

Community Involvement in Controlling Cutaneous Leishmaniasis in Ikrampur Village of District Mardan through Dissemination of Information among Schoolchildren

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ABSTRACT

Cutaneous Leishmaniasis is caused by *Leishmania tropica* and *Leishmania major* in Khyber-Pakhtunkhwa, Pakistan by the bite of infected female Phlebotomous sandfly. This study was conducted for the spreading of information on Cutaneous Leishmaniasis among schoolchildren in District Mardan Khyber-Pakhtunkhwa, Pakistan. The study aimed for the development of prevention and control strategies against the disease. Age ranged from 13 to 19 years. All the students (n=200) attended a class and received a pamphlet on Cutaneous Leishmaniasis. Knowledge on Cutaneous Leishmaniasis was evaluated with a pre and post knowledge questionnaire. A significant improvement in knowledge was observed among schoolchildren (p<0.05). The spread of information on Cutaneous Leishmaniasis among schoolchildren can contribute to measures for the prevention of disease.

KEYWORDS: Cutaneous Leishmaniasis; schoolchildren; information dissemination

INTRODUCTION

Leishmaniasis is an infection caused by trypanosomatid parasites, belonging to genus *Leishmania*. Leishmaniasis is transmitted to and between humans and other mammals by the bite of female *Phlebotomus* sand-flies via Anthroponotic or zoonotic cycles. As intracellular amastigotes the parasites persist and reproduce within phagolysosomes of macrophages. Leishmaniasis is from self-limiting cutaneous leishmaniasis (CL) to fatal visceral leishmaniasis (VL) [1]. Each year the approximation of new cases and deaths are 1.5-2.0 million and 70,000 respectively, and 350 million people are at risk of infection and disease as well as an approximately 2.4 million disability-adjusted life-years (DALY) world widely [2]. CL is endemic in 88 countries globally, and 90% of cases occur in Afghanistan, Algeria, Brazil, Syria, Peru, Saudi Arabia, Iran, Iraq and Pakistan [3].

Records about the CL first outbreak in Pakistan are not available, though, in 1935 after a severe earthquake in Quetta the outburst of the disease was happened [4]. But according to the WHO report for the first time CL was reported in 1960 in Pakistan, and the most probable vector of infection is considered to be *Ph. Sergenti* [5] which is prevalent mostly in mountainous parts of Pakistan [6].

In various regions of Pakistan the disease is known to be endemic since many years, but recently it seems to have become an epidemic in the country [7], caused by *L. tropica* and *L. major* [8]. The most common type of CL in Pakistan is called "urban" or "anthroponotic leishmaniasis" [9]. Usually single or multiple lesions occur on uncovered parts (hands, feet, face) of the body starting from nodule or plaque and passes through the stages of crust, ulcer and scar formation [10]. The treatment primarily relies on the drugs available *viz.*, pentavalent antimonials, Amphotericin B, Miltefosine, Paromomycine, Buparvaquone.

The world's largest outbreak of CL occurred in Kabul (Afghanistan) where more than 9% of the population (270,000) was affected. After the Soviet invasion of Afghanistan, the cross-border movement of 3.5 million Afghan refugees occurred into Pakistan, settled in more than 300 formally accepted camps in different areas of Pakistan including the Khyber Pukhtunkhwa [11]. *Jalala* camp was one of the largest camp in Mardan which carried this infection to local people, therefore the people in Mardan region call it in their local Pashto language as the "*Kabalyano bemari*" (disease of Afghans) while in Afghanistan it is known as *Saldana*. The WHO has been working with local health authorities in the Khyber Pukhtunkhwa to control the outbreak of CL by adopting various strategies. Community involvement in controlling this infection is need of the time, so this study, based on a short term intervention by involving schoolchildren, in an attempt to develop a sustainable policy for the control and prevention of CL in Ikrampur village of District Mardan.

MATERIALS AND METHODS

A dissemination study regarding CL were organized in a Govt Girls High school Ikrampur (Baizo Kharki), Mardan by involving students from 8th to 10th grades in 2013. Total 200 students were involved in

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this study. All the students from 8th to 10th grades were attended a standardized lecture on Cutaneous Leishmaniasis and received a copy of a pamphlet on the disease.

Study area. This study was conducted in CL endemic village known as Ikrampur (Baizo Kharki), with a population of approximately 25,000 people. This is the last village and Union Council of the District Mardan, situated in the north east strip of Mardan and on the edge of Malakand. A typical village consists of cemented paths and carpeted streets with safe drainage system. Its houses are made from strong stones so the villagers now build their huge houses from bricks and concrete. Most of the village people live simple life and the needs are minimum. It is surrounded by massive mountains. Here three government schools for girls are situated, in which two are primary and one is high school. We selected the high school for our communication purpose consist of approximately 600 students.

A Basic health unit (BHU) is also situated in Ikrampur (Baizo Kharki), where the people from all the nearby villages, including Ikrampur visit for the treatment of CL.

The study included the following items.

- **Training students**

All students from the 8th to 10th grades were invited to participate. Mean age was 14 years (range: 13-19). All the students attended a CL lecture, at the end of which they received a copy of the pamphlet.

- **Pre and Post-intervention Assessments**

Pre-knowledge Assessment

Awareness of CL among students were evaluated before the specific class/training by using an individual multiple-choice questionnaire with fourteen (14) closed ended questions; including etiology, mode of transmission, disease identification, possible risk factors, and care seeking behavior, treatment and protective measures.

Questionnaire design

The knowledge towards CL were included mode of transmission, epidemiological features and prevention. The original version of the questionnaire was in Urdu (in order to facilitate the local people) which included fourteen (14) closed ended questions and two (02) open ended questions. The open ended questions included the following domains:

The first part included age, gender, current residence, and family's income, educational and occupational status. The second part included queries regarding disease (size of lesion, number of lesions, duration of lesion, position) and its treatment.

Post knowledge Assessment

After 45 days of specific classes/training, the post knowledge assessment were taken by using the same questionnaire as for the pre knowledge assessment to compare their results.

During data collection visits, the assessment of hygienic condition around the household (leaves, fruit, or branches on the ground, accumulated garbage, and animal droppings) were assessed.

Results and discussion. Cutaneous leishmaniasis causes a public health problem globally. It has now become endemic in 88 countries of the world. It is generally due to the migration and travelling of people. In the present study Mean number (average: 31) of correct answers in pre-knowledge assessment on the questionnaire by the students of all the classes (grade 8th to 10th) were similar and low. 45 days after the class, the mean number of correct answers was 37. A significant difference was observed in the improvement of correct answers by the students ($p < 0.05$). Performance according to grades was similar (Table. 1). The method used here is practicable and comparatively simple. Once knowledge and health related skills are developed, students begin to lead better lives and contribute to enhance the quality of life in their families. The main idea in this approach is action and participation, with students and their direct involvement in the process. Table. 2 shows knowledge about cutaneous leishmaniasis among schoolchildren. During a survey in Balochistan about cutaneous leishmaniasis visits were made to schools and delivered lectures to students about CL in each class [12]. A cross-sectional descriptive survey in Al-Hassa (Eastern Province of Saudi Arabia) were carried out by including 1824 participants, age ranging from 15- 63 years (mean 35.86 ± 9.54 years). Above 76% of the studied population had a good awareness about the clinical manifestations of CL but the awareness about the vector, transmission, risk factors and protective methods were very little. This study provide a template to plan interventions in Al-Hassa [13].

Table. 1. Mean number of correct answers and improvement in a questionnaire on Cutaneous Leishmaniasis among 8th, 9th and 10th grade students from a high school prior to and 45 days after a class on the disease (n=200).

Class (No. of students)	Mean test score (%)		Difference (Post-Pre)
	Pre	45 days Post	
8 th (47)	31	36	05
9 th (76)	33	38	05
10 th (77)	30	37	07
Total (200)	31	37	06

Significance difference after class on Cutaneous Leishmaniasis ($p < 0.05$).

Table. 2. Knowledge regarding Cutaneous Leishmaniasis among the included students (n=200)

S. No.	Questions	Responses (%)		
		Correct	Incorrect	Do not know
1	*CL is caused by (option): Parasite	39.5	34.25	26.25
2	*CL is transmitted by the bite of an insect: True	57.5	22.5	20
3	Females are more affected by the *CL: False	34.5	35.75	29.75
4	*CL usually affects the (option): uncovered body parts	67.5	22	10.5
5	The disease more commonly affects children: True	58	27.75	14.25
6	*CL is initially manifested by (option): blister /papule	65.75	29	5.25
7	The insect responsible for the disease is (option): sandfly	82.75	7.75	9.5
8	Sleeping outdoor increases the risk of getting the disease: True	82	9.75	8.25
9	Sitting on grass/contact with tree leaves cause the disease: False	20.75	56.75	22.75
10	An infected person should seek treatment at (option): Hospital	93.5	03	3.5
11	It is self-limited skin problem: False	47	47.25	06
12	Bed nets are protective against insects that cause the disease: True	88	5.75	6.25
13	Skin repellents are protective against insects that cause the disease: True	91	6.5	2.5
14	Sprays are used to kill the insects: True	92.25	05	2.75

*CL: Cutaneous Leishmaniasis



During visits, the hygienic condition were also assessed around the household *i.e.* leaves, fruit, or branches on the ground, accumulated garbage, and animal droppings (Figure. 1).

It is concluded that the dissemination of information regarding cutaneous leishmaniasis among the students helped to improve their level of knowledge. Their knowledge can contribute in controlling the disease as compared to the local community member.

Figure.1. Showing accumulated garbage around the houses.

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