

**Assessment of Knowledge, Attitude and Practice on Visceral  
Leishmaniasis in Sunderpur VDC of Mahottari District**

**Submitted to:**

**The Central Department of Rural Development  
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Kathmandu**

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**Submitted By:**

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**June22, 2010**

## RECOMMENDATION LETTER

This thesis entitled “**Knowledge, Attitude and Practices on Visceral Leishmaniasis in General people of Mahottari District**” has been completed by Mr. Nav Raj Bist under my full guidance and supervision for the partial fulfillment of the requirement for the Master of Arts in Rural Development. I hereby recommend this work for its evaluation and approval.

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## APPROVAL LETTER

This is to certify that the thesis entitled "**Knowledge, Attitude and Practices on Visceral Leishmaniasis in General people of Mahottari District**" submitted by Mr. Nav Raj Bist has been examined. It has been declared successful for the fulfillment of the academic requirements toward the completion of Masters of Arts in Rural Development.

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Nav Raj Bist

## *Abstracts*

*kala-azar(KA), also known as visceral leishmaniasis, tropical splenomegaly, Sirkari disease and dum dum or Assam fever, is an important public health problem in many parts of the world. Of the 500,000 new cases of kala-azar which occur annually, 90% are in five countries: Bangladesh, Brazil, India and Nepal.*

*In this region, Visceral leishmaniasis is endemic in Bangladesh, Nepal and India. The incidence is declining as result of improvement of situation in Bangladesh and India, but cases have been rising in Nepal. In India, Bihar which is attached to the study district Mahotari, contributes about 90 % cases and the remaining cases are from UP and west Bengal. The incidence has a focuses in the border districts, particularly on the India-Nepal borders.*

*Leishmaniasis has been the cause of great suffering and death for hundreds of years. Leishman and Donovan first described visceral Leishmaniasis in 1903, hence the causative agent was named leishmania donavani. The Leishmaniases are now endemic in 88 countries on five continents- Africa, Asia, Europe, North America and South America- with a total of 350 million people at risk. 72, out of 88 are in developing countries and 13 of them are among the least developed in the world.*

*The general objectives of the study is to assess the Knowledge, Attitude and Practice of the general people on VL in rural VDC of an endemic district. And the specific objectives are as (1) To assess the knowledge of the people on VL. (2) To find out the attitude of the people regarding VL. (3)To find out the practices of the people on factors affecting VL.*

*This was a descriptive and cross-sectional study. The study was conducted in sunderpur VDC of Mahottari district (purposively selected) where Bench Mark study was previously conducted in 2002. As described earlier, this is the VDC from where the KA cases are reported relatively in higher number. The total number of HHs of this VDC accounted 593. The study population was the general population of ward no. 4 of sunderpur VDC.*

*This was multi-stage sampling. Where out of 12 VL endemic districts, mahottari district was selected. In the second stage Sunderpur VDC(Purposive sampling) was selected. In the third stage ward no. 4 (purposive sampling) was selected. And in the fourth stage individuals were selected (Stratified Proportionate Systematic Random Sampling). Finally the sample frame was total population of household heads ( 86 household heads) of ward no. 4 of Sunderpur VDC. The data collection technique was interview and observation. For which structured questionnaires and observation checklists were formulated.*

*After completion of this study I found Since kala-azar in Nepal as in the rest of the world is a disease of poverty, only a small proportion of the kala-azar affected population of the lowest*

*socio-economic strata living in remote rural regions has no access to health institutions. The ultimate goal of kala-azar elimination is to contribute to mitigation of poverty in the 12 kala-azar affected districts of Nepal by reducing the burden of the disease and assisting in the development of equitable health systems. The information of the research drawn from the interview, observation checklists, FGD and literature review to make it more reliable and authentic.*

*Majority of the people are illiterate in the study area. Therefore, there need to be initiated educational based programs by the government and non-governmental agencies. The people of the study have been adopting agriculture. About 46.51 percent of the sampled population involves in the agriculture services and remaining other population adopts non-agricultural activities like population adopts non-agricultural activities like business, service etc. This study shows that intervention can bring about a significant change in people's knowledge regarding suspecting of KA cases, sand-fly as a transmitting vector, availability of free treatment and also in the referral of KA cases by FCHVs. Regarding preventive/risk factors/ behaviours like sleeping inside the animal shed is found 29%.*

# CONTENTS

	Page no.
<b>Recommendation</b>	I
<b>Approval Letter</b>	II
<b>Acknowledgement</b>	III
<b>List of Contents</b>	IV
<b>List of tables</b>	V
<b>List of figures</b>	VI
<b>Abbreviation</b>	VII

## **Chapter I INTRODUCTION**

1.1 Background.....	
1.2 Statement of the problem.....	
1.3 Rational of this study.....	
1.4 Research question.....	
1.5 Objectives of the study.....	
1.6 Research Variables.....	
1.7 Operational definitions.....	

## **Chapter II LITERATURE REVIEW.....**

## **Chapter III METHODOLOGY.....**

3.1 Study design.....	
3.2 Study area.....	
3.3 Study population.....	
3.4 Sampling method.....	
3.5 Sample size.....	
3.6 Data collection technique.....	
3.7 Tools/ instruments.....	
3.8 Data analysis.....	
3.9 Validity and reliability.....	

3.10 Ethical considerations.....  
3.11 Expected outcome of the research.....

**Chapter IV DATA ANALYSIS AND INTERPRETATION**

4.1 General Characteristics of the study population.....  
4.2 Respondents’ knowledge, Attitude and practices on kala-azar...  
4.3 Additional Findings.....

**Chapter V CONCLUSIONS AND RECOMMENDATIONS.....**

**Reference**

**Annexes**

Annex 1: Questionnaire of Kala-azar.....  
Annex2: Map of the study district and VDC.....



## LIST OF TABLES

Table	Page No.
1. Incidence and number of kala-azar cases in Mahottari District	
2. Number and cases of kala-azar over the past 4 years in mahottari district	
3. Findings of baseline survey, 2002	
4. Kala-azar cases and incidence, by Region & District, FY2062/63 to 2064/65	
5. Socio-demographic findings of the respondents	
6. Respondents knowledge on kala-azar	
7. Respondents knowledge on sign/symptoms of kala-azar	
8. Knowledge on kala-azar transmission	
9. Knowledge on availability of free treatment of kala-azar	
10. Knowledge on referral of kala-azar cases	
11. Knowledge on information on referral of kala-azar cases to hospital	
12. Knowledge on prevention of kala-azar	
13. Knowledge on treatment of kala-azar	
14. Prevalence of bed-net in the house	
15. Reason for not having a bed net	

## **LIST OF FIGURES**

Figure No1: Sufficiency from agricultural product.

Figure No 2: Education of the respondents

Figure No 3: Marital Status

Figure No 4: Respondents knowledge on sign\symptoms of kala-azar

Figure No 5: Knowledge on transmission

Figure no 6: Knowledge on availability of free treatment

## **ABBREVIATIONS\ACRONYMS**

AIDs	Acquired Immuno-Deficiency Syndrome
BCC	Behaviour Change Communication
BMS	Benchmark Study
CBOs	community Based Organizations
DALYs	Disability Adjusted Life years
DHO	District Health Office
DHS	Department of Health Service
EDPT	Early Diagnosis and Promote treatment
EHP	Environment Health Project
EWARS	Early warning and Reporting System
FCHVs	Female Community Health Volunteers
FGD	Focal Group Discussion
HH	House Hold
HIV	Human Immuno-Deficiency Virus
HMG	His Majesty's Government
HMIS	Health Management information system
HW	Health workers
IRS	Indoor Residual Spraying
KA	Kala-Azar
LD	Leishmania Donovanii
MA	Malaria
MoH	Ministry of Health
PKDL	Post kala-azar Dermal Leishmaniasis
VBDRTC	Vector- Borne Disease Research and Training Centre
VDC	Village development Committee
VL	Visceral Leishmaniasis
WHO	World Health Organization

# Chapter I

## INTRODUCTION

### 1. Background

Nepal is a landlocked country sandwiched in between the two most populous countries in the world, India in the south, East, and West and China in the North. It is located between 26° 22' and 30° 27' north latitudes and 80° 12' East longitudes, and elevation ranges from 90 to 8848 meters. A total surface area of this country is approximately 147,181 sq. km. Its size is 885 km East-West length and 193 km North-south non-uniform mean widths.

Topographically, Nepal is divided into following distinct ecological regions:

#### 1. Mountain Region

Himalayan high lands in the north lie at the altitude of 5,000 to 8,884 meter above sea level, which includes Mount Everest (8,848 meter). It occupies 35% of the total area of Nepal.

#### 2. Hilly Region

The broad bands of the Mahabharata range at an altitude of 4,000 to 5,000 meters (1000-16000 ft above the sea level) with many river valleys within. It occupies 42% of the total area of Nepal.

#### 3. Inner Terai Region

River valleys lying between the Siwalik ranges in the south and the Mahabharata range in the north, altitude ranging from 610 meters to 1524 meters (200-1000ft) above the sea level.

#### 4. Outer Terai Region

This region lies in the southern part of the country bordering India. In the outer terai plain, extensive cultivation is practiced. Some parts are still covered with dense tropical forest. Terai is the prime source of agriculture and industries in the country having 40% of its land arable and these three physio-geographical belts are non-parallel to each other. Plain terai region occupies 23% of the total landmass of Nepal. The southern terai belt stretches east to west with a width of 26 to 32 km. and a maximum elevation of about 30m. from the sea level.

**Climatic Condition:** On the basis of climate, Nepal can be divided into three distinct climatic zones:

- ) Subtropical- Siwalik Range including inner and outer terai region.
- ) Temperate- Mahabharat Range (Hilly Region)

## ) Alpine- Himalayan region.

The temperature record shows a wide variation from region to region. During the summer season temperature exceeds 40 degree C in terai, while it may be less than 28 degree C in the middle section of the country. The average precipitation is between 1500-2500 mm. For the purpose of administrative sense Nepal is divide into 5 development regions, which are further divided into 14 zones, 75 districts, 240 electoral constituencies, 58 municipalities and 3915 VDCs and 36009 wards.

### **Demographic and Socio- economic Characteristics of Nepal**

As per central bureau of statistics(CBS), the final tally of the national census held in 2001 puts the total population at 23151423 which comprises the male population of 49.96% and female population 50.04% with a growth rate 2.27 and population doubling time 31 years. The population of Nepal has been increasing rapidly. In 1911, the total population was 5.6 million; the population growth rates during the 1920s and 1930s were rather negative due to prevalence of disease and virtually non-existent of health facilities in the country. However, migration of population from hills to terai and from rural areas to urban centers has been continuously increasing. The economy of Nepal is heavily dependent on agricultural. The population involved in agriculture is 81.3% and non-agricultural sectors 18.7%. Nepal is one of least developed country in the world, with a per capita GNP at around US \$240. Nepal is ranked in the 22<sup>nd</sup> position from the bottom in the Human Development Index.

### **General Description of the Study Area**

The study was conducted in Sunderpur VDC of Mahottari district. The district is one out of six districts of Janakpur zone. This is one of the southern districts of central region, which falls topographically in the area of outer terai, the southern border of which is attached to the districts of Bihar, India. These Indian districts were once popularly regarded as “epicenter of Kala-azar.” The district like Dhanusa surrounds it in the East, Sarlahi in the West and sindhuli in the North. The district is situated between the altitude 26 32’ -27 18’ and Longitude 85 40’ -85 58.’ The total area of the district is 1002 sq.km. and the land surface elevation ranges from 61 meters to 808 meters from the sea level.

Climatic condition of the districts ranges from tropical, sub-tropical to mild temperature. The district is composed of 76 VDCs and one municipality, Jaleswor, the district head-quarter. The total population of the district is 23151423(2001 census) is out of 535,484, out of which 51.7% is male and 48.3% is female, the population density per sq. km. is 53.4 and the average annual growth rate (from 1991 to 2001) is 1.98%, total number of household is 96891 and the average family size is 7, life expectancy at birth is 60.5 years for males and 58 years for females, adult literacy rate is 24.5% which is worst(65<sup>th</sup> position) in district ranking, the same for male is 38.01% and for female is 10.99%. The IMR(infant Mortality rate) of the district is 68/1000 which is regarded as the best in district ranking but the overall composite index of development, poverty and deprivation index, women’s empowerment index, educationally disadvantaged Population(59.46%), gender discrimination index are “worst” in district ranking while the percentage of landless and marginalized HH(34.25%), gender imbalance ratio in literacy

status(29.0), and per capita food production rank intermediate in district ranking. There are 67 SHPs, 6 HPs, 3 PHCs and 1 district hospital in the district.

## **1.2 Statement of the problem**

### **1.2.1 World:**

Kala-azar is a worldwide problem found in several countries. About 500,000 cases of the disease occur annually. Five countries, namely India, Sudan, Nepal, Bangladesh and Brazil account for 90% of the global incidence. Kala-azar

Especially, occurs among the socially marginalized and the poorest communities. In the SEAR countries, Kala-azar occurs in India, Bangladesh and Nepal. A small focus has also been reported from Bhutan but the epidemiology of this focus is little known. In the three countries of the region about 189 million people in 109 districts are at risk.

The annual estimate for the incidence and prevalence of kala-azar cases worldwide is 0.5 million and 2.5 million, respectively. Of these, 90% of the confirmed cases occur in India, Nepal, Bangladesh and Sudan.

### **1.2.2 Kala-azar in Nepal: A Situation Analysis**

Visceral leishmaniasis (VL), also called Kala-azar (KA) was known to be endemic in southern terai of Nepal as postulated by an Indian scientist Raghavan in 1953. Not enough information is available for the past in Nepal. During 1960s and 1970s VL ceased to be a public health problem, which was mainly, attributed to countrywide malaria eradication activities with DDT spraying. With the advancement of malaria eradication activities and improvement of malaria situation, insecticide spraying was reduced. After more than a decade of curtailment of insecticide spraying particularly in southern terai VL cases started coming up and first recorded in 1980 with the incidence rate of 1.5 per 100,000 populations. Since then VL cases are in steady rising trend. The kala-azar control programme aims to reducing kala-azar morbidity and preventing mortality by applying primary health care approach, including active community participation.

Reports suggest that VL, which may have killed thousands in the 1950 and through 1960s in the Terai, is now coming back.

Kala-azar is mainly confined to the southern plains of eastern and central region bordering KA endemic districts of Bihar and West Bengal states of India. However, a few sporadic cases are occasionally recorded from other parts of the country. Kala-azar endemic districts are 13 in number. Approximately, 5.5 million populations are estimated to be at risk of KA. A total of 22,257 cases with 492 deaths were reported during 1980-2002. The figures given do not represent the actual kala-azar situation of the country as these KA cases are reported from the hospital records (mainly government) and patients treated elsewhere are not included. Therefore, it is believed that KA in Nepal is a grossly under reported disease. The real dimension of the disease may be much bigger (3-5 times) than which has been reported.

From 1980 to 1989 the incidence rate per 100,000 populations remained below 10 except in 1988 when the incidence rate was 17.18. The minimum incidence rate was 1.50 in 1980. The CFR was 0% in 1985 and as high as 13.16% in 1982. After 1989 the incidence rate remained quite high. Up to 1992 it was around 20 or below. From 1993 onward it was always above 30 and went up to 49 in 1994. In 1999, it was 43.14. However, the case fatality remained low, below 4%, except in 1990 and 1991 when the rate was 7.6 and 6.4 respectively. Higher incidence rate and lower CFR during the later part of the last decade indicates probably to the prompt and regular reporting of KA cases to and also to the betterment of the cases at the hospitals.

In 1997, 12 districts reported 1342 cases with 36 deaths. During the year 1998 a total of 1438 cases were detected, with 42 deaths in the country. Out of those cases, 29 were reported from Makwanpur(5), Nawalparasi(6), Surkhet(2), Butwal(1), Nepalgunj(3), and United Mission Hospital, Palpa(12). The exact location to which those belonged to could not be traced out and therefore the population affected due to those cases could not be ascertained. Hence, those 29 cases were not included while calculating the incidence rate and CFR of the country. In 1999, altogether 1794 cases were recorded in the country from 12 districts from which the KA cases used to be reported regularly. As compared to 1998, the CFR in 1999 was low.

In 2000, altogether 2090 cases were recorded from the same 12 districts, with the incidence rate of 50.20/100,000 and CFR 2.39%, almost double that of year 1999. Likewise in 2001, altogether 2020 cases were recorded from the same 12 districts with an incidence rate of 48.57/100,000 and CFR 1.09%. In 2002, Total reported cases were 2389 with 18 deaths due to KA.

However, a few sporadic cases are reported from other parts of the country every year. More than 5.6 million people living in these districts are believed to be at risk of this disease. Since 2037(1980) to fiscal year (2062/2063), a total of 21,837 cases and 297 deaths have been reported from this disease. The kala-azar (KAI) has shown a slight decrease from 2604 in FY 2061/2062 to 23.9 per 100,000 populations at risk in fiscal year 2062/063( Compared to the significant increase from 17.9 in fiscal year 2060/2061 to 26.4 per 100000 populations at risk in fiscal year 2061/2062. Similarly the case fatality rate (CFR) has shown a decreasing trend 1.7 in 2061/2062 to 1.3 in 2062/2063 (compared to an increasing trend from 0.8 percent in fiscal year 2059/2060 to 0.9 in 2060/2061 to 1.7 in 2061/2062). The kala-azar control programme aims to reducing kala-azar morbidity and preventing mortality by applying primary health care approach, including active community participation.

Kala-azar has already established its grip in India and is also rapidly increasing in Nepal. In spite of the ongoing control programme, the incidence of the disease has inclined in the recent past. Reports suggest that VL, which may have killed thousands in the 1950 and through 1960s in the Terai, is now coming back.

In Mahottari district, the disease seems to be in increasing trend both in terms of total number of cases and total number of deaths, which were 209 and 0 respectively in 2005, and 235 and 3 respectively in 2006.

Government of Nepal is committed to the regional strategy to eliminate kala-azar and with India and Bangladesh is signatory of the memorandum of understanding that was formalized during the world health Assembly held in May 2005 on kala-azar elimination, with the target of achieving the disease elimination, By the end of 2015, the annual incidence of kala-azar will be reduced less than 1 case per 10,000 populations at district level

Based on the regional strategy proposed by the South East Asia Kala-azar technical advisory group and adjustments proposed by the Nepal expert group discussions, Government of Nepal, Ministry of Health and population has adopted the following strategies in the implementation of the kala-azar elimination program in Nepal.

- ) Improve program management.
- ) Early diagnosis and complete treatment.
- ) Integrated vector management.
- ) Effective disease and vector surveillance.
- ) Social mobilization and partnerships.
- ) Clinical, Implementation and Operational Research.

## **Diagnosis of kala-azar in Special Situation**

All suspected cases of PKDL should be confirmed with rk39 test. However, it is important to note that the rk39 test may be negative in PKDL cases with only macular lesions and kala-azar/HIV co infection. If there is strong suspicion amongst rk39 negative suspected cases in above mentioned?

Conditions, such patients should be referred to centers where diagnostic facility of PCR or demonstration of parasite in pinch biopsy is available.

## **Treatment of kala-azar**

The objective of treatment of kala-azar is to cure the patient, prevent the complications of the disease, minimize the side effects of medicines, contain the risk of development of drug resistance and reduce the risk of spread of disease. In special situations more than one disease may be prevalent in an individual and kala-azar-HIV co infection is a special concern in Nepal. In national program a variety of drugs is available for treatment of kala-azar.

The national program recommends the use of the following drugs for the treatment of kala-azar:

### **First Line Drug-Miltefosine :**

Miltefosine is the drug of choice of national program and is provided to all cases of kala-azar if there are no contraindications. It is only the oral drug available for the treatment of kala-azar. The drug is available in two doses: as 10 mg and 50 mg capsule. It is relatively a safe drug.

### **Second Line Drug (Amphotericin B)**

Amphotericin B is recommended as the second line drug for the treatment of kala-azar. The cure rate of this drug is very high, exceeding 90%. The drug is given at 0.75-1 mg/kg daily dose as a daily IV infusion in 5% dextrose

Over 6 hours for 14 days. If there is poor response to the treatment, the drug has to be continued for a period of 21-28 days.

## **Treatment of kala-azar in Special Situation**

Following conditions are considered as special situations for kala-azar, and the national program recommends treatment of such cases at level III health institution or special referral centers.

- i. Pregnancy
- ii. Married women of reproductive age who are not using contraceptives regularly
- iii. Absolutely breast feeding mother
- iv. Children less than two year of age
- v. Kala-azar and severe anemia(hemoglobin less than 5mg/dl)



- vi. Kala-azar and TB co-infections
- vii. Kala-azar with HIV co-infection
- viii. Kala-azar patient suffering from any other serious disease(s)

### 1.2.3 Kala-azar in Mahottari District

Mahottari is one of the southern terai of central region, which is attached to the border district of Bihar, a state of India where kala-azar is highly endemic. Open border and frequent mobility across the Indian border are said to be compounding the KA situation in southern border districts of Nepal including Mahottari district. The district had been experiencing focal outbreaks over the past few years. The cases are being reported from almost all the VDCs except few.

Approximately 40,000 population of the district is at risk of kala-azar. Incidence of kala-azar in the district is in increasing trend. As the table below reveals, there are more than threefold increments in incidence in three years.

**Table 1: Incidence and number of KA cases in Mahottari District**

Description	1999	2000	2001	2002	2003
Cases	124	177	176	306	314
Incidence/10,000	32.01	45.69	45.36	76.5	7.85

**Table2: Number and cases of kala-azar over the past 4 years in Mahottari district**

District	FY 2062/63 (2005/2006)		FY 2063/64 (2006/2007)		FY 2064/65 (2007/2008)	
	No. of cases	Incidence per 10,000	No. of cases	Incidence per 10,000	No. of cases	Incidence per 10,000
Mahottari	299	5.77	328	6.2	162	2.6

### **Kala-azar cases and incidence, FY 2062/63 to 2064/65**

Source: HMIS/MD & Disease control section/EDCD, DoHS

## 1.5 Objectives

### 1.5.1 General objectives

To assess the Knowledge, Attitude and Practice of the general people on VL in rural VDC of an endemic district.

### 1.5.2 Specific objectives

1. To assess the knowledge of the people on VL
2. To find out the attitude of the people regarding VL

3. To find out the practices of the people on factors affecting VL

**Research Question:**

What are the knowledge, attitude and practices of the people of sunderpur VDC regarding VL?

**Research Variables**

**Independent Variables**

) KA intervention package

**Dependent variables**

) Incidence of kala –azar

) Knowledge on suspecting KA cases.

) Knowledge on KA transmitting vector.

) Knowledge on availability of free treatment.

) Referral of KA suspected cases by FCHVs.

**Operational Definitions**

**Incidence of KA:** New cases of KA confirmed in health facilities.

**Knowledge on suspecting KA:** Respondent knowing at least 2 s\s of kala –azar including prolonged irregular fever.

**Knowledge on KA transmitting Vector:** Respondent knowing that the disease, KA is transmitted by “Bhusuna” (sand fly)

**Knowledge on availability on free treatment:** Respondent knowing that the main drug of KA is available free of cost at HFs.

**Treatment seeking practice:** Whom he\ she contacts first whenever the respondent suspects a case of KA or his\her family members becomes sick.

**Referral of KA case:** If a suspect of kala-azar is referred by FCHV\HW with referral slip to the KA treatment centers.

**Confirmed case of KA:** An illness with prolonged irregular fever, splenomegaly and weight loss as its main symptoms, showing parasitological positivity and\ or rk-39 positivity.



## **Chapter II**

# **LITERATURE REVIEW**

Kala-azar is a vector-borne disease caused by parasite *Leishmaniasis donovani*, transmitted by the sand fly, *Phlebotomus argentipes*. The disease characterized by fever for more than two weeks with splenomegaly, anemia, progressive weight loss and sometimes darkening of the skin. In the endemic areas, children and young adults are its principal victims. The disease is fatal if it is not timely treated. Kala-azar and HIV co-infections have emerged as a health problem in recent years.

Over the last decade, there have been some significant advances both in the diagnosis and treatment of kala-azar. The rk39 dipstick test kit, a rapid and easy applicable serological test has been demonstrated to have high sensitivity and specificity in validity studies conducted in the Indian subcontinent. For the first time, an oral drug, Miltefosine, has proven to be efficacious in drug trails and has been registered for the use in kala-azar.

kala-azar(KA), also known as visceral leishmaniasis, tropical splenomegaly, Sirkari disease and dumdum or Assam fever, is an important public health problem in many parts of the world. Of the 500,000 new cases of kala-azar which occur annually, 90% are in five countries: Bangladesh, Brazil, India and Nepal.

In this region, Visceral leishmaniasis is endemic in Bangladesh, Nepal and India. The incidence is declining as result of improvement of situation in Bangladesh and India, but cases have been rising in Nepal. In India, Bihar which is attached to the study district Mahotari, contributes about 90 % cases and the remaining cases are from UP and west Bengal. The incidence has a focuses in the border districts, particularly on the India-Nepal borders.

Leishmaniasis has been the cause of great suffering and death for hundreds of years. Leishman and Donovan first described visceral Leishmaniasis in 1903, hence the causative agent was named *leishmania donovani*. The Leishmaniasis are now endemic in 88 countries on five continents- Africa, Asia, Europe, North America and South America- with a total of 350 million people at risk. 72, out of 88 are in developing countries and 13 of them are among the least developed in the world.

It is believed that worldwide 12 million people are affected by leishmaniasis; this figure includes cases with overt disease and those with no apparent symptoms. Of the 1.5-2 million new cases of leishmaniasis estimated to occur annually, only 600,000 are officially declared.

Annually number of deaths in 2001 is estimated around 59,000 with 2,357,000 DALYs. In addition, deadly epidemics of visceral leishmaniasis periodically flare up. In Varanasi district, Bihar, India, 1209% of village population suffered kala-azar, with a case fatality rate of 10.5%. In the 1990s Sudan suffered a crisis with an excess mortality of 100,000 deaths among people at risk. An epidemic of cutaneous leishmaniasis is ongoing in Kabul, Afghanistan with an estimated 200000 cases.

The precise disease burden of leishmaniasis is not known but its economic and social impact is tangible. The expansion of leishmaniasis is related to environmental changes such as deforestation, building of dams, new irrigation Schemes and migration of non immune people to endemic areas. It seriously hampers productivity and vitally needed socioeconomic progress. Epidemics have significantly delayed the implementation of development programmes in Saudi Arabia, Morocco, the Amazon and the tropical region of t

There is a growing problem of relapse and unresponsiveness to the currently available anti-leishmaniasis. Besides therapeutic failure toxicities and deaths have been observed with higher and prolonged dosages. Presently many drugs are under trail, which may tackle the problem of resistance, however, a concerted effort is required to control the global problem of leishmaniasssis.

According to WHO report, three main factors are more effective in transmission and epidemic of this disease in the area.

- a. **Socioeconomic Factors:** Primitive housing and low standards of hygiene increase the risk of transmission in per domestic areas. For instance, organic remnants and piles of bricks and stones constitute potential breeding and resting sites for sand flies. In the eastern Mediterranean area, leishmaniasis is usually predominant in low income groups. In cities, poor people concentrate in the per urban compounds, close to the sylvatic cycle. A higher number of persons sleeping in one room also attract per domestic anthropophilic sand flies.
- b. **Population movements:** Outbreaks of leishmaniasis are often associated with the agricultural development of an area and the introduction of non-immune people into sparsely inhabited areas where the infection is zoonotic. Prediction of such outbreaks depends on the availability of ecological information and on evaluation of development areas prior to the implementation of projects.

**C. Environmental changes:** In many villages and cities of various countries, the infection rate has been reported to be highest among people living at the edge of natural foci, close to the sylvatic cycle. The transmission rate decreases rapidly as the distance from the focus increases, because of the limited dispersal ranges of sand flies.

The well-known success of the control campaigns in certain countries shows that the fight against the leishmaniasis can be won. In China, visceral leishmaniasis has been eliminated from the country's vast north-east plains. In Azerbaijan, Israel, Kazakhstan and Turkmenistan, cutaneous leishmaniasis has been eliminated from urban areas. In the north eastern region of Brazil, the incidence of VL was reduced by 68% between 1959 and 1963. The tools to control the leishmaniasis exist but they should be made available to any country that needs them.

VL co-infection usually affects HIV infected patients when they develop severe immune depression. It arises as an opportunistic infection in people with AIDS. AIDS increases the risk of VL by 100-1000 times in endemic areas.

VL/HIV co-infection is emerging as an extremely serious, new disease and it is increasingly frequent. VL/HIV co-infections are considered a real threat, especially in South- Western Europe where between 25% and 70% of adult VL cases are related to HIV and where 1.5% to 9% of AIDS cases suffer from newly acquired or reactivated VL. Intravenous drug users have been identified as the main population at risk.

In response to the rising trend of VL/HIV co-infection, WHO and UNAIDS have set up a surveillance system in 28 institutions worldwide. All members of the network use the same guidelines for diagnosis and a computerized case report form, both endorsed by WHO.

VL/HIV co-infections can lead to epidemiological changes, which modify the traditional patterns of zoonotic VL. Co-infected patients harbor a high number of leishmania in their blood so there is also a risk of them becoming reservoirs of the disease (that is, infective for the sand fly vector) as in anthropometric foci in Bangladesh, Nepal, India and East Africa. Consequently, there is an increased risk of future epidemics.

Drugs resistance is also becoming common in certain areas (i.e. Bihar, India) making their use ineffective. More than 60% of cases in India are now resistant to the first line drug. Recently, some oral drugs have been found effective. The best is Miltefosine. This is convenient to use, but still in the trial stage phase-IV. The drug is given daily for 28 days. Another drug is Aminosidine. This drug is good but still in trial stage. Amphotericin B Lipid complex is also a new drug. The drug is very effective and patient can be cured with even one.

Vaccination remains the best option for control of all form of disease. There is effective vaccine for any form of leishmaniasis as yet. The Bill and Melinda gates Foundation funded the development of a chimeric vaccine made as a fusion of three recombinant leishmanial antigens (LeIF, LmSTI-1 and TSA) in monophosphory lipid A adjuvant (IDRI-Corixa) to be tested in phase 1 in the United States as well as efficacy trials in several countries around the world. Lastly, attenuated vaccines by gene deletion have shown some promise in mice.

Kala-azar was supposed to be eradicated as a secondary effect of spray of DDT under the malaria eradication programme. However, kala-azar epidemic continues to occur from time to time. A

two –pronged approach is required for eradication of the disease: treatment of cases of kala-azar and PKDL and spray of DDT or malathion or pyrethroids to kill the sand fly. If this is continued for five years, the disease can be eradicated.

A cross Border Meeting between Nepal and India to provide a forum to share information on kala-azar situation in Dhanusa/Mahottari districts, Nepal, and the adjoining districts ( Sitamarhi, Madhubani and Supoul) of Bihar state, India, took place in Dhanusa, Nepal on June 7, 2002. This meeting to initiate community based cross-border collaboration for the prevention and control of kala-azar identified collaborative activities towards community-based kala-azar prevention and control in Bihar and Dhanusa / Mahottari and foster greater cross-border collaboration at the local and community level.

Major cross border issues in the control of kala-azar include porous border, uncontrolled migration and different diagnostic and treatment practices particularly among private practitioners, crossing the border frequently even during the treatment, thereby leading to dropouts and indiscriminate use of anti-leishmaniasis drugs.

### **Baseline Survey, 2002**

Baseline survey was conducted in six districts: Sarlahi and kapilvastu from outer Terai, Jhapa and Kanchanpur from forest fringes and Chitwan and Surkhet from inner Terai. Survey was done in 1800 HH, 300 from each district. Major findings were as follows:

**Table 3: Findings of Baseline Survey, 2002**

<b>Indicators</b>	<b>Percentage</b>
Awareness of disease	14%
Knowing sand-fly as a vector of KA	14%
Knowing Health Workers provide services	27%

Knowing about free treatment	25%
Sleeping outside open	55%
Partial bed-net use	7%
Mud-Wall cracks and damp floor	94%
Sleeping ground floor	70%

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The above reveals that knowledge regarding KA is very low and risk behaviours are high.

## **Activities Carried Out In Fy 2064/65 (2007/2008)**

### **Case detection and treatment:**

As in the previous fiscal year various training programmes for health workers at different health institutions were conducted so as to develop the desired competency in the prevention and control of Kala-azar. Epidemiology and Disease Control Division continued conducting training programmes for the laboratory personnel from the district hospitals on rK-39 dipstick diagnosis of Kala-azar. Currently health institutions in Kala-azar endemic districts are using this diagnostic technique. Peripheral level health workers were trained on appropriate skills required for prevention and control of vector borne diseases including Kala-azar. Similarly as in the previous year, Vector Borne Disease Research and Training Centre (VBDRTC) also conducted training on Kala-azar and other Vector-Borne Diseases (VBDs) for District Health Officers (DHOs), Medical Officers (MOs), Public Health Officers (PHOs) and other health personnel. Kala-azar elimination activities were carried out in Saptari District as a pilot programme.

### **Indoor Residual Spraying in priority-selected Kala-azar affected areas:**

Two rounds of selective Indoor Residual Spraying (IRS) was carried out in prioritized Kala-azar affected areas of 11 districts based on the national guideline on IRS. IRS for the prevention and control is carried out only in those villages where Kala-azar cases were recorded in previous year or in areas with an outbreak in the recent past.

### **Continuation of treatment through Miltefosine:**

As in the previous FY 2063/64, Miltefosine (oral drug) has been continually utilised as first line drug for the treatment of Kala-azar in Saptari, BPKIHS, Teku Hospital, Jaleswor Hospital and Janakpur Zonal Hospital.

### **Analysis of Achievement**

#### **Vector Control:**



Indoor residual spraying in two cycles was conducted in Kala-azar affected areas of 11 endemic districts with hundred per cent achievement against the set targets. During this fiscal year a total of 11, 68,000 people were protected with indoor residual insecticide spraying.

**Case Detection and Treatment:**

A total number of 1,371 cases were reported and treated in different health facilities in this fiscal year. Out of the 1,371 cases, 1357 (99 percent) cases were improved after the treatment while 14 cases (1.02 percent) died.

**Table 4: Kala-azar Cases & Incidence, by Region & District, FY 2062/63 to 2064/65**

Districts	FY 2062/63 (2005/2006)		FY 2063/64 (2006/2007)		FY 2064/65 (2007/2008)	
	No. of cases	Incidence per 10,000	No. of cases	Incidence per 10,000	No. of cases	Incidence per 10,000
Jhapa	15	0.35	22	0.5	36	0.42
Morang	46	0.82	63	1.11	55	0.55
Sunsari	137	2.89	117	2.41	46	0.62
Saptari	217	3.56	255	4.1	197	3.15
Siraha	197	3.56	142	2.35	109	1.72
Udayapur	8	0.40	42	2.07	35	1.4
<b>Eastern</b>	<b>620</b>	<b>2.17</b>	<b>641</b>	<b>2.2</b>	<b>478</b>	<b>1.17</b>
Dhanusha	76	1.43	109	2.01	112	1.5
Mahottari	299	5.77	328	6.2	162	2.6
Sarlahi	231	4.19	364	6.46	449	6.2
Rautahat	37	0.72	38	0.72	26	0.4
Bara	65	1.30	37	0.73	34	0.5
Parsa	10	0.66	14	0.91	1	0.01
<b>Central</b>	<b>718</b>	<b>2.60</b>	<b>890</b>	<b>3.15</b>	<b>784</b>	<b>2.0</b>
Palpa	2	-	-	-	-	-
Makwanpur	-	-	-	-	3	-
Rukum	1	-	-	-	-	-
Okhaldhunga	-	-	-	-	7	-
BPKIHS	-	-	-	-	71	-

Sukra Raj Tropical Hospital	-	-	-	-	28	-
<b>Others</b>	<b>3</b>	-	-	-	<b>109</b>	-
<b>National</b>	<b>1,341</b>	<b>2.387</b>	<b>1,531</b>	<b>2.67</b>	<b>1371</b>	<b>1.71</b>

*Source: HMIS/MD & Disease Control Section/EDCD, DoHS*

*Note: According to elimination goal for Kala-azar, case incidence has been calculated in per 10,000 at risk population. (In the earlier reports this indicator is calculated in per 100,000 at risk population)*

In comparison to the FY 2063/64, the reported cases of Kala-azar during the FY 2064/65 have decreased from 1,531 to 1,371. This signifies the effectiveness of interventions focused to interrupt the disease transmission particularly IRS. As in the previous fiscal year, CDR reported more cases (784) reflecting the incidence of 2.0 per 10,000 at risk population than the EDR (478) with incidence of 1.17. District data reveals that the highest number of cases was recorded in Sarlahi,

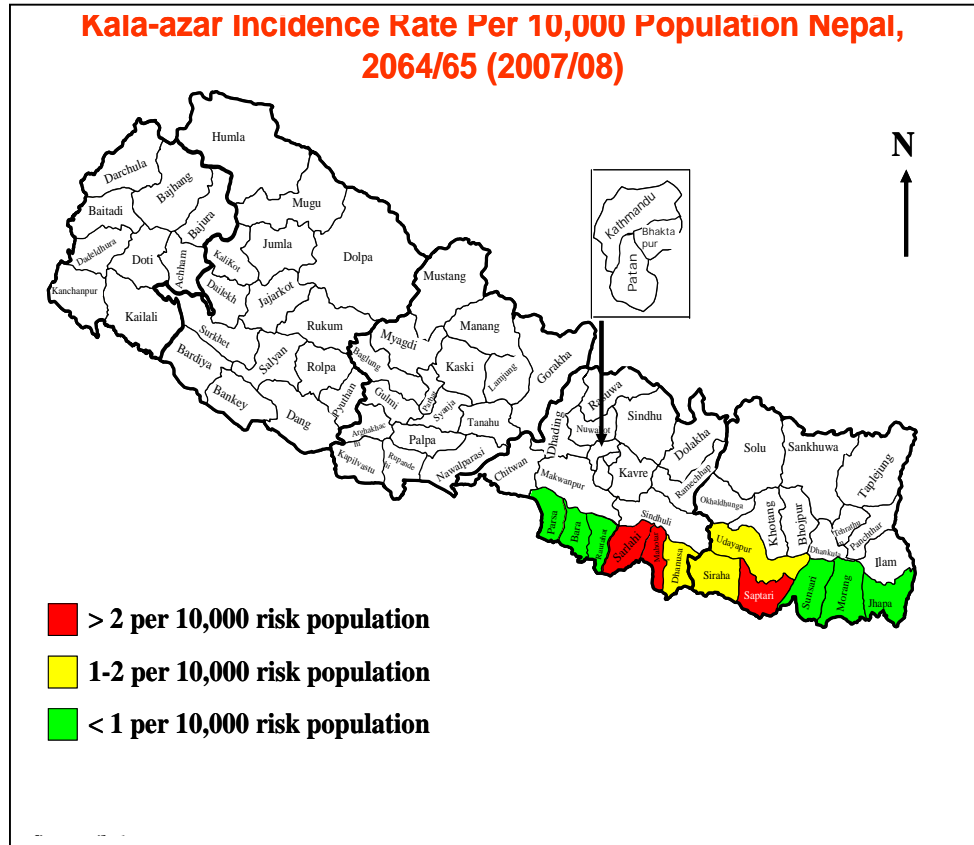
Saptari and Mahottari. Since the reported cases are a compilation of reports from government health institutions mainly, the real scenario may be different. It is known that cases of Kala-azar also cross the border for treatment at the hospitals and private clinics from Nepal to India or vice versa. For example, 106 cases of Mahottari and 237 cases of Sarlahi district were from neighbouring country.

### **Kala-azar Indicators**

In fiscal year 2064/65 the Kala-azar incidence per 10,000 at-risk populations ranges from 6.2 in Sarlahi followed by Saptari (3.15) to 0.01 in Parsa reflecting the national incidence of 1.71 per 10,000 at-risk population. Out of those 12 districts 6 districts have an incidence of more than 1, while 6 districts have an incidence of less than 1 per 10,000 at-risk populations.

A steady rise in CFR was observed up to the FY 2061/62 but it started declining from 2062/63 onwards. However in the last three consecutive fiscal years the CFR did not show much fluctuation. In the

FY 2064/65 it was 1.02 percent. This could be attributed to the increase in awareness of people in endemic districts and improvement in the management of cases in the hospitals. Kala-azar treatment failure cases are not reported through the regular information system.



### Recommendations Made During the Fy2063/64 and the Action Taken During 2064/65

Problems/Constraints	Action to be taken	Action Taken
Resources for Kala-azar elimination piloting and scaling up	Mobilize external resources for expanding the kala-azar elimination programme to all kala-azar endemic district	Scaling up of government funding and ongoing exploration of additional funds
Shortage of staff for outbreak investigation and control	To strengthening the outbreak response	Efforts are ongoing
Delayed response due to unavailability of staff	to create post of 2 MO HA at EDCD to strengthen existing RRT create post of one epidemiologist,	

Incomplete reporting	one surveillance assistant at all five region	
Staff are so much overwhelmed by control activities that investigation and finding determinants of the disease outbreak hindered	at the district level create one post of surveillance assistant restructure all level RRTs so as to involve other potential stakeholders	
Inadequate budget for outbreak management of region and districts	Increase the budget	Increment in the ditrict and regional budget were made
Delayed or no care seeking	Incentive package for kala-azar patients and their care takers	Budget have been allocated in the district program

#### **Targets for Fy 2065/66 (2008/2009)**

S. No.	Activities	Unit	Annual Targets
1	Early detection and timely appropriate treatment in Kala-azar endemic districts	Districts	12
2	Indoor residual spraying in highly affected Kala-azar areas	Times	2
3	Supply of rK-39 diagnostic tools and drugs SAG, Miletfosine and Amphotericin B	Districts	12
4	Transportation allowance for 1500 patients	Districts	12

*Source: Disease Control Section/EDCD, DoHS*

#### **Vector-Borne Disease (VBD) Programme in Mahottari District**

Timely case detection and effective case management through increased community awareness and promotion of early treatment seeking behavior has become crucial for this proven disease burden in rural communities of the country.

Viewing this fact, EHP/USAID had piloted malaria and kala-azar control interventions at the community level in 18 VDCs of Dhanusa and Mahottari. The main purpose of this piloting was to develop a feasible and effective model for kala-azar control so that MoH can replicate it throughout the KA endemic districts of the country. To this and Bench Mark survey was planned and designed to collect information in order to find out the general knowledge of kala-azar and malaria among the population, as well as examine the availability of health services in these pilot VDCs; and to understand the existing practices for care seeking. The information was collected through structured questionnaires, which were administered at the household level, through focus group discussions, which were conducted with various groups at the community level and key informant interviews carried out among the health workers of various institutions of the sampled districts. The Bench Mark survey was intended to facilitate the development of evidence based interventions for kala-azar affected areas.

## **Chapter III**

# **RESEARCH METHODOLOGY**

### **3.1 Study Design:**

This was a descriptive and cross-sectional study.

### **3.2 Study area:**

The study was conducted in sunderpur VDC of Mahottari district (purposively selected) where Bench Mark study was previously conducted in 2002. As described earlier, this is the VDC from where the KA cases are reported relatively in higher number. The total number of HHs of this VDC accounted 593.

**3.3 Study population:**

General population of ward no. 4

**3.4 Sampling Method:** Multi-stage sampling.

- ) **First stage:** mahottari district out of 12 VL endemic districts(purposive sampling)
- ) **Second stage:** Sunderpur VDC(purposive sampling)
- ) **Third stage:** ward no. 4(purposive sampling)
- ) **Fourth stage:** selection of individuals (Stratified Proportionate Systematic Random Sampling)

**Sample Size:**

Sampling frame: Total population of Household heads (86 households) of ward no. 4 of sunderpur VDC.

**Sampling Unit:** Household heads or anyone above 18 years of age present in the house.

**Data collection technique:**

- ) Interview
- ) Observation

**Tools/Instruments:**

- ) Structured questionnaires
- ) Observation checklists

**Data analysis:** Epiinfo 6 and spss11

**Validity and Reliability:**

- ) Study preparation and questionnaire development will be done in the close guidance of the research supervisor.
- ) Questionnaire will be checked and verified by study supervisor and concerned teachers.
- ) Pre-testing of the questionnaire will be in a similar community and validity of the tools in its contents and accuracy of information will be ensured.
- ) Data entry will be done on the same day of its collection.
- ) To ensure the external validity of the study, adequate literature will be reviewed.

**Ethical Consideration:**

- ) Verbal Informed consent will be taken from all the respondents before interview and objectives of the research will be clarified to them.

- ) Participants were assured that the information they provide would maintain privacy and confidentiality.
- ) Written consent will be taken from the central Department of rural Development.
- ) Necessary consent will be taken from DDC, DPHO, and CDO.
- ) Consent will be taken from the VDC and the local leaders.

**Expected outcome of the Research:**

It is expected that this study will be helpful in putting some light in the aspect of the level of knowledge, attitude and practices of the general population in a rural VDC of the endemic district regarding VL. These findings may prove helpful in identifying the key issues where the kala-azar control programme is lagging in the combat against this disease. And, hence plan and take necessary actions accordingly.



## Chapter IV

### DATA ANALYSIS AND INTERPRETATION

Only the objective-related findings have been analyzed, interpreted and compared with the findings of different researches. But it is ensured that the key findings and the relevant information are being not left herein.

#### 4.1 General Characteristics of the Study Population

General characteristics of the study population were assessed so as to know mainly the socio-demographic condition of the respondents which include sex, religion, language, educational and marital status, family size and type, occupation and food sufficiency from agricultural products.

Most, 68.60% of the respondents were male and 31.39% were female. Majority was a Hindu religion follower that is 74.41% and Muslims were 25.58%. Majorities were 55.81 Maithali language speakers; Urdu speaker were 6.97%, Hindi speaker were 20.93%, Dunwari 12.97% and Nepali 3.48%. Regarding their education status, most of the respondents were illiterate that is 30.23%; literate (just read and write) were only 26.74%; 27.90% of them have received primary level education; secondary level schooling was received by 11.62% higher secondary level by 3.48%. Most of them respondents were (69.76) found married, 22.09% unmarried, and 8.13% of respondents were found widow/er.

A total of 54.65% of the HHS was found nuclear family and 45.34% joint families. Family size in average was 5.8, a large number. Most (46.51%) had agriculture to be their main occupation, business by 8.13%, house work 12.79%, service 3.48%, unskilled and labour 10.46%, working in other country 12.79% and unemployed 5.81%. A total of 26.74% of the respondents were found having food sufficiency for less than or equal to 3 months and only 25.58% of the respondents have the same for more than or equal to 12 months. This shows the gravity of poverty in the community.

The socio-demographic findings have been shown below in table-5

**Table-5: Socio-demographic findings of the respondents**

<b>Socio-demographic variables</b>	<b>Number (n=86)</b>	<b>Percentage (%)</b>
<b>Sex of the respondents</b>		
Male	59	68.60
Female	27	31.39
<b>Religion</b>		
Hindu	64	74.41
Islam	22	25.58
<b>Language</b>		
Dunwari	11	12.79
Hindi	18	20.93
Maithali	4855.81	
Nepali	3	3.48
Urdu	6	6.97
<b>Family Structure of the household</b>		
Nuclear	47	54.65
Joint	39	45.34
<b>Sufficiency from agricultural product</b>		
Less than or equal to 3 months	23	26.74
More than 3 months to 6 months	17	19.76
More than 6 months to 9 months	11	12.79
More than 9 months to 12 months	13	15.11
More than 12 months	22	25.58

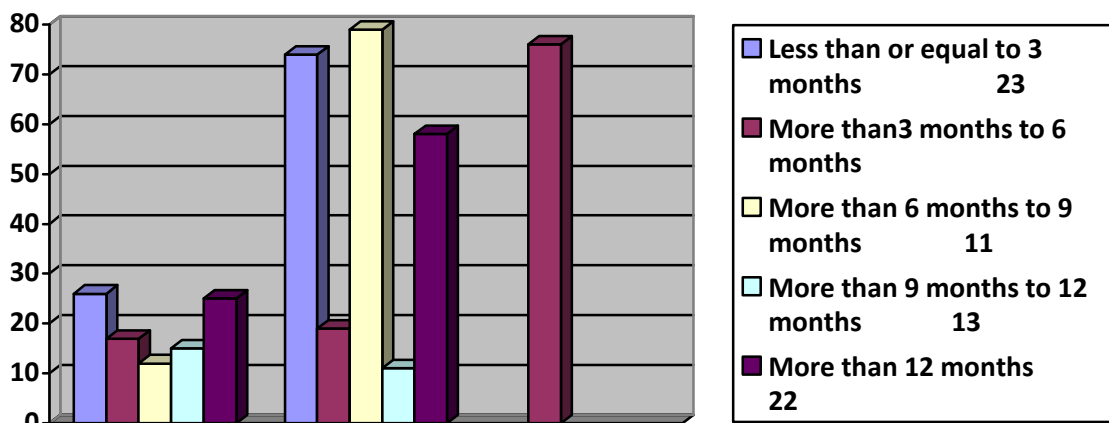


Figure no 1

### Education of respondents

Illiterate	26	30.23
Primary level (1-5)	24	27.90
Secondary level (6-10)	10	11.62
Higher secondary level (11-16)	3	3.48
Literate	23	26.74

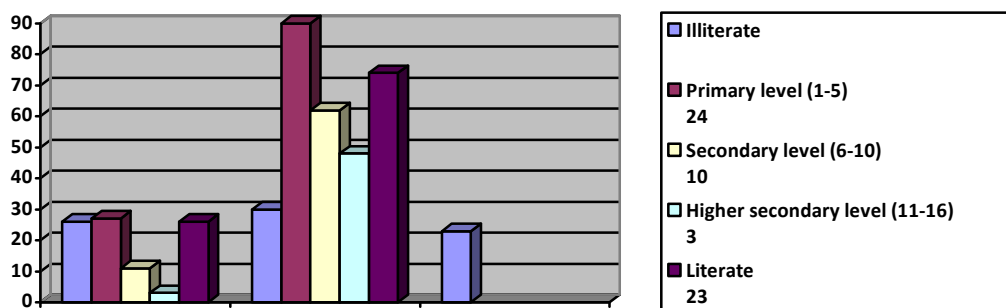


Figure no 2

### Marital Status

Married	60	69.76
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Unmarried	19	22.09
Widow/er	7	8.13

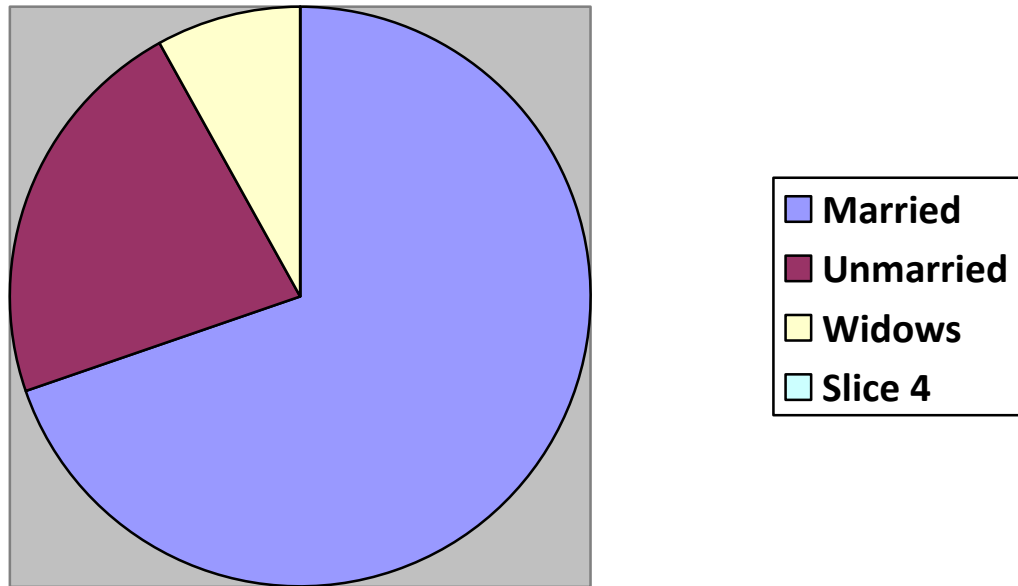


Figure no 3

**Occupation**

Agriculture	40	46.51
Business	7	8.13
Service	3	3.48
Skilled/Unskilled labour	9	10.46
House work	11	12.79
Work in other country	11	12.79
Unemployment	5	5.81
Others	0	0.0

**4.2 Respondents' knowledge on Kala-azar:**

This part of the analysis evaluates the knowledge level of the general population, and their behavior relating to referral, prevention and treatment seeking practices.

Respondents were asked about whether they had heard of kala-azar or not. This study revealed that 100% of the respondents had heard of kala-azar.

**Table 6: Respondents' knowledge on Kala-azar**

Description	Frequency (%)
Yes	86(100.0)
No	0(0.0)
Total	100(100.0)

Majority have heard of kala-azar from relatives/friends i.e. 33.3%, followed by from health workers 28.7% and Radio-16.2% .Rest from seeing KA patient, poster/pamphlets/newspaper and TV.

**Table 7: Respondent's knowledge on sign/symptoms of kala-azar**

Description	Frequency (%)
Fever	76 (88.37)
Weight loss/weakness	10 (11.62)
Pain in abdomen	30(34.88)
Abdominal distension	7 (8.13)
Face turns black	17(19.76)
Others	39 (3.48)
Do not know	11 (12.79)
No response	4 (4.65)

Table no. 7 shows that the respondents knowledge about sign/symptoms of kala-azar as higher as fever 88.37% and remaining pain in abdomen 34.88%, Face turns black 19.76%, weight loss 11.62%, don't know 12.79% and 4.65% did not give any response.

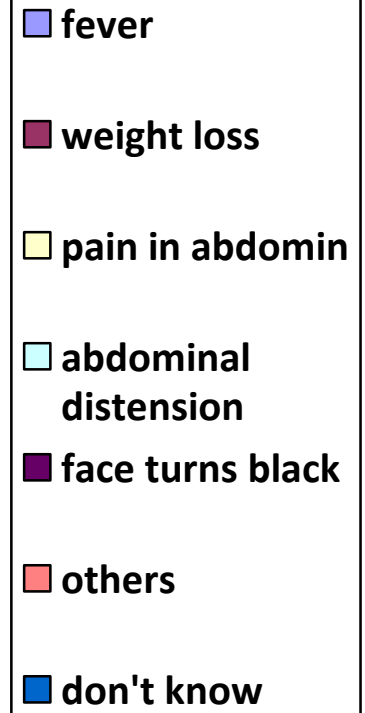
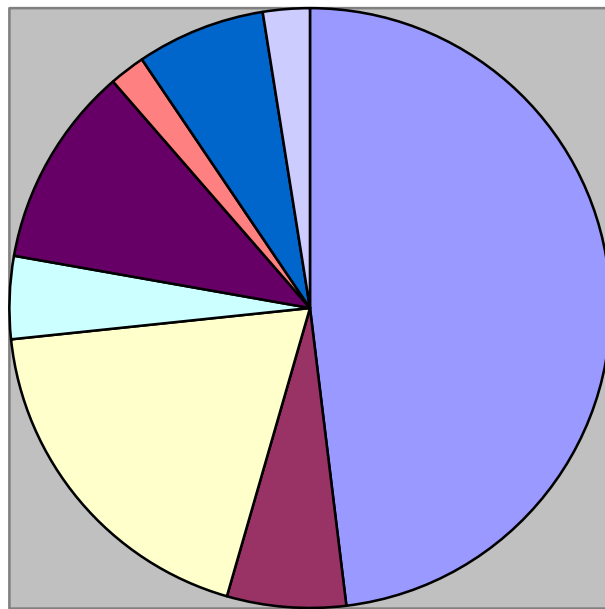


Figure no 4

**Table 8: knowledge on kala-azar transmission**

<b>Description</b>	<b>Frequency (%)</b>
Sand-fly	48(55.81)
Mosquito bite	37(43.02)
Dirty environment	19(22.09)
Other insects	2(2.32)
Staying with KA patients	7(8.13)
Others	3(3.48)
Don't know	6(6.97)
No response	4(4.65)

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Table no.8 shows that the respondents knowledge regarding transmission of kala-azar, the sand fly bite 55.81% and remaining mosquito bite 43.02%. Dirty environment 22.09% and 4.65% respondents did not response any more.

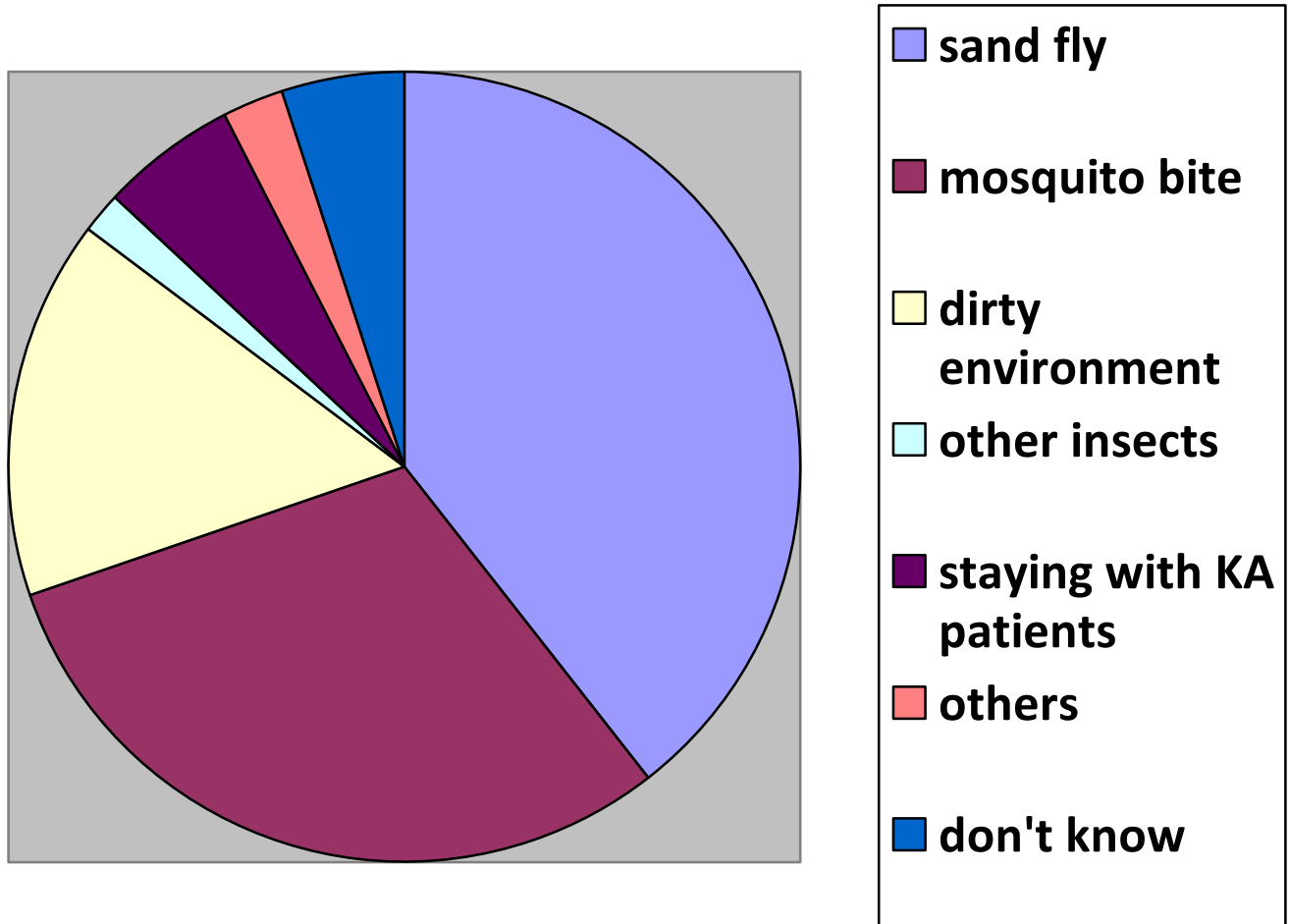


Figure no 5

**Table 9: Knowledge on availability of free treatment of kala-azar**

Description	Frequency (%)
Yes	46(53.48)
No	40(46.52)
Total	86(100.0)

Majority (53.48%) of the respondents had found knowledge about free treatment of kala-azar and 46.52% did not.

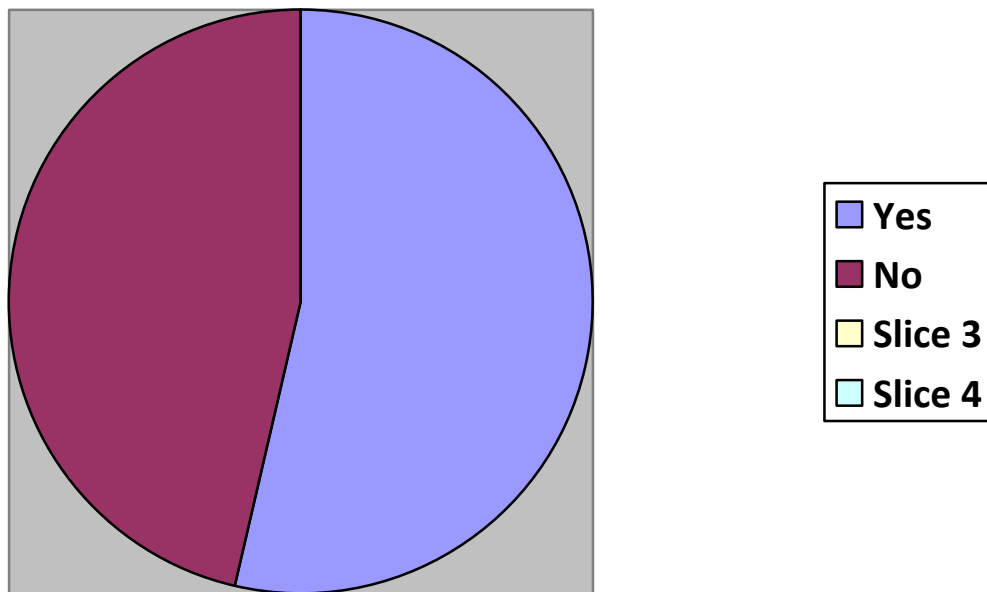


Figure no 6

**Table-10: Knowledge on referral of kala-azar cases**

Description	Frequency (%)
Self-referred	4(21.05)



HW-referred	9(47.36)
FCHVs	6(31.57)
Others	0(0.0)
Don't know	0(0.0)
<hr/>	
Total	19(100.0)

Among 19 respondents, kala-azar cases had referred to the health centers by HW was 47.36%, FCHVs 31.57% and 21.05% were self attained.

**Table 11: Knowledge on information on referral of kala-azar cases to hospital**

Description	Frequency (%)
Yes	72(83.72)
No	14(16.27)
<hr/>	
Total	86(100.0)

Majority (83.72%) of the respondents had knowledge about information on referral of kala-azar cases to hospital and 16% did not.

**Table 12: Knowledge on Prevention of kala-azar**

Description	Frequency (%)
Yes	72(83.72)
No	14(16.27)
No response	0(0.0)

Total	86(100.0)
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**Table 13: Knowledge of treatment of kala-azar**

Description	Frequency (%)
Yes	76(88.72)
No	0(0.0)
Don't Know	8(9.30)
No response	2(2.23)
Total	86(100.0)

Majority (88.72%) of the respondents were found that the kala-azar had treatments, 9.30% don't know and 2.23% did not have response.

**Table 14: Prevalence of bed-net in the house**

Description	Frequency (%)
Having bed-nets	78(90.69)
No bed-nets	8(9.30)
Total	86(100.0)

Majority (90.69%) of the respondents had bed-nets on their home and 9.30% did not.

**Table 15: Reasons for not having a bed-net**

Description	Frequency (%)
Cannot afford	6(75.00)
Do not like it	1(12.5)
No available locally	1(12.5)

Don't know	0(0.0)
No response	0(0.0)
<hr/>	
Total	8(100.0)

Among 8 respondents, the reasons of not to use bed-nets were found that they cannot afford 75%, do not like it and not available locally 12.5% respectively.

### **Additional findings**

#### **Bahaviour related to sleeping habit:**

This study reveals that 29% of the respondents use to sleeping inside the animal shed remaining behavior related to sleeping outside 17%, floor they use for sleeping purpose 13%.

## Chapter V

# CONCLUSION AND RECOMMENDATIONS

### 6.1 Conclusion

Kala-azar or visceral leishmaniasis is a major public health problem in Nepal. Since kala-azar in Nepal as in the rest of the world is a disease of poverty, only a small proportion of the kala-azar affected population of the lowest socio-economic strata living in remote rural regions has no access to health institutions. The ultimate goal of kala-azar elimination is to contribute to mitigation of poverty in the 12 kala-azar affected districts of Nepal by reducing the burden of the disease and assisting in the development of equitable health systems. The information of the research drawn from the interview, survey, FGD and literature review to make it more reliable and authentic.

Majority of the people are illiterate in the study area. Therefore, there need to be initiated educational based programs by the government and non-governmental agencies. The people of the study have been adopting agriculture. About 46.51 percent of the sampled population involves in the agriculture services and remaining other population adopts non-agricultural activities like population adopts non-agricultural activities like business, service etc. This study shows that intervention can bring about a significant change in people's knowledge regarding suspecting of KA cases, sand-fly as a transmitting vector, availability of free treatment and also in the referral of KA cases by FCHVs. Regarding preventive/risk factors/ behaviours like sleeping inside the animal shed is found 29%.

### 6.2 Recommendations

The following recommendations are made on the basis of this study.

- ) Awareness/advocacy campaign regarding its s/s, transmission, prevention, referral and treatment seeking behavior should be continued through FCHVs, HWs and mass media till KA no longer remains a public health problem.
- ) Time to time different intervention programme can be replicated to all KA endemic districts which would contribute to kala-azar elimination.

- ) Recording and reporting system need to be strengthened at district as well as lower level health facilities.
- ) Precautions must be taken and inconsistencies must be avoided to a larger extent or as much as possible while doing research/ study.

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**Annex 1: Questionnaire of kala-azar**

Interviewer..... Date:.....

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District..... VDC..... Household No.....

Ward No..... Name of the settlement.....

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**Section 1: Demographic and socio-economic characteristics**

Name of the respondents: .....M F

Name of the householdheads: ..... M F

Caste/ethnic group.....Religion.....

Language.....

Family types: (a) Nuclear (b) Joint/extended

Table: Demographic information of the family members:

S.N.	Names	Age		Sex	Educations for person>5 years	Marital status :for person>10 years	Occupation:for persons.10 years		
		Yr	Mon	M/F					
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									



1.1 Sufficiency from agricultural produce ( circle one):

- a. Less than or equal to 3 months
- b. More than 3 months to 6 months
- c. More than 6 months to 9 months
- d. More than 12 months
- e. Others.....

2.4 Which time, do you think is appropriate for listening and watching kala-azar messages?

On T.V.

- a) Morning
- b) Mid day/afternoon
- c) Evening
- d) Night
- e) Others.....

On Radio:

- a) Morning
- b) Mid dasy/afternoon
- c) Evening
- d) Night
- e) Others.....

2.5 What are the signs and symptoms of kala-azar?

- a) Fever
- b) Weight loss

- c) Pain in abdomen
- d) Abdominal distension or swelling of the abdomen
- e) Face turns black
- f) Others.....
- g) Don't know
- h) No response

2.6 How is kala-azar transmitted?(multiple answer)

- a) Sand fly bite
- b) Mosquito bite
- c) Dirty environment
- d) Other insects
- e) Staying with kala-azar patients
- f) Don't know
- g) No response

2.7 can people die from kala-azar?

- a) Yes
- b) No
- c) Don't know
- d)No response

2.8 can people protect themselves from KA?

- a) Yes
- b) No
- c) Don't know
- d) No response

2.9 If yes, how can a person protect himself or herself from kala-azar? (Multiple answer)

- a) Using a bed net
- b) Cleaning environment
- c) Insecticide spraying
- d) Plastering the wall/floor
- e) Keeping away domestic animals/pets/pests.
- f) Worshipping/praying god
- g) Making smoke
- h) Not sleeping with a person who has KA
- i) Others
- j) Don't know
- k) No response

2.12 Can kala-azar be treated?

- a) Yes
- b) No
- c) Don't know
- d) No response

2.11 Who can treat kala-azar? (Multiple answer)

- a) Faith/traditional healers
- b) Private clinic
- c) Chemists/pharmacists
- d) Others
- e) Don't know
- f) No response

2.12 Did they refer to hospital (circle one):

- a) Yes

- b) No
- c) Don't Know
- d) No response

2.13 If he/she did not go to the Health workers/sub-health post/PHC/ Hospital, why? (Multiple answer)

- a) Very far (distance) from home
- b) No staff/doctor
- c) No drugs
- d) Did not like health workers/no confident on health worker
- e) Cannot afford
- f) Not necessary
- g) No time
- h) Can not be cured
- i) Don't know where to go
- j) Others
- k) Don't know
- l) No response

2.14 Does anyone in your family sleep inside the animal dhed?

- a) Yes
- b) No

2.15 Does any members of your family sleep outside the house in the open?

- a) Yes
- b) No

2.16 If yes, how often do you/they sleep out side?

- a) Always
- b) Summer only
- c) Others.....
- d) Don't know
- e) No response

2.17 Where do you and your family members sleep?

- a) Only on the floor
- b) Only on the bed
- c) Both

2.18 Which floor do you/your family use for sleeping purposes inside house?

- a) Ground floor
- b) First floor
- c) Both

2.19 Do you repair rat holes?

- a) Yes
- b) No

**Section 3: Number of house hold adopted preventive measure**

3.1 How many bed nets do you have? ( multiple answer)

- a) Single                    number.....
- b) Double                    number.....
- c) Don't know

3.2 How many people in your household use a bed net?

Male    Female

Adults > 15 years

Children < 14 years

	Male	Female
Adults > 15 years		
Children < 14 years		

3.3 Why do you/they use a bed net? ( Multiple answer)

- a) To prevent insect bites
- b) For health reasons
- c) To have a good night's sleep
- d) Others
- e) Don't know
- e) No response

3.4 Why don't you have bed net in your house?

- a) Cannot afford
- b) Do not like it
- c) Not available locally
- d) Others
- e) Don't know
- f) No response

3.5 In the last 12 months, was insecticide spraying done in your house?

- a) Yes
- b) No
- c) Don't know
- d) No response

3.6 After spraying, did you plaster/paint your house wall?

- a) Yes
- b) No
- c) Don't know
- d) No response

3.7 If yes, when did you plaster/paint your house wall?

- a) Immediately after spray
- b) Within one month
- c) Within two months
- d) Within three months
- e) After three months

3.8 If yes, plastered/painted the wall within 3 months after spraying, why?

- a) Bad smell
- b) Festival
- c) Ceremonies
- d) Don't like insecticide residuals
- e) Regular activity
- f) Others....
- g) Don't know
- h) No response

**Section 4: Number of household has information about prevention, early diagnosis and treatment facilities of kala-azar**

4.1 Have any of your family members ever had kala-azar?

- a) Yes
- b) No
- c) Don't know

d) No response

4.2 If yes, how many were sick?

Specify numbers.....

4.3 For the most recent case, who said that it was kala-azar?

a) Self diagnosis

b) Health workers

c) Faith/traditional healers

d) Medical shopkeeper

e) Private practitioners

f) Others

g) Don't know

h) No response

4.4 Who referred? (Circle one)

a) Self-referred

b) Health workers referred

c) FCHVs

d) Others.....

4.5 If he/she went to the hospital, where was the hospital?

a) In Nepal

b) In India

c) Don't know

d) No response

4.6 If he/she went to the hospital, did he/she complete the full course of treatment?

a) Yes

b) No



c) Don't know

c) No response

4.7 If yes, how long did the patient get the treatment?

a) Less than 20 days

b) 20-30 days

c) More than 309 days

4.8 If he/she did not complete the full course of treatment, k why?

a) Very expensive

b) Feeling better

c) Painful

d) Long distance to the hospital

e) No health worker

f) No improvement

g) Others.....

h) Don't know

i) No response

4.9 Did he/she have to pay for his/her treatment for kala-azar?

a) yes; if yes, how much was the cost?

b) No

c) Don't know

d) No response

4.10 Do you know that free treatment for kala-azar is available?

a) Yes

b) No

- c) Don't know
- d) No response

**Section 5: Number of household received message through targeted institutions ( NGOs, CBOs, VDCs and school etc) from ongoing activities about KA prevention and control**

5.1 Are there any NGOs, CBOs working for prevention and control of KA?

- a) Yes
- b) No
- c) Don't know
- d) No response

5.2 If yes, which one? List the names

.....

5.3 How do they inform or pass on the messages?

- a) Poster
- b) Training
- c) Street Drama
- d) Others

5.4 Are there any preventive and control program on kala-azar, conducted by your VDC?

- a) Yes
- b) No
- c) Don't know
- d) No response

5.5 If yes, what are they?

- a) Poster
- b) Miking
- c) Exhibition
- d) Child to child
- e) Training
- f) Street drama
- g) Others.....

5.6 Does the school provide any preventive and control program or messages on kala-azar in your VDC?

- a) Yes
- b) No
- c) Don't know
- d) No response

5.7 If yes, what are they?

- a) Poster
- b) Training
- c) Street drama