Prevalence of Visceral Leishmaniasis among people of Saharsa district with reference to Age, Sex, Economic condition and House pattern

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Abstract

Visceral leishmaniasis (VL) is a very common disease in state like Bihar. Recent emergences or reemergence of vector-borne parasite diseases like leishmaniasis have caused global health and economic issues affecting people, domestic animals, and wild animals. The relationship between host, reservoir, and vector (human, animal, and sand-fly) as well as the environment affects the ecology and epidemiology of leishmaniasis. The objective of this study was to determine the prevalence of VL in Saharsa district and its correlation with age, sex, economic condition and house pattern. Total of 150 Individuals of different age groups were examined. Of the total 150 individuals, 50.89% were found positive for VL. The prevalence of leishmaniasis was also examined in relation to age, sex, economic condition and house pattern. The prevalence of leishmaniasis was the highest in the 1-15 year age group (44.8%) than older age group. The prevalence of leishmaniasis was higher in males (61.84%) than in females (38.15%).

Keywords: *Age, Visceral Leishmaniasis, Saharsa, Occupation*

Introduction

On the Indian subcontinent (ISC), a disease known as visceral leishmaniasis (VL) is spread from person to person by the protozoan parasite *Leishmania donovani*. Female *Phlebotomus argentipes* sand flies bite a human. If left untreated, the disease's symptomatic form, also known as kala-azar (KA), which is marked by fever, weight loss, and an enlarged liver and spleen, has a case fatality rate of over 95% (WHO. 2016). Studies indicate that closeness to a previous VL patient, the use of bed nets, and the amount of pesticide spraying are key factors in VL risk, and that more effective treatments have recently lowered the case fatality rate to 10% on average (Alvar, 2012, Bern, 2012, Bern 2007, Pecado, 2014). However, the impact of time gaps between the onset of symptoms and treatment has not been thoroughly studied. The two main methods of control are indoor residual pesticide spraying and improved case detection and management (shorter onset-to-treatment times).

With India, Bangladesh, and Nepal accounting for 80% of the projected 200,000–400,000 yearly global cases between 2004 and 2008, the ISC has historically borne the brunt of the burden of VL. The number of cases in the ISC has, however, significantly decreased since 2011. (Alvar,2012, Chowdhury et al., 2014, NVBDCP, 2016 & WHO,2016).

Therefore, one of the WHO's eradication targets is to reduce the incidence of symptomatic VL to under 1 case/10,000 people/year at the sub-district level in the ISC by 2020. The governments of Bangladesh, India, and Nepal have more ambitiously set a deadline of the end of 2017 for achieving the elimination target. (WHO, 2014). With 80% of all VL cases in India occurring in the northern Indian state of Bihar, it is by far the most impacted region within the ISC. With recent estimates of 1–5 instances per 10,000 per year at the sub-district (block) level, the situation is far from being resolved. (Bhunia et al. 2013 & 2014).

The reported prevalence of VL at the national and regional levels has fluctuated over the past 50 years in about 15-year cycles, with notable decreases in recent years. (Singh et al, 2016).

In the present investigation, the case of leishmaniasis was investigated in Saharsa district and the objective of this study was to determine the prevalence of VL in Saharsa district and its correlation with age, sex, economic condition and house pattern.

Materials and Methods

The goal of the current work was to determine the actual and realistic disease burden of visceral leishmaniasis in the district of Saharsa. The second goal was to study the general population risk by examining the interaction or impact of environmental/eco-climatic factors and VL incidence as well as the relationship between econometric factors and VL incidence. After gathering information from both primary and secondary sources, the actual or realistic load was calculated. While secondary data was based on hospital records from nearby commercial and public institutions, primary data was based on the results of the rk39 test. A team was assembled and trained for the field work with the goal of collecting blood samples and econometric data using predesigned questionnaires. Some participants in the study offered their services willingly and were trained PHC employees. After initial verification by a clinical or paraclinical trained staff member, blood was taken from a person who had irregular fever for the previous two months, lack of appetite, and weakness from panchayats (local administrative units) of any block. The survey results were put to use in an analytical analysis of the VL epidemiology in the district under investigation.

Result and Discussion

The Following Results were obtained after investigation

Total no of cases of Leishmaniasis	Male	Female
76	47(61.84%)	29 (38.15%)

Table1: Table shows total no of cases found during study(Sex wise).

Fig1: Cases of Leishmaniasis among people of Saharsa district

Fig2: No. of Cases of Leishmaniasis with relation to age group
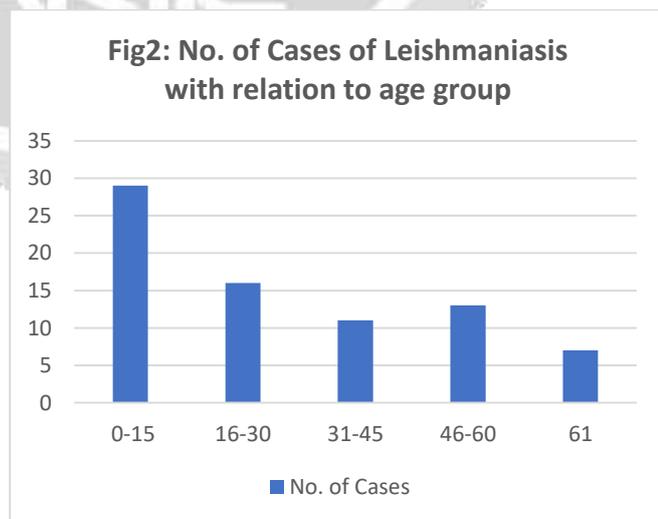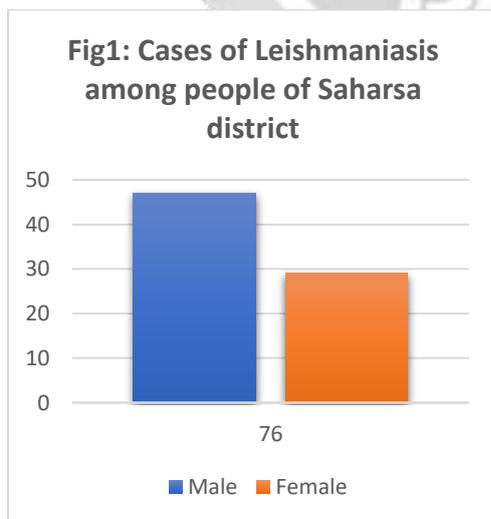
Age Group	No. of Cases	Male	Female
0-15 Years	29 (38.16%)	17 (58%)	12(42%)
16-30Years	16 (21.05%)	9 (56.25)	7 (43.7%)
31-45 Years	11 (14.47%)	8 (72.7%)	3 (27.27%)
46-60Years	13 (17.10%)	7 (53.8%)	6 (46.13%)
61and More	07 (9.21%)	4 (57.1%)	3 (42.85%)

Table2: Table 2 shows total no of cases with relation to the age group of patients.

Economical Condition	No of Cases	Male	Female	House Pattern	No of Cases	Male	Female
Bad	42 (55.26%)	29 (69%)	13 (31%)	Kachha	37 (48.68%)	20 (54%)	17 (45.9%)
Good	26 (34.21%)	18 (69%)	8 (31%)	Kachha with tin roof	20 (26.31%)	13 (65%)	07 (35%)
Better	06 (7.89%)	4 (66%)	2 (24%)	Semi Pucca	14 (18.42%)	09 (64.2%)	05 (35.8%)
Best	02 (3.63%)	2 (100%)	0	Pucca	05 (6.58%)	03 (60%)	02 (40%)

Table3: Table 3 shows the total no of cases with relation to economic condition and house pattern of patients.

Fig3: No. of Cases of Leishmaniasis with relation to economical condition

Fig4: No. of Cases of Leishmaniasis with relation to Housing Pattern
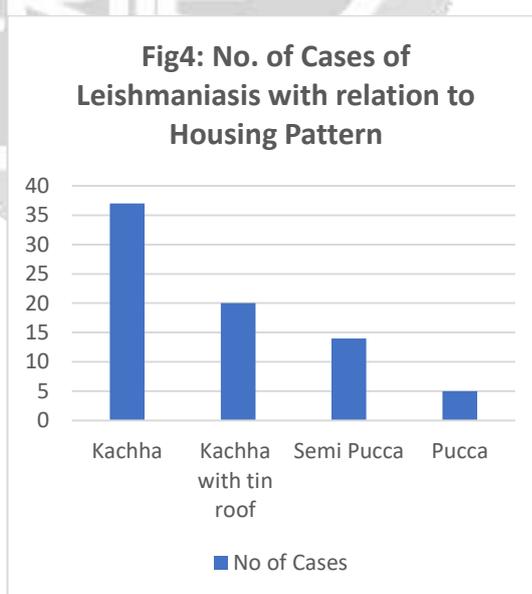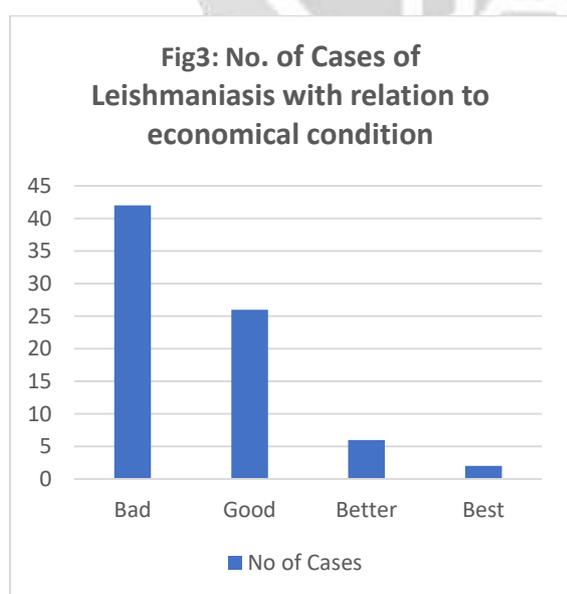
From the above table and figure it is clear that the Total results from the study. During investigation, there was a total of 76 cases of VL in both Saharsa and Simri Bakhtiyarpur Subdivision; 61% were males, and 29% were females. The distributions of total cases categorized by age are shown in Table2 Figure 2. Of the youngest age range (0–15 years), 58% (17) of males and 42% (12) of females were infected. The age ranges from 16 to 30 years had 43.7% (9/16) female cases and 56.25% (7/16) male cases, The age ranges from 31-45 Years   8 (72.7%) male cases and 3 (27.27%) female cases and finally, there were 57.1% (4/7) male and 42.9% (3/7) female cases in the oldest age range of 61 years and over. When examining the total cases of VL by livestock number, there were 61.8% (47/76) of cases with one to three livestock in the family, 28.9% (22/76) of cases with zero livestock, and 9.2% (7/76) of cases where the family-owned four or more livestock. The respondents in all 45 cases were asked to identify the month in which they first experienced symptoms.

For all VL cases, material used for houses and roofs was documented. of 45 households with VL patients, 48.68% of them used thatch as a housing construction material. Twenty six percent of the active case households (Saharsa and Simri Bakhtiyarpur Subdivision) had mud plastering with tin roof. The most number of the households interviewed with confirmed VL cases reported their economic status as poor or agri-labor/poor. The study highlights significant variance in the care route by being one of the few to evaluate diversity in the burden of VL cases in Bihar and the first to look at regional disparities and the effects of socio-economic factors (SEFs) on VL death rates, diagnosis, and treatment in the ISC. Three nations, including India, are thought to be responsible for between 300,000 and 500,000 annual occurrences of VL (kala-azar). (Desjeux, 2004).

The current study evaluated contributing factors in VL cases in India's Bihar state's Saharsa area. According to these statistics, males under the age of 30 had a higher incidence of the disease, but females between the ages of 0 and 15 had the highest incidence of VL infection.

Similar to the work by Ranjan and others,6 those individuals 21 years and older accounted for the highest percentage of cases (42%), whereas the current study also had 40% of the total cases in children ages 0–10 years. Additionally, 61.84% (N = 26) of the current study's total cases of VL were male, which has also been seen in previous studies in India and is thought to relate to a higher incidence of exposure as a result of clothing and habits,with men in Saharsa significantly more likely to contract the disease than women. (Kumar et al. 1999, Rai and Sehgal, 1990).

Housing material included brick, thatch, cement, mud, and different combinations thereof. As for roofing materials, tile, thatch, and brick/ cement were used. An evaluation of all housing materials and roofing materials indicated that 74.99% of the houses with cases of VL had thatch in their building materials, whereas 25.01% of the houses did not include thatch in their building materials.

Conclusion

We draw the conclusion that there are still difficulties in eliminating VL in different VL-endemic districts of Bihar, and that the pathway to care varies greatly between locations. For long-term control, districts with a high case load should receive more attention, and efforts should be made in all regions to decrease waiting times for diagnosis and treatment, either by expanding provision or raising awareness, as well as to enhance access to healthcare for women.

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