

The First Community Knowledge, Attitude and Practices Assessment towards Visceral Leishmaniasis in at High-Risk Districts of Benishangul Gumuz Regional State, Western Ethiopia

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Abstract

Background: Visceral leishmaniasis (VL or Kala-azar), a fatal neglected tropical disease, has become a growing public health and socioeconomic concern in Ethiopia. VL placed huge burden; about 5000 and over 3.2 million annual incidence and populations at risk respectively. Its (re)emergence has claimed several hundreds of lives including in area hitherto not known to be endemic. As a vector bone disease control measures for VL involve infection prevention. Thus, community knowledge, attitude and practice become a prerequisite in planning public health intervention measures. Benishangul Gumuz is a fast-changing economic development corridor in Ethiopia where VL was detected recently.

Methods: A cross-sectional survey was conducted to assess community knowledge; attitude and practices towards VL using pretest-structured questionnaire. From 6 districts selected purposively for being high VL risk, 646 males and 320 females were randomly enrolled.

Result: The overall awareness of VL among the participants was low: few knew (7.14%) about the presence of VL in their area. Among the informed participants, 35 (50.7%), knew the cause of VL; whereas, 58.0% of the informed participants have good understanding on the transmission of VL, of these 57.5% and 42.5% respondents knew that VL can be transmit by sand fly and mosquito, respectively. About 60.7% award respondents had good knowledge on the clinical sign and symptom of this, 35.7, 9.5 and 54.8 respondents mentioned abdominal swelling, fever and others respectively. More than half (56.00%) of the participants reported spending their time from dawn-to-dusk out door on traditional bed called "majifa" to get air and ventilate themselves. The majority (94.00%) strongly approved health education as a way to improve community awareness.

Conclusion: In conclusion, considering the very low knowledge, attitude and practice vis-à-vis the community's acknowledgement of social and behavior change communication (SBCC) as a way to create awareness; designing and implementing SBCC in Benishangul Gumuz Regional State seems a plausible option.

Keywords: Knowledge; Attitude; Practice; Benishangul Gumuz; Visceral Leishmaniasis

Abbreviations

KAP: Knowledge, Attitudes and Practices; SBCC: Social and Behavior Change Communication; VL: Visceral Leishmaniasis

Background

Visceral leishmaniasis (VL, Kala azar) is one of the deadliest vector borne diseases. It is a growing public health concern in east Africa, which contributes estimated 40,000 new cases per year to the global burden; Ethiopia, South Sudan, and Sudan being the most affected [1]. Over the past decades VL has become beyond public health problem in Ethiopia; it paused a formidable economic development and food security challenges [2-10] and claimed several hundreds of life's.

For visceral leishmaniasis prevention and control the implementation of combination of intervention strategies is recommended [11-13]; protecting the hosts from sand fly bites, and early diagnosis and proper treatment [14-16]. Thus, assessment of community knowledge, attitudes and practices (KAP) is critical to plan and undertake effective prevention and control measure. As Benishangul Gumuz is one of the fast changing economic development corridors in Ethiopia where VL was detected recently [8,10] understanding the level of the community towards VL in the area could inform control planning. Therefore, this survey aimed to assesses KAP of at risk communities toward VL.

Materials and Methods

Study area and population

Benishangul Gumuz, 34° 10'N and 37° 40'E; and in the latitude 09° 17'N and 12° 06' has a total area of 50,380 square kilometers with altitude ranging from 580 to 2731 [17]. The landscape of the region is 75% lowland, 24% midland and 1% highland. The region has a total population of 784,345, 398,655 male and 385,690 female [18]. The average household size is 4.15, 3.6 and 4.7 for the urban and rural respectively [19]. Six high VL risk districts: Dangur, Guba and Pawe from Metekel zone and Banbasi, Kurmuk and Sherkole from Assosa Zone were targeted purposively for the survey.

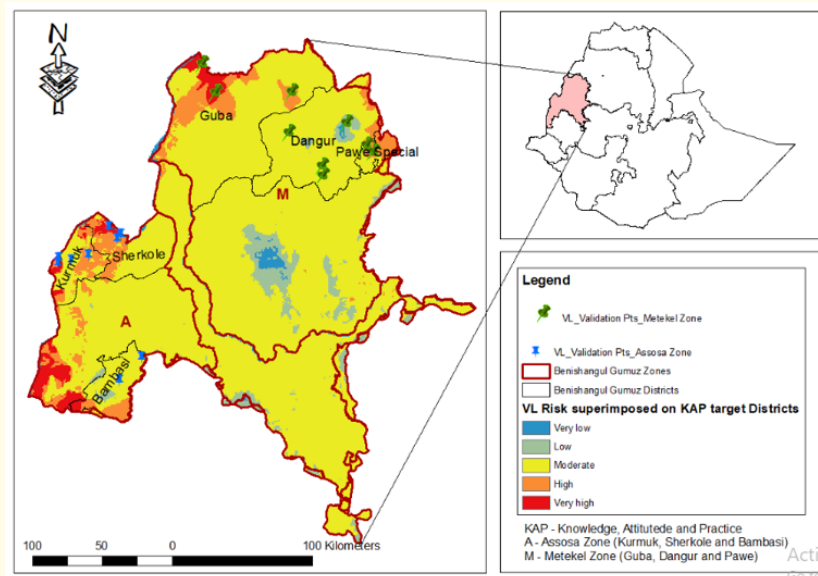


Figure 1: Map of the study districts; Benishangul Gumuz regional state, Western Ethiopia.

Study design, techniques and sample size determination

A cross sectional study was done from 2018 to 2020. The respondents for the interview were selected using a multi-staged sampling technique. At primary sampling unit, overlaying the environmental factor-based risk map [2020] two zones namely Assosa and Metekel were selected for they are within VL high risk area. Correspondingly within the selected zones districts with VL high risk targeted. Then an action map was prepared covering at risk districts and the kebele level shape file to identify high risk kebeles. Subsequently, a total of 1197 participants were randomly selected from each of the kebeles which is about 5% of total population from each kebele. Interview was carried out on 966 participants, > 12 years. Written informed consent was obtained from each participant, parents or guardians before administering the questionnaire.

Data management and analysis

During data collection, the data were checked for its completeness. Data were double entered and analyzed using STATA version 13. The chi-² descriptive statistics were used to for variables like age, sex, occupation, education and housing types. Association of socio-demographic variables with the knowledge of individuals was considering a significance level of 0.05 (p-value < 0.05). The frequency distributions of different variables were also assessed.

Result

Sociodemographic characteristics

Sociodemographic characteristics of the study participants are summarized in table 1. A total of 646 (66.87%) males and 320 (33.13%) females participated in the study. The majority of the study participants (82.51%) were young aged and in terms of educational status 12.53%, 32.19%, 49.59% and 5.69% of the participants were illiterate, elementary, secondary and, diploma and above respectively. Participants had three types of housing namely: wood and mud walled, stone and mud walled and wood only housing types were found to be 77.23%, 6.42% and 16.35% respectively.

Variables	Frequency	Percentage (%)	Variables	Frequency	Percentage (%)
Age			Trader	10	1.04
13 - 18	797	82.51	Civil servant	47	4.87
> 18	169	17.49	Laborer	9	0.93
Sex			Student	789	81.68
Male	646	66.87	Education		
Female	320	33.13	Illiterate	121	12.53
Housing type			Elementary	311	32.19
Wood and mud walled	746	77.23	Secondary	479	49.59
Stone and mud walled	62	6.42	Diploma and above	55	5.69
Wood only	158	16.35			
Occupation					
Farmer	111	11.49			

Table 1: Sociodemographic characteristics of study participants (n = 966), Benishangul Gumuz, Western Ethiopia 2020.

*No = Number of Participants, % = Percentage.

Knowledge of the community

The chi-² statistical analysis in table 2 indicated that age (P = 0.000), occupation (P = 0.020) and education (P = 0.000) were significantly associated with the awareness of the community about VL in the study area. There was no significant difference between sexes (P = 0.970).

Variables	Sample (n)	Aware frequency	Percentage (%)	χ ²	P-value
Age					
13 - 18	797	44	5.52	18.07	0.000
> 18	169	25	14.79		
Sex					
Male	646	46	7.12	0.00	0.970
Female	320	23	7.19		
Occupation					
Farmer	111	15	13.51	11.69	0.020
Trader, Civil servant and Laborer	66	7	10.61		
Student	789	47	6.00		
Education					
Illiterate	121	16	13.22	20.20	0.000
Elementary	311	7	2.25		
Secondary	479	40	8.35		
Diploma and above	55	6	10.91		

Table 2: Knowledge of the community about visceral leishmaniasis in association to demographic character (n = 966), Benishangul Gumuz, Western Ethiopia 2020.

Visceral leishmaniasis is barely (7.14%, 69/966) known in the area; of those who heard of VL the majority (59/69, 85.5%) heard from friends. Moreover, about 35.7% (15/42), 9.5% (4/42) and 54.8% (23/42) of the respondents mentioned abdominal swelling, fever and other (weight loss, anemia, enlarged spleen and liver) as signs and symptoms of VL respectively. Among the awarded participants, 35 (50.7%), knew the cause of VL. Among the respondents who had the informed about VL, 58.0% have good understanding on the transmission of VL, of these 57.5% and 42.5% respondents knew that VL can be transmit by sand fly and mosquito, respectively.

Parameter	Frequency (n)	Percentage (%)
Have you heard about VL		
Yes	69	7.14
No	897	92.86
Source of information about VL		
Friends and community	59	85.50
Media	5	7.25
Health professional	5	7.25
Do you know what causes VL		

Yes	35	50.7
No	34	49.3
Do you know about the transmission		
Yes	40	58.0
No	29	42.0
Do you name the vector		
Sand fly	23	57.5
Mosquito	17	42.5
Do you know the sign and symptoms		
Yes	42	60.9
No	27	39.1
Knowledge on sign and symptom		
Abdominal pain	15	35.7
Fever	4	9.5
Others (weight loss, anemia, enlarged spleen and liver)	23	54.8

Table 3: Respondents' level of knowledge about visceral leishmaniasis (N = 966), Benishangul Gumuz, Western Ethiopia 2020.

Visceral leishmaniasis related attitudes and practice of the community

More than half (56.00%) of the respondents reported sleeping, all the night on the traditional bed called “majifa” to get air and ventilate themselves. Most (77.23%) live in housing type made of wood and mud walled. About 40.27% of the participants had practiced different VL preventive measures, including bed net, and insecticide and clean and waste management. Of the practiced preventive measures bed net utilization, insecticide and clean and waste management were 282 (29.19%), 48 (5.00%) and 59 (6.11%) respectively. Moreover 908 (94.00%) of the respondents believe that health education could help alleviate public health problems.

Variables	Frequency	Percentage %
Do you know preventive measures for VL		
Yes	389	40.27
No	577	59.73
Practice of infection prevention measures		
Bed net	282	29.19
Insecticide	48	5.00
Clean and waste management		
Housing type		
Wood and mud walled	746	77.23
Stone and mud walled	62	6.42
Wood only	158	16.35
Sleeping Habit		
Out door	541	56.00
Indoor	425	44.00
Can health education help to alleviate public health problems		
Yes	908	94.00
No	58	6.00

Table 4: Attitudes and practice of the respondents related to visceral leishmaniasis, (N = 966), Benishangul Gumuz, Western Ethiopia 2020.

Discussion

The generated data to understand the level of the awareness, attitude and practices of the high risk communities about VL is a primary step in implementing different strategic measures to improve treatment seeking behavior prevent and control VL. The finding indicated that the community awareness about VL was 7.14% out the total interviewee. The current finding is in agreement with Fesseha and Ali [21] at Kafta Humera-District who reported 6.7% of the participants were aware about the VL. Geographically both Benishangul Gumuz Regional State and Kafta Humera are located in lowland altitude North western Ethiopia and known to be endemic part of the country [22]; this might be the reason for agreement. Awareness of the community were significantly associated ($P = 0.000$) with age group where the age group above 18 years old had higher percentage of awareness than less than 18 years of age group. This might be related to long life experience in the area and chance of exposure to the disease might give them good level of understanding about VL. The current finding complemented by Terefe., *et al.* [23] who indicated that the adults, age group older than 15 years, were more affected with VL and well aware about symptom of VL as compared to the young age groups. Whereas, there was no significant difference ($p = 0.970$) between sexes on the awareness of the disease, but slightly female had higher awareness with the percentage of (7.19%) than males (7.12%). This is also supported by Menezes., *et al.* [24] (2016) and Carina., *et al.* [25]. According to Menezes., *et al.* [24] and Carina., *et al.* [25] family care responsibilities might be associated with higher female awareness (i.e. medical appointments, examinations, and hospitalizations), which favors their contact with health professionals and exposure to information related to care and disease prevention.

Among occupations farmers showed the highest awareness about VL with 13.51% which is significantly ($P = 0.020$) associated with awareness as compared to other occupational groups, followed by other occupation (trader, civil servants, and labors) with 10.61% in lump sum. This finding tells us the existence of awareness variation among occupations. This could be because farmers involved in agricultural fields work and repeated exposure with different reservoir hosts and vector [26].

Out of the total interviewed 69/966 were heard about VL. Among these heard respondents 85.5%, 7.25% and 7.25% were informed from Close friends and community, media and health professionals, respectively. These were the three most important source of information for those respondents who had heard about VL. Surprisingly in this survey respondents have equal chance of hearing about VL from media and health professional. This finding was in line with Tamirat., *et al.* [27] who reported source of information mainly from friends (80.8%). Furthermore, information transferability within the community in both study area were almost the same indicating that physical appearance and discussion is highly valued in the area. However, there was difference in relation to media and health care professionals; where pamphlet (34.1%) and health care provider (33.2%) were used as major source of information in West Armachio, Northwestern Ethiopia [27]. The difference observed between two study areas might be the difference on responsibility and low activities of health professionals and shortage information in Benishangul Gumuz Regional State as compared to West Armachio.

When the two zones compared the heard respondents about VL, respondents who lived in Metekele Zone were more knowledgeable (84.1%) than those in Assosa Zone (15.9%). This marked knowledge difference about the disease could be because Metekel Zone is close proximity to VL endemic areas, where Metekel Zone is a neighbor of endemic areas of South Sudan, and Humera, Metema and Armachioho that enable to share information and create better understanding than Assosa. The high awareness among Metekele zone respondents is in line with the community information transferability mechanism, where people more exchange information through friends and neighborhoods' as indicated from this survey 85.5% source of information is from friends and nearby community. Therefore, people who are close to the problem would have high chance of awareness due to frequent communication and contact with neighboring village or zone and/or districts. This finding is in agreement with previous reports [27].

Moreover, knowledge among the heard respondents on signs and symptoms of the clinical VL indicates that 60.7% of them had good knowledge and the remaining was not. This is relatively higher as compared to Libo Kem Kem, Northwest Ethiopia: where 17.3% respondents had knowledge about sign/symptom of VL [28]. More than half of the respondents (54.8%) in our study knew at least more than one sign and symptoms of the disease. This is similar to a study conducted in Addis Zemen town, South Gondar, Northwest Ethiopia (62%) [29]. This higher awareness in Benishangul Gumuz Regional State might be due to fast communication among pastoralist community through traditional and high social interaction as compared to sedentary farmers at Libo Kem Kem district.

Among the awarded participants, 35 (50.7%), knew the cause of VL; the finding was comparable to Lo'pez-Perea., *et al.* [30] in Libo Kemkem and Fogera Amhara Regional State at 2011, where 58.7% of the participants had the awareness about the cause of the disease, VL.

In general among the respondents who are knowledgeable about VL, 58.0% have good understanding on the transmission of VL, of this 57.5% and 42.5% respondents knew that VL can be transmit by sand fly and mosquito; respectively. The vector sand fly finding was comparable with the reports of Tamrat., *et al.* [27] from West Armachiho, Northwestern Ethiopia, who reported 52.7% and Alemu., *et al.* [29] from Addis Zemen town, South Gondar, Northwest Ethiopia, who reported 68.1% of the respondents aware about the transmission ways of VL by the bite of sand fly respectively; whereas, finding on mosquito 42.5% higher than the finding by Khanum., *et al.* [26] from Bangladesh who reported 22.7% of the respondents aware about the transmission ways of VL by mosquito, this might be because of the higher endemicity of malaria in Benishangul Gumuz Regional state which familiarize the respondents with mosquito(malaria vector) [31].

More than half of the respondents (59.73%) did not practice proper prevention measures of the disease; this might be because of low awareness of the community; this is supported by study conducted by Siddiqui., *et al.* [32] from India who reported about 66% respondents did not know about the prevention measures. In this survey the attitudes and practice of the community assessment with regards to prevention measures has indicated that substantial proportion (40.27%) of respondents practice prevention through bed net, use of insecticide and clean and waste management. This goes with knowledge of the cause of VL (58%). Findings reported in Libo Kem Kem district, Northwest Ethiopia, showed a significantly high proportion of the participants (82.4%) practiced different preventive measures of VL [28]. Out of preventive measures 29.19%, 5.00% and 6.11% respondents practice preventive measures on bed net, insecticide and clean and waste management, respectively to avoid sand fly bite to human. The higher percentage of bed net as compared to insecticide and clean and waste management might be due to the fact that the government gives bed nets to people for the control and prevention of malaria in the study area, which indirectly help to control leishmania as it is also, supported by Alemayehu., *et al.* [33] who reported that mosquito bed nets could prevent sand fly bites. This finding was comparable with the reports of Berhe., *et al.* [34] from Welkait District of Ethiopia, Ayehu., *et al.* [35] from West Armachiho district of Northwest Ethiopia and [28] from Libo Kem Kem district of Northwest Ethiopia who showed 23.11%, 21.10% and 24.90% of the respondents use bed net to prevent access of sand fly to human, respectively. This finding was lower than the finding reported by Bern., *et al.* [36] in Nepal who reported 70% of the participants use bed net to avoid sand fly bit. This high bed net utilization in Nepal might be due to high awareness in preventive measures as compared to Ethiopia [23,36]. Whereas, the findings on insecticide and clean and waste management are also coincides with the reports of [37] with 8% and 8.4% respectively for insecticide and clean and waste management in Punjab, Pakistan.

As most study areas of the region is low land which is characterize by hot weather condition. As results hot weather condition 56% of participants spent most of their time staying out door by sleeping on the traditional bed called "majifa" to get air and ventilate themselves from dawn-to-dusk. This finding was supported by Alemayehu., *et al.* [33] from West Armachiho, Northwestern Ethiopia, who reported 54.6% of the participants sleep out door. This is also supported by research work by [10]; on serological investigation part of this study, have shown that community who stay at outdoor had high percentage of leishmania skin test reactivity as compared to indoor. This might be due to the chance of exposure to infected sand fly bit as compared to the indoor. This is supported by Nackers., *et al.* [38] from Gedaref State, Sudan.

The lower number of the respondents 79 (8.19%) believed that VL is the result of the evil deed. This finding is in agreement with the reports of Azene and Jirata [28] from Libo Kem Kem district, Northwest Ethiopia who reported 5.8% of the respondents believed that VL is the result of the evil deed. On the other hand, majority of respondents (94.00%) believed that health education can alleviates the problem of the disease, this finding consistent with Amorim., *et al.* [39] from Northeastern Brazil, who reported health education can alleviate significantly the problem of the disease.

Conclusion and Recommendation

The overall survey revealed that the community has a low level of knowledge, attitude, and practices on the occurrence, causative agent, sign and symptom, transmission of the leishmaniasis; whereas, among the communities who were awarded of VL had better understanding. The study also showed that source of information of the community regarding this disease is highly related with close friends and community which shows communication is fast among people and the social norm is good. Bed net utilization is more preferred preventive measure in the study area. On the other hand the community strongly favors health education as a way to prevent infectious diseases and peer group and the formal channels. Hence designing and implementing social behavioral change communications seems a feasible alternative to improve preventive measure against VL and we recommend further studies to establish ecological determinants and VL dynamism in the area.

Authors' Contributions

Conceptualization: SB, GM, GT, TF, NK, AK. Field and laboratory work: SB, GM, TS, SM. Data analysis and writing up: SB, TS, GT, AK, GM, SM. Critical review: All authors proofread, commented and approved the final manuscript.

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