Assessment of HIV risk behaviors, practices and knowledge among people living with HIV in Bhutan, 2011

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ABSTRACT

Introduction: A total of 217 HIV positive cases have been reported in Bhutan as of 2010. A descriptive study to assess the knowledge and behavioral practices among 116 of those persons living with HIV (PLHIV) was conducted in 2011. **Methods:** Data on demographic characteristics, sexual behavior, alcohol consumption: mobility and HIV knowledge both before and after testing positive for HIV were collected. Responses regarding behavior before and after HIV diagnosis were compared. **Results:** Of 116 participants, 52.6% were males; a majority of male PLHIV (72.1%) belonged to salaried group of people while housewife represented 47.3% among female respondents. Forty- three percent of male and 5.5% of female participants reported having exchange sex and 52.5% of male and 41.8% of female participants reported having non-exchange sex partners before HIV diagnosis. The consistent condom use had significantly increased after HIV diagnosis among males with exchange (12% vs. 60%, p=.04) and non-exchange (13% vs. 100%, p<.001) partners. Eighty-four percent of male and 61.8% of female participants reported consuming alcohol before HIV diagnosis. Only one male respondent reported injection drug use before HIV. There was a decrease in incidence of sexually transmitted infection (56.9% vs. 31.9%) after HIV diagnosis. Forty-three percent of males had traveled abroad before HIV diagnosis; among those, 30.8% reported having exchange sex while abroad. **Conclusions:** Our findings indicated that high-risk sexual behavior was common before HIV diagnosis and that sexual practices changed after diagnosis. Educational campaigns aimed at increasing HIV knowledge and safe sex, are critical to reduce HIV infections in Bhutan.

Keywords: Alcohol & drug use; HIV knowledge and HIV detection; PLHIV sexual behavior.

INTRODUCTION

In 2010, the total population of Bhutan was 695, 822[1], making it one of the least populated countries in Asia. Seventeen percents of those aged 15-64 years, were salaried people employed either in the government services or private sectors. In Bhutan, where most of the residents are farmers, the salaried individuals occupy a higher social economic status.The literacy rate among general population was 60% in 2010[1].

The first case of HIV in Bhutan was detected in 1993 through the routine medical screening[2]. Since then the number of HIV cases detected through clinical and laboratory testing programs has been increasing. According to the Ministry of Health (MoH) Bhutan, a total of 217 HIV cases were reported in Bhutan between 1993 and June 2010[3]. However, the actual numbers of HIV cases are likely to be higher: undetected due to the low numbers of voluntary counseling and testing (VCT) centers nationwide: and the long asymptomatic period during which HIV infection can remain undetected[2].

Bhutan is recognized as being a low HIV prevalence nation, with 0.01% prevalence[2,3]. Current evidence shows that HIV in Bhutan is predominantly transmitted through heterosexual sex[1-4]. Data indicated that HIV prevalence is increasing among certain groups in Bhutan, such as salaried males and housewives[3]. There is little information on key populations severely affected by HIV. Therefore, it is not known how HIV is spreading in the population or what risk factors are contributing to the spread of the disease. The objectives of this study were to describe the demographic characteristics of people living with HIV (PLHIV) in Bhutan, describe the possible risk factors associated with HIV infection, determine the current risk behaviors and safe sex practices among PLHIV, and assess their knowledge about HIV transmission and prevention. The findings from this study may serve as a reference from which public health policies can be derived.

METHODS

In May 2011, a descriptive study among all PLHIV in Bhutan was conducted. Of the 217 known HIV- positive cases in Bhutan, 43 died and 12 had left the country. Out of the remaining 162 PLHIV, 137 were 18 years or older and eligible to participate. Fourteen eligible people could not be contacted and seven refused to participate in the study. Therefore, 116 PLHIV participated in this study. After seeking the informed consent, participants were asked about their behaviors in the year preceding diagnosis and in the time since diagnosis.

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A structured questionnaire was used to collect data on demographic characteristics, sexual history with exchange and non-exchange sex partners, alcohol consumption, drug use, travel history and knowledge on HIV prevention. The questionnaire were adopted from Bhutan's General Population Survey 2008[5].

An exchange sex partner was defined as an extra-marital partner with whom a respondent had sexual relations in exchange for cash or gifts. A non- exchange sex partner was defined as an extra-marital partner with whom a respondent had sexual relations without paying or receiving cash or gifts. Participants were considered to have used condoms consistently if they reported always using a condom during sexual intercourse with extra-marital partners. Participants were considered to have experienced sexually transmitted infection (STI) symptoms if they reported any of the following: urethral discharge, genital ulcer/ warts, or inguinal swelling in the year preceding diagnosis or in the time since diagnosis. A salaried person was defined as a person receiving a monthly salary either as an employee of the royal government of Bhutan or a non-government organization; persons owning business were not considered salaried persons. Commercial sex workers (CSWs) were defined as female who exchanged sex for money as a primary source of income.

The study was approved by the Research Ethics Board of Health, an independent review board in Bhutan. To protect the confidentiality of the HIV status of participants, data were collected by HIV counselors who were already aware of the participant's HIV status. Privacy was maintained throughout the interviews. Data were entered into EpiData and analyzed using EpiInfo (version 3.5.3). Paired and un-paired t-tests were used to test for differences in means of variables. Chi-square tests for independent variables and McNemar chi-square tests for dependent variables were used to test for differences in proportions. The analysis was focused on the behaviors of the PLHIV and changes in these behaviors after HIV diagnosis.

RESULTS

Of the 116 participants, 52.6% were male and 89.7% of participants were aged 19 to 44 years. The median age was 38 years for males and 34 years for females. The youngest respondent was 19 and the oldest was 51 years old. In terms of educational background, 63% of participants were literate. Males PLHIV differed from females PLHIV in several aspects: literacy was significantly higher among males than females (73.8% vs. 50.9%, p=0.01) and the majority of male were salaried employees (72.1%), while nearly half (47.3%) of female were housewives. None of the participants identified their occupation as Commercial Sex Workers (CSWs). Most participants (77% of males and 66% of females) were married at the time of interview. The median age at first sex was 18.7 years with the youngest being at 11 and the oldest at 34 years old. This clearly demonstrates that significant number of sexual activity does happen at young ages before marriage (Table 1). In terms of the residence of the participants, while 28% resided in the capital city Thimphu; another 50% resided in districts in Chukka (24%), Samdrupjongkhar (12%), Samtse (7%), and Sarpang (6%) bordering to India. These areas may be vulnerable to rapid spread of HIV due to their geographic location, rapid urbanization, industrialization, business hubs and

Table 1. Characteristics of HIV-infected persons by gender, Bhutan, 2010 (n=116)

Characteristics	Male		Female		Total		p-value
	No.	%	No.	%	No.	%	
Total	**61**	**53.0**	**55**	**47.0**	**116**		
Age (years)							
19-34	22	36.0	31	56.4	53	45.7	0.03
35-44	32	52.5	19	34.5	51	44.0	0.05
≥ 45	7	11.5	5	9.1	12	10.3	0.7
Median age (range), years	38 (25 – 51)		34 (19-51)		35 (19-51)		0.007
Education							
Literate	45	73.8	28	50.9	73	62.9	0.01
Illiterate	16	26.2	27	49.1	43	37.1	
Occupation							
Salaried	44	72.1	9	16.3	53	45.7	0.001
Business	4	6.6	6	10.9	10	8.6	0.5
Housewife	0	0.0	26	47.3	26	22.4	0.001
Farmer	7	11.5	6	10.9	13	11.2	0.9
Others*	6	9.8	8	14.5	14	12.1	0.4
Marital Status							
Married	47	77.0	36	65.5	83	71.6	0.2
Unmarried	5	8.2	2	3.6	7	6.0	0.4
Divorced/separated/Widowed	9	14.8	17	30.9	26	22.4	0.03
Median age at marriage (range)	24 (16-29)		19 (12-26)		22 (12-29)		0.03
Median age at first sex (range)	18 (11-28)		18 (12-25)		18 (11-28)		0.07
Median age at first sex (range)	18 (11-28)		18 (12-25)		18 (11-28)		0.07
Median age at first exchange sex (range)	21 (16-27)		22 (15-30)		22 (15-30)		

**Others includes students, laborers, prisoners and monks*

easy access across the border. The HIV prevalence among CSWs across the border in India was 6%[6].

Male participants reported a variety of HIV risk behaviors before diagnosis and a significant reduction in these behaviors after diagnosis. The proportion of male participants who reported having at least one exchange sex partner before testing positive were significantly higher compared to female (42.6% vs. 5.5%, p=0.001). The majority of men reported that their exchange sex partners were CSWs. The consistent condom use with exchange sex partners was as low as 11.5% before HIV diagnosis, while it had increased to 60.0% after diagnosis (p=0.037). Similarly, the proportion of male participants reporting having extramarital non- exchange sex partners declined from 52.5% before diagnosis to 80.0% after diagnosis (p=1.000). Similar to the males, the proportion of females reporting having non-exchange sex declined from 41.8% before diagnosis to 16.4% after diagnosis (p=0.001). More than half of female participants 54.5% reported not having any sex partner apart from husband both before and after HIV diagnosis and did not report any evidence of being infected from any other potential sources of HIV infection (Table 2).

Eighty-four percent of male and 61.8% of female participants reported consuming alcohol diagnosis to 12.7% after diagnosis (p=0.001). None of the participants reported having sex partners of the same sex. A small proportion (24.6%) of males did not report any sexual partners other than their spouse before or after HIV diagnosis and did not report any other potential sources of HIV infection (Table 2).

Among the 55 female participants, less than 10% reportedhaving exchange sex before or after HIV diagnosis. The consistent condom use with exchange sex partners had increased from 66.7% before before HIV diagnosis. Four male reported using drugs before HIV diagnosis and two continued using drugs after HIV diagnosis. Of those one male reported injection drug use (IDU) before HIV diagnosis: he used to inject drugs regularly and share needles with other injecting drug users which he stopped after HIV diagnosis; No female respondents reported IDU either before or after HIV diagnosis (Table 3).

Fifty-four percent of males reported STI symptoms before HIV diagnosis, and 20% reported such symptoms after diagnosis (p=0.001). Similarly sixty percent of females reported STI symptoms before HIV diagnosis, while 45.5% reported such symptoms after diagnosis, A majority (> 70%) of male and female who reported STI symptoms sought treatment at a health care center (Table 3).

Among male participants, 42.6% reported travelling abroad before HIV diagnosis and 29.5% reported travelling abroad following diagnosis. Of those 30.8% reported having exchange sex abroad with CSWs before diagnosis. A majority of males who reported having exchange sex abroad (87.5%) did so in India. Of those 37.5% had consistently use condoms. While 21.8% of female reported travelling abroad, only one female reported of having exchange sex abroad both before HIV diagnosis and after HIV diagnoses (Table 4).

Table 2. Prevalence of sexual risk behaviors among HIV-infected men and women before vs. after HIV diagnosis, Bhutan, 2010 (n=116)

Sexual behavior	Before		After		p-value
Men (n=61)	No.	%	No.	%	
-Had sex with an exchange sex partner	26	42.6	5	8.2	0.001
-Correct and Consistent condom use	3	11.5	3	60.0	0.037
- Had sex with a non-exchange sex partner	32	52.5	7	12.7	0.001
-Correct and Consistent condom use	3	9.4	7	100.0	0.001
-Did not report having exchange or non-	15	24.6	50	82.0	0.001
Women (n=55)					
-Had sex with an exchange sex partner	3	5.5	5	9.1	0.2
- Correct and Consistent condom use	2	66.7	4	80.0	1.000
-Had sex with a non-exchange sex partner	23	41.8	9	16.4	0.001
-Correct and Consistent condom use	3	13.1	3	33.3	0.314
-Did not report having exchange or non-exchange sex partners	30	54.5	45	81.8	0.002

Table 3. Alcohol consumption, drug use and STI among HIV-infected men and women before vs. after HIV diagnosis, Bhutan, 2010 (n=116)

	Before		After		p-value
Male (n=61)	**No.**	**%**	**No.**	**%**	
Having consumed alcohol	51	83.6	35	57.4	0.003
Having sex with any partners among those who consumed alcohol (n=51, 35)	41	80.0	15	44.1	0.001
Having ever used drugs	4	6.6	2	3.3	0.250
- IVDU	1	25.0	0	0.0	1.000
- Non-injection drug use	3	75.0	1	50.0	0.780
Having ever experienced STI symptoms	33	54.1	12	19.7	0.001
Visited Health care centre for STI Treatment	22	66.7	9	75.0	0.628
Female (n=55)					
Having consumed alcohol	34	61.8	29	52.7	0.275
Having sex with any partners among those who consumed alcohol (n=51, 35)	16	47.1	8	27.6	0.110
Having ever used drugs	0	0.0	1	1.8	0.479
– IVDU	0	0.0	-	-	NA
– Non-injection drug use	0	0.0	1	100.0	0.479
Having ever experienced STI symptoms	33	60.0	25	45.5	0.171
Visited Health care centre for STI Treatment	25	75.8	20	80.0	0.720

Ninety-seven percent of participants were aware that correct and consistent condom use can reduce the risk of HIV infection, 93.1% knew that the risk of HIV infection can be reduced by not having sex with multiple partners and 94.8% knew that HIV can be transmitted from mother to child in-utero, during the process of child birth and through breastfeeding. However, only 78.7% of male and 58.2% of female PLHIV were aware that anal sex increases risk of HIV infection (p=0.02). More than 87.9% knew that HIV is not transmitted through mosquito bites

Table 4. Mobility and sexual behavior among HIV-infected men and women before vs. after HIV diagnosis, Bhutan, 2010 (*n*=116)

	Before		After		*p*-value
Male (*n*=61)	***n***	**%**	***n***	**%**	
-Ever traveled outside Bhutan	26	42.6	18	29.5	0.073
-Traveled to India (*n*= 26, 12)	22	84.6	9	50.0	0.013
-Had exchange sex during travel abroad (*n* = 26, 12)	8	30.8	1	5.6	0.068
-Correct and Consistent condom use during such sexual practice (*n*= 8, 1)	3	37.5	1	100.0	0.325
Female (*n*=55)					
-Ever traveled outside Bhutan	12	21.8	12	21.8	0.131
-Traveled to India (*n*= 12, 12)	8	66.7	7	58.3	1.000
-Had exchange sex during travel abroad (*n*= 12, 12)	1	8.3	1	8.3	0.068
-Correct and Consistent condom use during such sexual practice (*n*= 1, 1)	1	100.0	0	0.00	0.325

or sharing meals with infected persons (Table 5).

The median duration between HIV diagnosis and interview was five (range: 1-15) years for males and four (range 1-12) years for females. The proportion of participants diagnosed through blood donor screening was higher for males than females (29.5% vs. 3.6%, $p<0.001$). HIV infections among female were primarily (34.5%) detected through antenatal (ANC) screening. A majority 34.4% of males and 34.5% of females were diagnosed through HIV testing conducted while tracing the contacts of other HIV-infected persons. About 5% of male and 4% of female cases were detected during care for HIV/AIDS related symptoms. Among married participants 92.7% had disclosed their HIV status to their spouse and 91.5% reported their spouse had been tested for HIV; however HIV status of their spouse was not collected in this study. Forty-two percent of the participants were on anti-retroviral treatment (ART).

Table 5. Number and percentage of the HIV-infected persons who agreed with the following statements on HIV/AIDS by gender, Bhutan, 2010 (male 61: female 55)

Knowledge	Male		Female		Total
	n	**%**	***n***	**%**	***n***
People can reduce their risk of HIV/AIDS by using a condom correctly and consistently during penetrated sex.	61	100.0	52	94.5	113
People can reduce their risk of HIV/AIDS by avoiding multiple sex partners.	57	93.4	51	92.7	108
A pregnant woman infected with HIV can transmit the virus to her unborn child through birth process and breast feeding.	58	95.1	52	94.5	110
Anal sex increases risk of HIV transmission.	48	78.7	32	58.2	80
People can reduce their risk of HIV/AIDS by using a condom correctly and consistently in anal sex.	55	90.2	47	85.5	102
A person can get HIV from mosquito bites.	52	85.2	50	91.0	102
A person can get HIV by sharing a meal with someone who is infected.	60	98.4	50	91.0	110
A person can get HIV by sharing used injection needles.	55	90.2	50	91.0	105
A healthy looking person can have HIV	47	77.0	34	61.8	81
Answered all the questions correctly	24	39.3	13	23.6	37

Table 6. HIV testing and services provided to the HIV-infected persons, by gender, Bhutan, 2010 (male 61: female 55)

Health services	Male		Female		Total	
	n	**%**	***n***	**%**	***n***	**%**
Median of time and range in years since HIV diagnosis	5 (1-15)		4 (1-12)		5 (1-15)	
Reasons for HIV testing*						
Contact tracing	21	34.4	19	34.5	40	34.5
Voluntary	16	26.2	9	16.4	25	21.6
Blood donor screening	18	29.5	2	3.6	20	17.2
Pregnancy/ANC	-	-	19	34.5	-	-
AIDS-related symptoms or signs	3	4.9	2	3.6	5	4.3
STI patient	2	3.3	3	5.5	5	4.3
TB patient	0	0.0	1	1.8	1	0.9
Disclosed HIV-status to spouse	45	95.7	31	88.6	76	92.7
Spouse was tested for HIV	43	91.5	32	91.4	75	91.5
On ART	24	39.3	25	45.5	49	42.2

** Each category is consider Yes/No*
†Denominator is married persons
ANC indicates antenatal clinic; ART indicates antiretroviral therapy; STI indicates sexually transmitted infection; TB indicates tuberculosis

DISCUSSION

This study is the first of its kind in the country. Ninety percent of participants were between 19 and 44 years of age, demonstrating that the vast majority of HIV- infected persons in Bhutan are in their most productive years of life. This finding is consistent with the finding that 85% of HIV-infected persons in Nepal7, India8, 9 and Laos10 were of similar age.

Differences in occupational backgrounds of male and female participants gave an indication that HIV infection in Bhutan was not concentrated among known high-risk groups (such as CSWs, men who have sex with men or IDUs). HIV infection among salaried person might be associated with their higher income, greater social status in the community, and increased mobility which in turn provide increased opportunities to meet and engage new or multiple partners. This contrasts with findings reported from South India[8], Nepal[11], Thailand[12] and Bangladesh[13], where the majority of HIV-infected males have been wage-earners and migrant workers. The proportion of HIV infected housewives found in Bhutan was consistent with the findings reported from Nepal[7,11], India[8], Laos[10] Thailand[12] and Bangladesh[13]. In our study a majority of female reported being faithful to their husband and did not report evidence of being infected from other sources suggested that they may have been infected through their husband. Studies conducted in several countries indicate that many women are acquiring HIV not because of their own sexual behaviors but because their partners engage in high-risk behaviors[3,7,14-16]. Thus the primary risk factor for HIV among housewives appears to be their spouses who engage in extra-marital sex.

The high-risk sexual behavior associated with low condom use with multiple sexual partners, might be a risk factor leading to the increasing rate of HIV infection in Bhutan. The high percentage of male PLHIV who engaged in exchange sex with CSWs is a concern for the general population. Husbands or male partners who had sex with CSWs may serve as a "bridge" which connects high risk (CSWs) and low risk populations (housewives). Reports on redefining AIDS in Asia have cited that if 10% of the male population bought sex, the risk of HIV infection could increase rapidly in the community[15]. Other possible risk factors could be sexual behavior while abroad. The exchange sex with low condom use may have contributed to the introduction of HIV to Bhutan from places where the HIV prevalence among CSW in 2008 was 6% and as high as 18%[16,17]. A number of studies conducted in Nepal, India and Bangladesh found that high rates of exchange sex among men who travelled abroad may place a substantial number of women at risk for acquiring HIV infection on their return.

The positive changes reported after HIV diagnosis might be partly due to access to proper counseling and information services. Inconsistent condom use with extra-marital partners contrasts to the levels of knowledge among participants indicated poor translation of knowledge to practice may be either due to low perceived risk of the participants or high levels of familiarity amongst the sexual partners. A study in Thailand found public health prevention programs and education led to substantial changes in sexual behavior[20]. Studies in Uganda[21] and Swaziland[22] found that counseling lead to positive changes in behaviors.

Several limitations were faced because of sensitive nature of study. Firstly, data collection was done by HIV counselors who knew their participants personally, which might have lead to social desirability bias particularly for questions about sexual risk behaviors, adherence to ART and other sensitive issues. Secondly, participants were asked to recall their past behavior with different sexual partners, which might have led to recall bias and bias on the assessment of changes in behavior before and after diagnosis. Thirdly, the accuracy of self-reported data on sexual risk behaviors might be compromised because of social desirability. Finally, data on accessibility of condoms and reasons for not using them were not explored in this study. It is not known whether the low condom use observed in this study is due to unavailability of condoms, unwillingness to use condoms despite knowledge of the risks.

CONCLUSIONS

This is the first publication of data on PLHIV in Bhutan. High-risk sexual behavior associated with low condom use was prevalent across all partners. There was a gap between knowledge and practice. An important step toward increasing condom use is changing inaccurate perceptions of low risk and promoting the use of condoms as dual protection from unplanned pregnancies and HIV and other sexually transmitted infections need to be strengthened. The availability of condoms, especially in locations where spontaneous sex may occur should be evaluated and increased. A campaign to promote and conduct voluntary HIV testing would help identify undiagnosed HIV infection and improve estimates of HIV infection. Lastly future research is needed to explore possible gender specific routes of HIV transmission.

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AUTHORS CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

JBD: Concept, design, , literature search, data collection and analysis, manuscript writing and review.

PDN: Design, data collection and analysis, manuscript writing and review

LZW: Design, data collection and analysis, manuscript writing and review

MSG: Design, data collection and analysis, manuscript writing and review

WSW: Design, data collection and analysis, manuscript writing and review

Author agree to be accountable for all respects of the work in ensuring that questions related to the accuracy and integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

None

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