

**ORIGINAL RESEARCH ARTICLE****KNOWLEDGE AND PRACTICE REGARDING KALA-AZAR AMONG COMMUNITY PEOPLE OF DANGIHAT, MORANG**Sita Bista<sup>1\*</sup>, Sochana Sapkota<sup>1</sup>, Govinda Akela<sup>2</sup><sup>1</sup> Department of Nursing, JF Institute of Health Sciences/Little Angels College of Higher /LACHS), Kathmandu, Nepal<sup>2</sup> Peoples Dental College and Hospital, Kathmandu, Nepal**\*Correspondence to:** Sita Bista, Department of Nursing, JF Institute of Health Sciences/Little Angels College of Higher /LACHS), Kathmandu, Nepal.E-Mail: [sitabista07@gmail.com](mailto:sitabista07@gmail.com)**ABSTRACT**

Out of 12 endemic districts of Nepal still 11 districts have been reported with Kala-azar, among which Morang is the one. It is useful to identify knowledge and practice of people regarding disease for its effective management. But there is dearth of the related study in our country. So this study aimed to assess the knowledge and practice regarding Kala-azar among community people of Dangihat, Morang. A descriptive cross-sectional study was carried out among community people of Dangihat-4, Morang within age group 15-60 years. Interview of 91 respondents by using semi structured questionnaires schedule with purposive convenience sampling technique was done from 3rd Ashwin to 24th Ashwin, 2072. The study showed that only 18.7% had correct knowledge of sandfly while majority (63.7%) thought mosquito as the vector of disease. Regarding symptoms 94.5% and 73.6% mentioned fever and blackening of skin respectively. Two third of the respondents thought cattle shed as the habitat of sandfly and 67% mentioned its biting time to be dusk/ dawn. Most (89%) of the respondents used bed nets and 44% used insecticide for prevention of Kala-azar. There was significant association between knowledge with previous history and source of information of disease and practice with educational level. Most (52.7%) of the respondents had inadequate knowledge while 78% had average practice regarding Kala-azar. The study population had inadequate knowledge and average practice of disease so further awareness programme may be needed in the village.

**Key words:** Community people; Kala-azar; Knowledge; Morang; Practice.**INTRODUCTION**

Kala azar is caused by *Leishmania donovani*, transmitted by the sand fly.<sup>1,2</sup> It is fatal disease if left untreated.<sup>1</sup> Sixty two countries are considered as endemic for kala-azar with nearly 200 million people at risk. It is estimated that annually around 500,000 cases of kala-azar occurs, with a prevalence of 2.5 million. More than 90% of visceral leishmaniasis(kala-azar) occurs in 5 countries among which one is Nepal.<sup>2</sup> In three endemic countries of South Asia: Bangladesh, India and Nepal, Kala-azar is considered as major public health problem affecting 100,000 people per year and 147 million people at risk. The disease contributes almost 1306 DALYs (disability adjusted life years) loss per year in these

countries. From these three countries, 109 districts have reported with visceral leishmaniasis with current burden of disease being 20 times higher than elimination target 2010/15. Case fatality rate is >95% where as mortality rate is >25% in these countries.<sup>3</sup> Fever for more than two weeks with splenomegaly, anaemia, and progressive weight loss and sometimes darkening of the skin are the characteristics of Kala-azar. Out of 12 endemic districts, 11 districts have reported kala-azar. Three hundred and sixty seven cases of kalaazar are reported in the fiscal year 2070/71 out of which 339 were native and rest were foreign cases. Highest number of case are detected from Morang(84)

followed by Saptari, Siraha, Sarlahi and Dhanusha. In the endemic areas, children and young adults are its principal victims.<sup>4</sup> Total of 15899 cases and 346 deaths have been found during 1980-2000. Only 2.1% had knowledge about sand fly as cause and about 29.9% used mosquito nets, 12.7% used spray and 22.1% used fire as protective devices. The gap between the knowledge, attitude and practices was recognized. Therefore, it is very necessary that the people in the endemic areas need to be made well known or informed about the disease and use of preventive measures against the vector borne diseases for the successful control of the disease.<sup>5</sup> Little is known how individual and communities in the rural endemic areas of Nepal perceives the disease and its management.<sup>6</sup> Successful control of the disease depends greatly on the community participation and support for the programs.<sup>1,5</sup> For designing socially and culturally acceptable control strategies and increasing community participation, researchers and health personnel must know about knowledge and practice of people regarding disease.<sup>5,6</sup> The objective of the study was to assess the knowledge and practice among community people of endemic area regarding kala-azar.

## METHODS

A Descriptive cross sectional design was used to assess knowledge and practice among community people of Dangihat-4, Morang within age group 15-60 years. Out of total 1868 population 91 respondents (sample) were selected for study by using Purposive convenience sampling technique, excluding respondents who weren't at home during study and who had no idea regarding Kala-azar. The sample was calculated using formula:  $n = \frac{z^2pq}{e^2}$ , where z: significance is 95% (1.96) and e: error is 10% (0.1),  $p=0.5$  and  $q=0.5$ ; we get  $n=96$ . And the sample was calculated as:  $ns = \frac{n}{(1+n/N)}$ , where N= total no. of population of Dangihat-4 within age group 15-60 years i.e. 1868. So the sample required was found to be 91. Semi structured questionnaire was developed by the researcher and face to face interview was done to collect the data during the study period of 3 weeks (3rd Ashwin to 17th Ashwin, 2072). The instrument consists of three sections: (i) Socio-demographical information of the respondents, (ii) Questions related to knowledge and (iii) Questions related to practices. Ethical clearance from Research

Committee of JFIHS and college administration of Nursing Campus were taken for the study. Formal and informal permission was taken from the Chairperson of Dangihat, VDC. Verbal consent was taken from respondents before taking interview, to participate in the study. Confidentiality of the respondents was maintained. Analysis of data was done by SPSS version 20 using parameters like: mean, percentage, standard deviation. All the data was arranged, coded, classified and tabulated to make it scientific and clear. The data obtained was analyzed by using frequency distribution and percentage by using table and Chi square test was done to find out association between selected variables.

## RESULTS

**TABLE 1: Socio- demographic Characteristics of the Respondents (n=91)**

Variables	Freq(f)	(%)
<b>Age (yr.)</b>		
<=20	9	9.9
21-30	32	35.2
31-40	22	24.2
41-50	21	23.1
51+	7	7.7
<b>Sex</b>		
Male	45	49.5
Female	46	50.5
<b>Educational status</b>		
Illiterate	10	11
Literate	81	89
<b>If literate</b>		
Can read/write	11	13.6
Primary level	29	35.8
Secondary level	32	39.5
Higher secondary & above	9	11.1
<b>Occupation</b>		
Agriculture	37	40.7
Labor	12	16.0
Service	11	14.7
Business	15	20.0
Others	16	17.6
<b>Presence of past history</b>		
Yes	4	4.4
No	87	95.6

More than half of the respondents were female with 35.2% of 21-30 years. More than two third of the respondents were literate with maximum (39.5%) of them having educational level up to secondary. Most (40.7%) of the respondents' occupation was agriculture. Only 4.4% of respondents' family had positive previous history of kala azar.

**TABLE 2: Knowledge regarding Kala-azar (n=91)**

Characteristics	Frequency(f)	Percentage(%)
<b>Vector</b>		
Housefly	11	12.1
Sandfly	17	18.7
Mosquito	58	63.7
Ticks	5	5.5
<b>Sources of information</b>		
Radio	54	59.3
Television	45	49.5
Newspaper	18	19.8
Relatives/ friends	65	71.4
<b>Transmission</b>		
Through polluted water	30	33.3
From infected person to another through vector	41	45.6
Through sexual contact with infected person	19	21.1
<b>Symptoms *</b>		
Fever	86	94.5
Black pigmentation of skin	67	73.6
Liver enlargement	8	8.8
Others	64	70.3
<b>Nature of disease</b>		
It can be completely cure after treatment	79	86.8
It is self cure	12	13.2
<b>Habitants of sandfly*</b>		
Polluted water	54	59.3
Cracks and crevices in home	49	53.8
Cattle shed	68	74.7
Garbage collection site	64	70.3
Any where	6	6.6
<b>Biting time of sand fly</b>		
During dusk/dawn	61	67.0
At night	7	7.7
During day	3	3.3
Both day and night	20	22.0
<b>Control measures of sandfly*</b>		
Meshing doors/windows	53	58.2
Use of nets	59	64.8
Use of insect repellents	39	42.9
Use of insecticides	56	61.5
Mosquito coils	35	38.5

\* = multiple choice question

Only 18.7% respondents knew about sandfly as vector. Majority (71.4%) of respondents had got information of the disease from relatives/ friends. Nearly half of the respondents mentioned that kala azar can be transmitted through vector. Regarding Kala-azar; 94.5% of respondents knew fever as its symptom 86.8% knew it can be cure. Regarding sandfly; 74.7% of respondents thought cattle sheds as its habitat and two third of the respondents mentioned correctly its biting time at dusk/ dawn. Most (64.8%) thought bed net as important control measures for it.

**TABLE 3: Practice for Prevention of Disease (n=91)**

Characteristics	Frequency(f)	%
<b>Practice for kala-azar prevention*</b>		
Cleanliness	86	94.5
Spray DDT/insecticide	40	44.0
Use bed nets	81	89.0
Use mosquito coils	23	25.3
<b>Methods often used while sleeping</b>		
Bed nets	88	96.7
Mosquito coils	3	3.3
<b>No. of bed nets available</b>		
2-5	63	69.2
>5	28	30.8
<b>Insecticide sprayed</b>		
Yes	52	57.1
No	39	42.9
<b>Practice of sleeping outdoors</b>		
Yes	36	39.6
No	55	60.4
<b>First visiting place during illness</b>		
Traditional healers	30	33.0
PHC	42	46.2
Hospital	19	20.8
<b>Cleanliness of the surrounding</b>		
Daily	52	57.1
Once a week	33	36.3
Within fifteen days	5	5.5
Once a month	1	1.1
<b>Availability of the sheds</b>		
Yes	56	61.5
No	35	38.5
<b>Working time during summer</b>		
In the day time	13	14.3
During dusk/dawn	78	85.7

Almost all (96.7%) of respondents used bed nets at night and maintain cleanliness. More than half of the respondents had their house sprayed with insecticide while one third had outdoor sleeping habit. Only 46.2% of respondents visited nearby PHC if they are sick. Two third of respondents worked during dusk/ dawn at summer due to high temperature.

**TABLE 4: Respondent's Knowledge and Practice on Kala azar (n=91)**

Variables	Frequency (f)	Percentage (%)	Mean
<b>Level of knowledge</b>			
Inadequate	48	52.7	52.3±12.5
Moderate	39	42.9	
Adequate	4	4.4	
<b>Level of practice</b>			
Insufficient	19	20.9	58.4±6.9
Average	71	78.0	
Sufficient	1	1.1	

Regarding knowledge of kala-azar: 52.5% had inadequate knowledge while regarding practice majority (78%) of respondents had average practice against kala azar.

**TABLE 5: Association of Level of Knowledge with Previous History and Sources of Disease**

Variables	Level of Knowledge			Total
	Inad-equate	Moderate	Ad-equate	
<b>History of Previous disease in family members</b> <i>p value 0.027</i>				
Yes	0(0.0%)	3(75.0%)	1(25.0%)	4
No	48(55.1%)	36(41.4%)	3(3.4%)	87
<b>Sources of information</b> <i>p value 0.462</i>				
Radio	26(48.1%)	26(48.1%)	2(3.7%)	54
<i>p value 0.369</i>				
Television	27(60.0%)	16(35.6%)	2(4.4%)	45
<i>p value 0.281</i>				
Newspaper	9(69.2%)	3(23.1%)	1(7.7%)	13
<i>p value 0.035</i>				
Relatives/ friends	32(49.2%)	32(49.2%)	1(1.5%)	65

The association between previous history of disease

and level of knowledge is significant ( $p$  value=0.027). Also the association between sources of information and knowledge level is significant in case of source of information from relatives/ friends ( $p$  value=0.035).

**TABLE 6: Association of level of Practice with Educational level**

Variables	Level of Practice			Total
	Insuffi- cient	Average	Suffi- cient	
<b>Educational level</b> <i>p value 0.031</i>				
Can write/ read	3(27.3%)	8(72.7%)	0(0.0%)	11
Primary	10(34.5%)	19(65.5%)	0(0.0%)	29
Secondary	3(9.4%)	29(90.6%)	0(0.0%)	32
Higher secondary and above	2(22.2%)	6(66.7%)	1(11.1%)	9

The association between educational level and practice is significant ( $p$  value=0.031).

## DISCUSSIONS

In the study, majority (35.2%) of the respondents were 21-30 years age, which is consistent with the findings of study of Bihar where 26.7% were between 25-34 years.<sup>1</sup> In contrast to another study of Bihar where majority (97.0%) of the respondents were male,<sup>2</sup> in the current study majority (50.5%) of the respondents were female, however it is supported by the study conducted in South Gondar where majority of the respondents were female 60.7%.<sup>7</sup>

Majority (89.0%) of the respondents were literate which is supported by the study of Southern Iran where majority (84.3%) were literate respondents.<sup>8</sup> Unlike the occupation of the respondents reported from study in Bihar where only 11.6% were involved in agriculture.<sup>2</sup> from current study it was reported that majority (40.7%) of the respondents were involved in agriculture, current finding was less than the study from rural communities of Amhara where majority (99.8%) of respondents were involved in cultivation of their land.<sup>9</sup>

The current research revealed that 18.7% told sandfly and 63.7% thought mosquito as vector of the disease and 71.4% of the respondents heard about disease from their relatives/ friends which is supported by study from Bihar that showed only 4%

knew sand fly as vector and 62.8% thought mosquito while more than half (60.6%) had heard it from neighbour/ friends.<sup>1</sup> The current study is opposed to the study from South Gondar where majority (68.1%) told sand fly as the vector of the disease.<sup>7</sup>

In regards of the respondents knowledge of Kala-azar transmission 45.6% knew it can be transmitted from one person to another through vector which is supported by study conducted in Sudan where 39.9% thought it could be transmitted from one person to another.<sup>10</sup>

In current study majority (94.5%) and 73.6% of respondents mentioned fever and blackening of skin as symptoms respectively which is similar to study from Dharan where majority (88%) believed that fever was the major sign/ symptom of kala azar followed by blackening of skin by 84%.<sup>11</sup> Regarding the curability, current study showed that two third of the respondents knew about it which is consistent with the studies from Sudan and Bihar where majority (95.6%) and 86.9% respectively knew about curability.<sup>2,10</sup>

In contrast to the study in Bihar where only 39% thought breeding site of sand fly was cattle shed<sup>2</sup>, the current study showed more than two third (74.7%) of respondents thought cattle sheds was the habitat for sand fly. Regarding the biting time of sand flies, study in Punjab revealed 14% believed in dusk and dawn<sup>12</sup> that contrast the study where 67% mentioned it in dusk/ dawn.

The mean knowledge of the respondents was 52.3% which opposed the findings of South Gondar where majority of respondents 89.4% were knowledgeable.<sup>7</sup> The association between previous history of disease and level of knowledge is significant ( $p$  value=0.027) is supported by study conducted in Dharan where history of previous exposure to kala-azar and related activity was statistically significant with awareness ( $p$ -value 0.01).<sup>11</sup> The association between sources of information and knowledge level is significant in case of source of information from relatives/ friends ( $p$  value=0.035). While other demographic status doesn't have association with knowledge whereas the study in Dharan showed there was no statistically significant association between awareness of kalaazar and age, education, occupation, monthly



income of the head of the households ( p- value 0.15, 0.25 , 0.32 and 0.75) respectively [11].

Regarding prevention, current study showed 89% of respondents use bed nets and 44% used insecticide which is supported by the study in Sudan where 85.5% used bed nets, 5.7% used insecticides spray.<sup>10</sup> However it opposed study conducted in rural village of eastern Nepal which revealed that only 29.9% used mosquito nets.<sup>5</sup> Current study showed 96.7% used bed nets while sleeping, which is supported by study in South Gondar where 93.7% used bed nets.<sup>7</sup>

Sixty point four percent slept indoor which was more than the findings from rural communities of Nepal where more than 85% respondents were found to sleep inside home. But the current study showed that respondents who slept outdoors were increased which may be due to increase temperature during summer.

Majority (46.2%) of respondents visited nearby PHC if they suffered from Kala azar which is supported by study from Bihar where 73.6% chose PHC/ government hospital for utilization of kala azar treatment.<sup>1</sup> Unlike the study in Dharan where majority (85%) of the families did not have shed near the house,<sup>11</sup> in current study two third of respondents had cattle shed at their home.

Majority 57.1% respondents cleaned their home surrounding daily, which less than the study from rural communities of Nepal where 97% reported cleanliness at home daily.<sup>6</sup> Present study reported that 85.7% of the respondents preferred to work during dusk/dawn which is in contrast to findings from South Gondar where 49.8% preferred to work during day time.<sup>7</sup> The association between educational level and practice is significant (p value=0.031) in the current study.

## CONCLUSION

From the findings it can be concluded that only few of respondents correctly defined Kala-azar in current study. Majority of respondents use bed nets while sleeping at night. Though respondents don't know about vector of Kala- azar, most of them use bed nets for protection which may be for protecting against mosquito bite.

Majority of the respondents had inadequate knowledge and average practice. There was significant association between educational level and practice in the current study where as insignificant relationship with age, income, occupation, previous history of disease and source of information. There was significant association between previous history with knowledge level. Awareness program may be needed to increase more knowledge and practice of people for protection from Kala azar.

## ACKNOWLEDGEMENT

Researcher would like to express special thanks and sincerity to the research committee of JF Institute of Health Sciences for providing this golden opportunity to conduct the research study for partial fulfilment of requirement for Bachelor of Sciences in Nursing. Researcher would also like to extend heartiest appreciation to study participants for providing necessary information for this study and Chairperson of VDC for providing permission to conduct study.

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