7	5.6
	3 years and more	5	8.3	7	11.7	18	30	16.7
One's attitude towards the future of his disease	hopeful	49	81.7	41	68.3	30	50	66.7
	hopeless	4	6.7	7	11.7	18	30	16.1
	vague	7	11.7	12	20	12	20	17.2

Graph 1: patients' attitude towards the future of their disease based on the period of time after diagnosis



As it is obvious in the graph 1, frequency of hope for improvement remarkably rises to four months of diagnosis, following a gradually falling trend accompanied by ambiguity one year after diagnosis. Then the graph experiences the period of stability which suggests that individuals during this period of time (from diagnosis to one year later) confront the most serious mental trauma in terms of attitude. Also, this period can be the most important and effective time for patients and their families to receive supportive treatment.

ANOVA, variance analysis test, was applied to compare the rate of PTSD in three groups of the study, which did not show significant difference ($P<0.05$, $F= 2.68$). Accordingly, the first hypothesis regarding the significant difference in the rate of PTSD in three groups (patients with cancer, their families and the control group) is rejected (table2, 3, 4).

Table 2: mean and standard deviation of PTSD & PTG variables in each group

variable	Cancer patients		Families with cancer patients		Pulmonary patients	
	M	SD	M	SD	M	SD
PTSD	17.6	13.42	22.76	14.83	23.31	16.33
PTG	54.08	17.02	53.48	14.78	45	11.18

Table 3: summarized variance analysis for testing significance of mean difference of PTSD in three groups

Groups	df	Sum square(SS)	Mean square(MS)	F ratio	P
Inter-group	2	1193.54	596.77	2.68	0.07
Intra-group	177	39344.11	222.28		
total	179	40537.66			

Table 4: results of ANOVA variance analysis test for comparing mean difference in three groups based on PTG

Group	df	Sum square(SS)	Mean square(MS)	F ratio	P
Inter-group	2	3096.67	1548.33	7.33	0.001*
Intra-group	177	37373.56	211.15		
Total	179	40470.24			

0.01<P*

ANOVA variance analysis test was used to compare the rate of PTG in three groups of the study which revealed a significant difference (P<0.01,F= 7.33). This finding approves of the second hypothesis of the research study (table 4). Tukey post hoc test was applied to detect which groups of the study showed difference. This comparison revealed a significant difference of test scores between cancer patients and non-cancer pulmonary patients (control group) (P<0.01). Also, test scores of families with a cancer patient was significantly different from those of non-cancer pulmonary patients (control group)(P<0.01). But the difference between cancer patients and their families was not significant (P<0.05). In other words, cancer patients and their families had a higher rate of PTG than the control group (table 5).

Table 5: results of Tukey test for two by two group comparison of PTG

Groups	Mean differences	Standard error	P
Cancer patients- non-cancer pulmonary patients	9.08	2.65	*0.002
Families with cancer patients-non-cancer pulmonary patients	8.48	2.65	*0.005
Cancer patients - their families	0.60	2.56	0.972

***P<0.01**

Findings of cancer patients revealed that no positively or negatively significant relationship (at P level <0.05) was detected between demographic variables (age, degree of education, number of family members, number of children in family, time of diagnosis)with PTSD and PTG. But a positively significant correlation was seen between the type of the individual's attitude towards the future of his disease and PTSD(r=0.28). In addition, regression model showed that the rate of PTSD can be predicted by the individual's attitude towards the future of his disease (P=0.028, F= 5.104). That is to say, the more hopeless and more ambiguous view the patient has, the higher the rate of PTSD will be. Moreover, this attitude towards the future was considered as the only effective variable in the group of families with cancer patients which showed a negatively significant association with the rate of PTG (P=0.035, r= - 0.27). Also, there was a negatively significant correlation between PTSD and PTG in the group of patients with cancer (P=0.01, r= - 0.33). However, the relationship between PTSD and PTG in families with cancer patients and the control group (non-cancer pulmonary patients) was not significant.

The last hypothesis of this research study focused on the mean difference of PTSD and PTG between females and males, according to which independent T-test was applied.

As it can be seen in table 6, there is a significant difference of PTSD mean scores between males and females (P=0.03, t= - 2.17). The mean figures show that females experience higher rate of PTSD than males. But no significant correlation was found between the two groups (males and females) in terms of PTG (P= 0.07, t= - 1.78). (Table 6).

Table 6: results of independent T-test for comparison of PTSD & PTG mean scores in females and males

variable	Group	N	M	SD	T	Df	P
PTSD	female	74	24.12	16.51	-2.17	178	*0.037
	male	106	19.2	13.65			
PTG	female	74	53.22	14.04	-1.78	178	0.077
	male	106	49.19	15.54			

0.01<P*

Frequency and percentage of individuals diagnosed with PTSD based on DSM-IV criteria, mean score of PTSD in three groups of the study, mean score of PTG in three groups of the study are indicated in tables 7, 8 and 9.

Table 7: frequency and percentage of individuals diagnosed with PTSD based on DSM-IV criteria

Groups	Total number	frequency	percentage
Cancer patients	60	33	28.4
Families with cancer patients	60	41	35.3
Pulmonary patients	60	42	36.2
Total	180	116	100

Table 8: mean score of PTSD in three groups of the study

Groups	Re-experience	Avoidance	Arousal
Cancer patients	5.5	5.7	6.4
Families with cancer patients	7.93	7.41	7.41
Pulmonary patients	7.33	8.35	7.15
Total	20.76	21.46	20.96

Table9: mean score of PTG in three groups of the study

Groups	Establishing intimate relationship	Understanding new possibilities	belief in personal power	Spiritual growth	Gratitude for life
Cancer patients	18.58	11.28	11.08	2.08	3.01
Families with cancer patients	18.5	11.01	10.65	2.96	4.01
Pulmonary patients	16.15	9.48	8.21	3.13	3.98
Total	17.74	10.59	9.98	2.72	3.67

DISCUSSION AND CONCLUSION

Results of the study revealed that cancer patients and their families had a higher rate of PTG than the control group. The more hopeless and ambiguous view the patient has about the future of his disease, the higher the rate of PTSD is. Also, there was a negatively significant correlation between PTSD and PTG in patients with cancer. A significant difference was observed between the mean score of PTSD in males and females.

Others studies in this regard have shown similar results, some of which are as follows:

Spitzer, Williams, Gibbon & First (1990) studied 160 females in the process of breast cancer diagnosis, 3% of which were diagnosed with PTSD after definite diagnosis of breast cancer. Alter et al (1996) studied the prevalence of PTSD on 27 females survived from cancer, 82% of which had breast cancer, and others were diagnosed with other types of cancer. Based on a structured interview, they found that 22% of them had to some extent experienced PTSD criteria in their lives following the cancer diagnosis.

Results of other relevant studies reveal that people experience extensively positive changes as a result of confronting a stressful event such as a chronic disease. A review of the present literature indicated that cancer patients reported some cancer-induced positive changes in different aspects of their lives including the effort they made to build up more intimate inter-personal relationship with family and friends, making changes in religious or spiritual beliefs, changing their philosophy of life(life ideology) , and developing a more meaningful view about life, changing or resetting priorities, focusing on personal positive and strong points, being more flexible, having more confidence in oneself, being able to self-express,…. (Cordova et al, 2001; Fromm et al, 1996; Sears et al, 2003; Thornton, 2002; Tomich and Helgeson, 2004; Widows, 2005). It has also been clarified that these changes have occurred at presence of different types of cancer including prostate cancer (Thornton, 2006), colorectal cancer (Salsman et al, 2008), leukemia and lymphoma (Diater et al, 1988), bone marrow transplant (Tallman et al, 2007) and breast cancer (Cordova et al, 2001; Sears et al, 2003; Bellizzi and Blank, 2006).

Given the results of the studies, paying serious attention to psychological factors in patients with chronic diseases, cancer and pulmonary diseases as well as their families is of vital importance. Since careful consideration of such factors besides relevant psychological interventions can lead to development of effective therapeutic modalities. The most important limitation of the present study is its cross-sectional design, since it is not able to provide a complete understanding of the trend of all issues and difficulties, and how to deal with cancer. Hence, it is necessary to conduct a longitudinal study on cancer patients and their families from the time of diagnosis. Despite

this limitation, clinical assessment was applied as a complementary tool for more accurate evaluation of the issue. It is recommended that researchers conduct such studies in a vast nationwide scale in the future.

REFERENCES

- Akechi, T., Nakano, T., Okamura, H., et al.(2001). psychiatric disorders in cancer patients: desceiptive analysis of 1721 psychiatric referrals at two Japaese cancer center hospitals . Jpn J Clin Oncol;31: 188- 94. doi: 10.1093/jjco/hye039
- Alter, C. L., Pelcovitx, D., Axelrod, A., Goldenberg, B., Harris, H., Meyers, B., Grobois, B., Mandel, F., Septimus, A., & Kaplan, S. (1996). Identification of PTSD in cancer survivors. *Psychosomatics*, 37(2) , 137-143.
- Bellizzi, K. M. & Blank, T. O. (2006). Predicting posttraumatic growth in breast cancer survivors. *Health Psychology, 25,* 47-56. PMID:16448297.
- Bostock, L., Shiekh, A. I. & Barton, S. (2009). Posttraumatic growth and health related trauma: A systematic review. *Journal of Clinical Psychology in Medical Settings*, 16, 281–296.
- Calhoun, L. G., Cann, A., Tedeschi, R. G., & McMillan, J. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *Journal of Traumatic Stress*, 13, 521–528. PMID:10948491
- Carroll, B. T., Kathol, R. G., Noyes, R., Wald, T. G., & Clamon, G. H. (1993). Screening for depression and anxiety in cancer patients using the Hospital Anxiety and Depression Scale. *General Hospital Psychiatry*, 15, 69–74. PMID: 8472942.
- Cordova, M. J., Cunningham, L. L. C., Carlson, C. R. & Androykowski, M. A. (2001). Posttraumatic growth following breast cancer: A controlled comparison study. *Health Psychology, 20,* 176-185. http://www.paloaltou.edu/content/cordova-m-j-cunningham-l-l-c-carlson-c-r-andrykowski-m-2001-posttraumatic-growth-following-b
- Daiter, S., Larson, R. A., Weddington, W. W. & Ultmann, J. E. (1988). Psychosocial symptomatology, personal growth, and development among young adult patients following the diagnosis of leukemia or lymphoma. *Journal of Clinical Oncology, 6,* 613- 617. http://jco.ascopubs.org/content/6/4/613.
- Derogatis, L. R. (1986). Psychology in cancer medicine: a perspective and overview. *Journal of Consulting and Clinical Psychology*, 54, 632–638. Doi: 10.1037/0022-006X.54.5.632
- Fallah Tafti S, Safa M, Talischi F, Ghassem Boroujerdi F. (2013). Evaluation of anxiety and depression in patients with asthma at Massih Daneshvari Hospital, Tehran. *Sri Lanka Journal of Psychiatry, 4 (1):7-9.*
- Fromm, K., Andryokwski, M. A. & Hunt, J. (1996). Positive and negative psychosocial sequelae of bone marrow transplantation: Implication for quality of life assessment. *Journal of Behavioral Medicine, 19,* 221-240. http://link.springer.com/article/10.1007%2FBF01857767.
- Gold, J.I, Douglas, M.K, Thomas, M.L., Elliott, J.E., Rao, S.M., Miaskowski, C.(2012). The Relationship Between Posttraumatic Stress Disorder, Mood States, Functional Status, and Quality of Life in Oncology Outpatients. *Journal of Pain and Symptom Management*. 44(4):520-31. doi: 10.1016/j.jpainsymman.2011.10.014. Epub 2012 Jun 27.
- Gurevich, M., Devins, G. M., & Rodin, G. M. (2002). Stress response syndromes and cancer: Conceptual and assessment issues. *Psychosomatics, 43,* 259-281.
- Jackson, J.C., Hart, R.P., Gordon, S.M., Hopkins, R.O., Girard, T.D., Ely, E.W.(2007). Posttraumatic stress disorder and post-traumatic stress symptoms following critical illness in medical intensive care unit patients: assessing the magnitude of the problem. *Critical Care*, 11 (1): R27. PMID:17316451.
- Helgeson, V. S., Reynolds, K. A. & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology*, 74, 797–816.

- Jemal, A., Bray, F., Center, M. M., Ferlay, J., Ward, E., & Forman, D. (2011). Global cancer statistics. *CA: A Cancer Journal for Clinicians, 61*(2), 69-90. http://onlinelibrary.wiley.com/doi/10.3322/caac.20107/abstract. DOI: 10.3322/caac.20107
- Kangas, M., Henry, J. & Bryant, R.A. (2005). Predictors of posttraumatic stress disorder following cancer. *Health Psychology*, 24, 579 – 585. Doi: 10.1037/0278-6133.24.6.579.
- Kangas, M., Henry, J., Bryant, R. (2005). The course of psychological disorders in the 1st year after cancer diagnosis. *J Consult Clin Psychol*, 763–8. PMID:16173866
- Linley, P. A. & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, 17, 11–21. PMID:15027788
- Lynch, M. E. (1995). The assessment and prevalence of affective disorders in advanced cancer. *Journal of Palliative Care*, 11, 10–18.
- McDaniel, J. S., Musselman, D. L., Porter, M. R., Reed, D. A., & Nemeroff, C. B. (1995). Depression in patients with cancer. Diagnosis, biology, and treatment. *Archives of General Psychiatry*, 52, 89–99. PMID: 7848055
- McDaniel, J. S. & Nemeroff, C. B. (1993). Depression in the cancer patient. Diagnostic, biological, and treatment aspects. In C. R. Chapman, & K. M. Foley (Eds.), *Current and emerging issues in cancer pain: research and practice* (pp. 1–19). New York: Raven Press
- Merecz, D., Waszkowska, M., Wezyk, A.(2012). Psychological consequences of trauma in MVA perpetrators – Relationship between post-traumatic growth, PTSD symptoms and individual characteristics. *Transportation Research Part*, 15, 565–574. http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.elsevier-6529be4a-de3e-31d1-aa73-86eae0b5841e
- Palgi., Y, Shrira., A., Haber, Y., Jacob, W. J., Goldray, O., Shacham, E. Sh., Ben Ezra, M.(2011). Comorbidity of posttraumatic stress symptoms and depressive symptoms among gastric cancer patients. *European Journal of Oncology Nursing*, 15, 454-458.
- Palmen, J.L., Fisch, M.J., (2005). Association between symptom distress & survival in out patients seen in a palliative Car Cancer Center. J pain Symptom Manage Jun; 29(6) :565 -71.
- Prati, G. & Pietrantoni, L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: A meta-analysis. *Journal of Loss and Trauma*, 14, 364–388.
- Sadock, B.J., Sadock VA. (Eds).(2007). *Comprehensive textbook of psychiatry*, (8th Ed.) Philadelphia: Williams & Wilkins Press.
- Safa M, Khalil Zadeh S, Talischi F, Alizadeh S. (2012). Correlation of anxiety-depression and sleep quality in mothers of children with cystic fibrosis and asthma. *Tanaffos*, 11 (1): 44-48.
- Salsman, J. M., Segerstrom, S. C., Brechting, E. H., Carson, C. R. & Andrykowski, M. A. (2008). Posttraumatic growth and PTSD symptomatology among colorectal cancer survivors: A 3 month longitudinal examination of cognitive processing. *Psycho- Oncology, 18, 3*0-41.
- Sears, S. R., Stanton, A. L. & Danoff-Burg, S. (2003). The yellow brick road and the emerald city: Benefit-finding, positive reappraisal coping, and posttraumatic growth in women with early-stage breast cancer. *Health Psychology, 22*, 487-497.
- Spiegel, D., Riba M. B. (2011). Supportive care and quality of life. In Devita V. T, Lawrence T. S, Rosenberg S. A. *Cancer: principles and practice of oncology*. 9th ed. Philadelphia: Lippinctton William and Wilkins Press.
- Spitzer, R. L., Williams, J. W., Gibbon, M. & First, M. B. (1990). *Structured Clinical Interview for DSM-III-R*, Non patient Edition (SCID NP, Version 1.0). Washington, DC: American Psychiatric Press.
- Stanton, A. L., Bower, J. E., & Low, C. A. (2006). Posttraumatic growth after cancer. In L. G.Calhoun and R. G. Tedeschi (Eds.), *Handbook of Posttraumatic Growth: Research andPractice* (pp.138-175). New Jersey: Lawrence Erlbaum Associates.

- Sukantarat, K., Greer, S., Brett, S., Williamson, R.(2007). Physical and psychological sequele of critical illness. *British Journal of Health Psychology*, 12, 65-74. PMID:17288666.
- Tafti SF, Cheraghvandi A, Safa M, Eragh DF, Talischi F. (2011). Study of depressed mood and quality of life in asthma in Tehran using the 28-item general health questionnaire. *East Mediterranean health journal, 17 (11).*
- Taku, K., Cann, A., Calhoun, L. G. & Tedeschi, R. G. (2008). The factor structure of the posttraumatic growth inventory: A comparison of five models using confirmatory factor analysis, *Journal of Trauma Stress, 21,* 158-164. PMID:18404631.
- Tallman, B. A., Altmaier, E. M., Garcia, C. (2007). Finding benefit from cancer. *Journal of Counseling Psychology, 4,* 481-487.
- Tedeschi, R. G., & Calhoun, L. G. (1996). Posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9,* 455-471. DOI: 10.1002/jts.2490090305.
- Tedstone, J.E., Tarrier, N.(2003). Post traumatic stress disorder following medical illness and treatment. *Clinical Psychology Review,* 23, 409-448. PMID:12729679.
- Thornton, A. A. (2002). Perceiving benefits in the cancer experience. *Journal of Clinical Psychology in Medical Setting, 9,* 153-165. http://link.springer.com/article/10.1023%2FA%3A1014996127535
- Thornton, A. A. & Perez, M. A. (2006). Posttraumatic growth in prostate cancer survivors and their partners. *Psycho-Oncology, 15,* 285-296. DOI: 10.1002/pon.953
- Tomich, P. L. & Helgeson, V. S. (2002). Five years later: A cross-sectional comparison of breast cancer survivors with healthy women. *Psycho-Oncology, 11,* 154-169. DOI: 10.1002/pon.570
- Tomich, P. L. & Helgeson, V. S. (2004). Is finding something good in the bad always good? Benefit finding among women with breast cancer. *Health Psychology, 23,* 16-23. PMID:14756599
- Van't Spijker, A., Trijsburg, R. W., & Duivenvoorden, H. J. (1997). Psychological sequelae of cancer diagnosis: a meta-analytical review of 58 studies after 1980. *Psychosomatic Medicine,* 59, 583–593.
- Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J.A. & Keane, T. (1993). The PTSD Cheklist(PCL). Reliability, Validity & diagnostic Utility. Paper presented at the annual convention of the international society for traumatic stress studies, San Antonio, TX.
- White, C.A. (2010). *Cognitive Behavioral Therapy for chronic medical patients: A practical guide for evaluation and treatment.* Translated by Molavi R and Fatahi K. Tehran: Arjmand Publications. [In Persian].
- Widows, M. R., Jacobsen, P. B., Booth-Jones, M. & Fields, K. K. (2005). Predictors of posttraumatic growth following bone marrow transplantation for cancer. *Health Psychology, 24,* 266-273. DOI: 10.1037/0278-6133.24.3.266.
- Yallom, A. (2003). *Existential Therapies.* London: SAGE Publications.
- Zabora,, J., Hofe, B., Szok, K., et al.(2001). The prevalence of psychological distress by cancer site. *Psycho Oncology,*10(0) ;19 – 28.
- Zoellner, T. & Maercker, A. (2006). Posttraumatic growth in clinical psychology – A critical review and introduction of a two component model. *Clinical Psychology Review,*26, 626–653. http://dx.doi.org/10.1002/jclp. 20441.
- Zoellner, T., Rabe, S., Karl, A. & Maercker, A. (2008). Posttraumatic growth in accident survivors: Openness and optimism as predictors of its constructive or illusory sides. *Journal of Clinical Psychology,* 64, 245–263. DOI: 10.1002/jclp.20441