

Occupational risk factors related to Cutaneous Leishmaniasis: A descriptive study

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Abstract:-Cutaneous Leishmaniasis (CL) is an endemic disease in Sri Lanka and it is considered as a notifiable disease from year 2008. Anuradhapura has been one of the areas shows highest incidences of Leishmaniasis in Sri Lanka. The purpose of this present study was to identify the occupational risk factors associated with Cutaneous Leishmaniasis. A quantitative cross-sectional study was conducted among patients who were diagnosed with CL and visit to Dermatology clinic at the Base Hospital Thabuththegama. Two hundred participants were recruited to the study by using convenience sampling method. A self-administered questionnaire was used to collect data and Statistical Package for Social Sciences (SPSS) Version 21 was used to analyze the data. Majority of the participants were male (n=145, 72.5%) and 46% of participants were over 40 years old. More than half (n=123, 61.5%) of the participants were paddy cultivators. Being a paddy cultivator was a significant occupational risk factor for CL. The results showed that gender was statistically significant variable for CL ($P < 0.05$). Statistically significant associations were also found at the level of 0.01 between occupation with gender, age and educational level. Furthermore, laborers (7.5%) were also more prone to affect by CL comparable with other occupations. Hence, a special attention should be given to male paddy cultivators by providing health education on the disease, identifying reservoir hosts and vector control will be important initiatives to prevent the spread of this disease.

Keywords: Occupational Risk factors, Cutaneous Leishmaniasis

Introduction

Cutaneous Leishmaniasis (CL) is a neglected disease strongly associated with the poorest population of the world (Thilahun et al., 2014). Leishmaniasis is a vector-borne disease caused by a protozoan parasite of the genus Leishmanial and transmitted by the bite of an infected female phlebotomine sand fly (Galgamuwa et al., 2017). Patients with CL present with a single ulcer or nodular lesions near the site of insect bite (Mccwir & Satoskar, 2013). The ulcers or nodules can be seen uncovered areas of the body such as the face, forearms and lower legs (Mccwir et al., 2013). According to the World Health Organization (WHO) Leishmaniasis threatens about 350 million people and children in 88 countries worldwide (WHO, 2017). As estimated, 0.9 to 1.3 million new patients and 20000 to 30000 deaths occurred annually in worldwide (Bmorovat et al, 2018). As many as 12 million people are believed to be currently affected (WHO, 2017).

Leishmaniasis is an endemic disease in Sri Lanka since the first autochthonous CL case was identified in 1992 (Weerakoon et al., 2016; Galgamuwa et al., 2017). The percentages of patients have increased in the last few decades due to numerous reasons such as human migration from endemic to endemic areas, poverty, deforestation and urbanization (Galgamuwa et al., 2017). More than 2000 cases have been identified from 2000 to 2009 and nearly 8487 patients have

been recorded during 2009 to 2016 representing at least one case from all 25 administrative districts (Wijerathna et al., 2018). Anuradhapura is one of the most endemic districts for CL in Sri Lanka. (Galgamuwa et al., 2017). Although, after conducting several studies, it can be seen the development of Leishmaniasis remains the same. Therefore, it is necessary to understand the risk factors to control and prevent Leishmaniasis properly hence we decided to perform this study. The purpose of this study is to identify occupational risk factors related to Cutaneous Leishmaniasis among patients who visit to the dermatology clinic at Base Hospital Thabuththegama.

Methodology

Study Design

A descriptive cross-sectional study was conducted among patients who were diagnosed with CL, visit to Dermatology clinic at Thabuththegama.

Study setting

This study was conducted at dermatology clinic in Base Hospital Thabuththegama. It is one of the largest base hospitals in Anuradhapura district. Diagnosed patients with Cutaneous Leishmaniasis visit dermatology clinic every Wednesday for treatments. Approximately, there are 35 to 40 patients daily at the clinic. All the diagnosis, treatments, care and procedures in the clinic are conducted under the supervision of one dermatologist while coordinating by nursing officers relevance to clinic.

Study population

The population of the research was the patients who visit the dermatology clinic at the Base Hospital Thabuththegama. 215 diagnosed patients with CL were selected as the sample by using convenience sampling method. Inclusion criteria for the study were patients who have diagnosed with CL. Patients who have mental illnesses, disabilities or

difficulties to communicate were excluded from the study.

Study material & Data collection

A self-administered questionnaire was developed in three languages Sinhala, English and Tamil. The questionnaire was consisted of two parts, part A-Socio demographic data (Age, Gender, and Educational level) and part B- Occupation related data. The questionnaire was pre-tested with 25 patients with CL, those data were not considered in the study. Reliability was established with results of pre-test. Face validity and content validity was done with supervisor and subject experts at the dermatology clinic. Modified questionnaire was used to collect data. The value of Cronbach's Alpha was more than 0.7 in the study.

Ethical consideration

Ethical approval was obtained from ethical review committee of National Hospital of Sri Lanka. All the information was gathered anonymously after obtaining the informed consent from the participants. Participants had the right to withdraw from the participation at any time of the study. Privacy and confidentiality of the participants and their information were ensured to the maximum at every stage of the research.

Data collection

The data collection was conducted from June 2019 to one month period.

Data Analysis

Analysis of collected data were carried out with the Statistical Package for Social Sciences, (Version 21).

Results and Discussion

Total of 215 patients who were diagnosed as Cutaneous Leishmaniasis in the dermatology clinic at base hospital Thabuththegama were invited to participate for answer the questionnaires. 15 questionnaires were excluded from final analysis due to incomplete

data. The final study sample was consisted of 200 subjects. Majority of patients were male (n=145, 72.5%) and the female represented 27.5% (n=55) of the total participants. The results showed that gender was statistically significant variable for CL ($P < 0.05$). When considering age 46% (n=92) of participants were over 40 years and 23.5% (n=47) of the participants were between 18-30 years old while 30.5% (n=61) were in-between 31-40 years. Majority (48.5%, n=97) of the participants were educated below ordinary level and most of the participants' (48%, n=96) monthly income were < 5000 rupees.

Table 1 - Socio-demographic data of the Participants

Socio-demographic data	Category	n	%
Gender	Male	145	72.5%
	Female	55	27.5%
Age	18-30 years	47	23.5%
	31-40 years	61	30.5%
	>40 years	92	46.0%
Religion	Buddhist	191	95.5%
	Christian	05	2.5%
	Islam	04	2.0%
Marital status	Married	141	70.5%
	Unmarried	48	24.0%
	Living together	04	2.0%
	Divorced	04	2.0%
	Widow	03	1.5%
Education level	O/L	60	30.0%
	A/L	36	18.0%
	Diploma	04	2.0%
	Graduate	03	1.5%
	<O/L	97	48.5%
Monthly income	<5000	96	48.0%
	5000-15000	52	26.0%
	15000-40000	41	20.5%
	>40000	11	5.5%

Source: KDU IRC 2020

Table 2 - Occupation related factors

Occupation	Count (n)	Percentage (%)
Paddy cultivator	123	61.5
Chene cultivator	4	2.0
Poultry	1	0.5
Teacher	4	2.0
Clerk	2	1.0
Housewife	10	5.0
Labourer	15	7.5
Government officer	9	4.5
Businessman	4	2.0
Others	11	5.5
No	17	8.5
Total	200	100.0

Source: KDU IRC 2020

Table 3 - Monthly income of Paddy cultivators

Monthly income	Frequency (n)	Percent (%)
<5000	82	66.7
5000-15000	27	22.0
15000-40000	13	10.6
>40000	11	0.8
Total	123	100.0

Source: KDU IRC 2020

Table 4 - Correlations between Occupation and socio-demographic data

Variable	Correlation significant level
Age	0.01
Religion	0.05
Gender	0.01
Educational level	0.01

Source: KDU IRC 2020

Out of 200 participants surprisingly 61.5% (n= 123) were paddy cultivators. Monthly

income of most of the paddy cultivators was less than 5000 rupees (Table 3). Statistically significant associations were found between occupation with gender, age, religion, and educational level (Table 4).

Being a paddy cultivator had a significant association to the presence of CL ($p < 0.05$). Similar finding to that of a study conducted in Ethiopia (Tilahun, Alemu, & Mulatu, 2014). The reason for the finding confirmed that the people whose occupations were closely related to paddy field were more prone to sand fly bites due to presence of increase the density of sand fly breeding places. A study conducted in Mekelle City, Ayder referral hospital. Tigray, North Ethiopia done by F.Tilahun et al in 2014 highlighted that the most of males and the farmers were relatively exposure for CL.

The findings of the present study revealed that gender was statistically significant variable for CL. This result agrees with finding of the previous study in Iran, (Oryan & Aetal, 2014). Another similar study conducted in Ethiopia that the sex was significant, highlighted that the gender had significant association to the prevalence of CL (Thilahun et al., 2014). Previous similar findings were reported even in Sri Lanka that the infection of CL was higher among males than females (Galgamuwa et al., 2017). Further findings were reported in Colombia, Silit, India, Libia and Pakistan. However, the reason for that in this study is that the main livelihood of most of the participants is paddy cultivating. Furthermore, the paddy fields facilitate favorable resting breeding habitans for sand flies and the north central province can be described as a province adorned by irrigated colonies and eco-systems which are for paddy cultivation.

Conclusion

Occupation was significantly associated with the disease of CL. Being a paddy cultivator was a main risk factor for CL and being a labourer

also a risk for affect by the disease comparable with other occupations. Because most of them work in open environment such as field and agricultural farms and wearing cloths to cover only lower part of the body. Therefore, they have a high risk of exposure to sand fly bites. According to this study results, males have a high risk to affect this disease since most of them perform outdoor activities mainly paddy cultivation. Hence, a special attention should be given to male paddy cultivators by providing health education on the disease, identifying reservoir hosts and vector control will be important initiatives to prevent the spread of this disease.

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