■ *Original Article*

Knowledge and practices regarding tuberculosis among people living with HIV/AIDS

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Abstract

Background: Tuberculosis is a serious public health problem in many developing countries. More than 2 billion people are infected with TB bacilli and annually around 9 million become infected, 1.7 million die due to this disease. TB is the most common opportunistic infection, leading to the mortality of people living with HIV. **Objective:** To assess the knowledge and practices of tuberculosis among people living with HIV/AIDS. **Method:** This study was carried out in Sunsari, Morang and Jhapa district of Eastern Nepal. Face to face interview was performed using convenience sampling technique. Data was collected from people living with HIV/AIDS, related to information on socio-demographic profile, knowledge, practices and risk taking behavior with the help of pretested semi-structured questionnaire. The generated data were entered into Microsoft Excel and SPSS 15.0 and Chi-square was applied for test of significance. **Results-** The total of 242 subjects were enrolled in the study. Out of them, 75.2% were males and 24.8% females, the age of the respondents varied from 14-65 years. Among them 53.3% were Intra Venus drug users, followed by 17.4% clients of commercial sex workers and housewives (17.4%). Around half (48.8%) of the study population were in the 30-39 yrs age group. The knowledge of tuberculosis disease was satisfactory but in depth knowledge of symptoms was not adequate. Regarding symptoms of TB, it was found that 85% were aware that cough for more than 2 weeks was suggestive of TB, 54% knew of chest pain and 84% knew of haemoptysis. Over the years, perception about tuberculosis has changed, which was shown by our finding, 93% of the respondents knew that TB is curable and 75% knew that anti-tuberculosis drugs provided free of cost under directly observed treatment short course (DOTS). Regarding knowledge of consequences of incomplete treatment, it was found that 17% answered the disease may attack again, and very few (2%) knew that incomplete or discontinued treatment would develop Multi drug resistantance. **Conclusion-** Our study revealed that knowledge and practices of people living with HIV/AIDS is not adequate. Their knowledge regarding consequences of treatment, and multi drug resisistance was very poor. Thus there is a need for an awareness program regarding tuberculosis - its signs and symptoms, treatment regimen and drug compliance through advocacy, communication and social mobilization.

Keywords: Tuberculosis, HIV, PLHA.

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Introduction

Tuberculosis (TB) is a leading public health problem worldwide particularly in developing countries. WHO, estimated that more than two billion people (one third of the world's population) has been

exposed to the tuberculosis pathogen.[1] Globally, the rate of case detection for new smear-positive cases reached 61% in 2006, compared with the target of at least 70%. Similarly, treatment success rate improved to 84.7% in 2005, just below the target of 85%.[2] TB is a leading cause of adult death in the world, killing 1.7 million people each year. Globally, 14.6 million people have active TB disease: each year 8.9 million people develop active TB.[3] The impact of Tuberculosis is such that in 1993 WHO declared TB to be a global emergency. The millennium development goal (MDGs) targets of 50% reduction incidence rates of TB infection by 2015 could be achieved if the current rate of decline is sustained.2 TB infection and mortality rates are falling globally at the level of around 35% between 1990 and 2009.[3]

In the South-East Asia Region, an estimated 1.7 billion people have been infected along with 4.88 million prevalent cases and an annual incidence of 3.17 million from TB in 2009, which is one-third of the global burden of TB. Five of the 11 member countries in the Region are among the 22 high-burden countries, India having the largest burden. Most cases occur in the age group of 15-54 years, with males being disproportionately affected.[4] In Nepal it is a major public health problem being endemic; more than 45% populations are infected, of which 60% are adult. Every year, 40,000 people develop active TB, of whom 20,000 have infectious (sputum positive) pulmonary TB.[5,6] According to National Tuberculosis Centre, the treatment success rate for the DOTS program is about 89%, the defaulter rate 6% and the rate of treatment failure 1%. The goal of DOTS is to reduce transmission in the community by aiming to cure at least 85%, and detection of at least 70% of new smear positive cases.[5]

Tuberculosis is a social disease with medical aspects. The social factors include many non-medical factors such as poor quality of life, poor housing, and overcrowding, population explosion, under-nutrition, lack of education, large families, early marriages, lack of awareness of causes of illness, etc.[7] TB is closely associated with poverty: although all ranks of society get the disease, the poor are at greatest risk, both because they are in greater contact with other sufferers and their immune system is weakened due to poor nutrition.[8] A major impact of TB on marginalized people with little social capital is to push them into abject poverty, because it destroys their ability to earn money or subsist through their work, and because the diagnostic and treatment processes are often costly. Tuberculosis is particularly challenging among the high risk group of those affected with HIV-including injection drug users, prisoners, and mobile populations. TB or HIV treatment is particularly challenging in these groups.[9] In their advanced form, both TB and HIV lead to severe weight loss, fever, and night sweats, frequently leading TB patients to think they have HIV and vice versa.[10] Because of the close social interplay between TB and HIV, public health professionals are increasingly interested in factors such as disease-related stigma and knowledge that might impact prevention and treatment of both diseases.[11]

Although TB and HIV have many biomedical differences, the origins and impact of stigma are similar. Factors that drive stigma for both diseases are that TB and HIV produce severe illness, can be transmitted to others, and occur more frequently in populations perceived to be different or deviant.[12,13] Stigma of either disease can lead to isolation from friends and family, loss of employment, exclusion from community activities, and fear of seeking out medical care.[13-17] Knowledge about these diseases is believed to be an important determinant of health-seeking behavior as well as adherence to preventive measures and treatment.[18]

Nepalese people's knowledge about tuberculosis is not satisfactory; study done by Bhatt CP et al, more than two third respondents had knowledge about the clinical symptoms of tuberculosis, among them chronic cough (82%), evening rise of temperature (72%) and blood in the sputum (72%) were the major symptoms described. Only 16.6% of the respondents knew that Tuberculosis is common opportunistic infection in people infected with HIV/AIDS. 53.3% patients responded correctly replied that body secretion like sputum contains Tubercle Bacilli and regarding disposal of sputum and other body fluids 30% said that incineration is the proper way of disposal.[19]

The HIV epidemic has increased the global tuberculosis burden. Nepal has concentrated epidemic of HIV with 0.39% prevalence among general population in 2010. Estimating the proportion of HIV infection among TB cases can act as early warning system for the spread of TB due to HIV in the country. HIV infection makes an infected person more susceptible to both pulmonary and extra pulmonary forms of TB.[20]

Similarly Multidrug resistant (MDR-TB) also reported high among IV drug users and HIV risk group people. In 2010, highest rates ever of MDR-TB, with peaks of up to 28% of global burden of new TB cases in some settings of the former Soviet Union was recorded. In context of Nepal, MDR among new cases is 2.9% and 11.7% among retreatment cases which is a very high percentage. Similarly the prevalence of extensively drug resistant (XDR) TB among MDR is at 5%. Importantly TB HIV co-infection is rapidly increasing which is at 2.4% among TB patients. Compared to an individual without HIV infection, HIV infected patients are up to 10 times as likely to develop TB.20 Tuberculosis is the most commonest opportunistic infection (OIs), among the HIV/AIDS accounting 40% death in Africa and South East Asia.[21] Various studies have documented the occurrence of TB among HIV infected person ranged from 46- 80%.

Objective

The objective of the study was to assess the knowledge and practices of tuberculosis among people living with HIV/AIDS.

Methods

This was a cross-sectional study carried out in different districts of Eastern region of Nepal. The representative sample was collected from the lowest level of community voluntary counseling and testing (VCT), STI/HIV clinics and temporary mobile clinics. Convenience sampling technique was applied for data collection during one year study period. All subjects were counseled and face to face interviewed separately and confidentiality was maintained throughout the study period. Questions were asked in local languages and further translated in English. Community mobilizes (CM), peer group educators (PE) and volunteers, were mobilized in the field to gather the study subjects, by using snowball technique. They were invited to VCT and STI centers where services of voluntary counseling testing & treatment of STI's were provided by trained medical personnel. Data was collected from following centers- VCT/HIV clinic of BPKIHS, Dharan Positive Group (DPGs), Kirat Yakthum Chumlung (KYC) Punarjeevan Kendra Dharan, Nav Kiran Plus Biratnagar, VCT/ STI center of Damak, & Labh Kush Aasharam Chandragadhi Jhapa, including some mobile VCT and STI Management clinic of SIDC (Society Improvement and Development Centre)- Dharan, Ithari, Inaruwa, Biratnagar, Blue Diamond Society Ithari, Morang AIDS-PLHA Society (MAPS).

Data processing and analysis: Data was entered in to Microsoft office Excel 2003 and further analyzed for statistical measures such as frequencies and percentages. Microsoft SPSS 15.0 was used and Chi-square was applied for test of significance. Figures, tables and multiple bars were used to present the data graphically.

Ethical considerations: The study was started after receiving acceptance by the ethical committee of B.P. Koirala Institute of Health Sciences. Before conducting the study, a written permission was taken from following NGO/INGO; Society Improvement and Development Centre, Asian Medical Doctors Association (AMDA), KYC-PJK, Sahara Nepal, and Blue Diamond Society (BDS). Verbal and written consent were obtained from each participant and confidentiality was maintained.

Results

A total of 242 subjects were enrolled in this study. The majority (75.2%) of the respondents were male, and rest were females (24.8%). The majority of the subjects (48.8%) belonged to 30-39 years age group followed by 25-29 yrs (23%), and 20-24 yrs (16%) respectively.

Table 1. Demographic factors of the study population

Characteristics Study Population (total n= 242)		
Age-wise distribution	**Number**	**Percentage (%)**
0-14 yrs	2	0.80
15-19 yrs	8	3.30
20-24 yrs	38	16.0
25-29 yrs	56	23.0
30-39 yrs	118	48.8
40 & above	20	8.30
Caste / Ethnicity		
Major hill caste	97	40.1
Hill Occupational caste	14	5.8
Hill Native caste	92	38.0
Terai Middle caste	17	7.1
Terai Occupational caste	2	0.8
Others	20	8.3
Religion		
Hindu	154	63.6
Kirat / Buddhist / Christians	84	34.7
Muslim	4	1.7
Marital status		
Unmarried	59	24.4
married	134	55.4
Widows / widower	12	5.0
Separated / Divorced	37	15.3
Migration status		
Not migrated	191	78.9
Migrated from Hill district	25	10.3
From Terai district	26	10.7
Migrated for Work / job	35	68.6
for education	7	13.7
for travel	9	17.6

The study population was ethnically divided into seven categories (Table 1). Major hill caste (MHC) included Brahmins, Chhetries, and Newar. Hill Occupational caste (HOC) included Bishwakarma, Damai, Sarki, etc. Similarly Hill Native caste (HNC) included people of Mongolian origin such as Rai, Limbu, Magar, Gurung, and Tamang. Terai Middle caste (TMC) included Shah, Thakur, Mandal, Mehta, Tharu, Rajbanshi, Yadav, Singh etc. Terai Occupational caste (TOC) included Mushar, Khatbe, Jhagar, Mallik. The majority of the study subjects belonged to HNC followed by MHC. TOC and Muslim were the least (altogether 3% only). Hindu constituted 63.6% followed by Buddhist/ Kirat /Christians and Muslim (34.7% & 1.7%) respectively.

In terms of marital status, more than half (55.5%) of the total population were married, while the rest 24.4% were unmarried. Among the married population, 45% were currently married, around 5% widows/widower and 15.3% separated/divorced (Table 1). Around 21% of study populations had migrated from different places. Among them 10.3% had migrated from the hills and 10.7% from terai districts. The majority of the study population (68.6%) had migrated for work, (13.7%) had migrated for education and (17.6%) for travel.

Regarding literacy status of the study population, 92.4% were literate. They were categorized according to the level of education, into primary education (55.8%), secondary education up to class ten (15.3%) and SLC & above (5.0%). Regarding employment, the largest group(21.9%) of the study population were skilled laborers (Table-2.), then the unemployed (21.1%) and the remaining belonged to the categories of housewife, student, business/sales, agriculture, professional/ administrative, police and army.

Table 2. Sex-wise distribution of Literacy Occupation and Income of the study population

Characteristics	Study population		Number (%)
Literacy status	**Male (N=182)**	**Female (N=60)**	**Total (N=242)**
Illiterate	13 (7.1)	10 (16.7)	23 (7.6)
Literate			
Informal education	21(11.5)	14(23.3)	35(14.5)
Primary level	110 (60.4)	25 (41.7)	135 (55.8)
Secondary level	30 (16.5)	7 (11.7)	37 (15.3)
Higher secondary & above	8 (4.4)	4 (6.7)	12 (5.0)
Occupational status			
Agriculture	15 (8.2)	1 (1.7)	16 (6.6)
Business / sales	17 (9.3)	6 (10.0)	23 (9.5)
Professional	5 (2.7)	5 (8.3)	10 (4.1)
Police / Army	6 (2.7)	0 (0.0)	6 (2.5)
Unskilled Laborers	34 (18.6)	5 (8.3)	39 (16.1)
Skilled laborer	52 (28.6)	1 (1.7)	53 (21.9)
Housewife	0 (0.0)	31 (49.0)	31 (12.8)
Student	2 (1.1)	1 (1.7)	3 (1.2)
Unemployed	45 (24.7)	11 (18.3)	56 (23.1)
Income per month			
Less than Rs.2250	88 (48.4)	30 (50.0)	118 (48.8)
Rs.2251- 5,000	84 (46.2)	23 (38.3)	107 (44.2)
More than Rs.5,000	8 (4.4)	6 (10.0)	14 (5.8)

On the basis of the poverty line within Nepal, i.e. approximately less than one USD per person per day income falls under poverty, the study population has been grouped into three category according to levels of income. Almost half of the study population

(49%) had income of less than Rs 2250 per month (fouls in below poverty line), around 44% of population was earned between Rs 2251 - 5,000 (average income, just above poverty) and few (5.8%) earned more than Rs 5,000 (Table.2.)

Table 3. Categorization of the study population according to risk behavior & HIV.

Characteristics	***HIV/ AIDS population (242)***	
Categorization of high risk group	No	Percentage
IDUs	129	53.3
CSWs	12	5.0
Clients	42	17.4
Driver	15	6.2
Housewife	42	17.4
Children	2	0.8

(Note: IDUs- Intra Venus Drug Users, CSWs- Commercial Sex Workers)

In terms of High Risk Behavior of the respondent, majority of them (53.3%) were IDUs, the next large population was Clients of CSWs (17.4%) followed by CSWs (5.0%) and a highway truck/bus drivers (6.2%) Table 3.

Table 4. Knowledge of Tuberculosis according to different ethnicity/cast group

Ethnicity/Cast	***Knowledge of Tuberculosis***		***Total***
	Yes	***No***	
Brahmin	28(100%)	0	28
Chhetri	55(98.2%)	1(1.8%)	56
Thakur	8 (100%)	0	8
Limbu	16(100 %)	0	16
Rai	37 (97.4%)	1(2.6%)	38
Magar	12 (92.3%)	1(7.7%)	13
Yadav, Mandal, Thakur	4 (100%)	0	4
Shah	9(100%)	0	9
Tamang	15 (100%)	0	15
Newar	13(100%)	0	13
Dalit	16(100%)	0	16
Muslim	4(100%)	0	4
Others	21(95.5%)	1(4.5%)	22
Total	***238(98.3%)***	***4(1.7%)***	***242***

Table 5. General knowledge related sign symptoms of tuberculosis, and its risk factors

Characteristics	Frequency(n=242)	Percentage (%)
Knowledge of Tuberculosis		
Yes	225	93.0
No	17	7.0
Knowledge of Duration of treatment		
Yes	206	85.0
Don't know	36	15.0
knowing Symptoms of TB[a]		
Cough > 2 weeks	206	85.0
Chest Pain	131	54.0
Fever	136	56.0
Haemoptysis	203	84.0
Loss of Weight	104	43.0
Loss of appetite	152	63.0
Risk factors of developing TB[a]		
Poverty	44	18.0
Hard work	87	36.0
Alcohol consumption	136	56.0
Smoking	186	77.0
Malnutrition	90	37.0
No proper ventilation	36	15.0
Contact with TB	181	75.0
Eating together	102	42.0
What happens in case of drug discontinuation?		
Disease will not be cure	174	72.0
Disease may attack again	41	17.0
Don't know	36	15.0
Drug resistance (MDR-TB)develops	5	2.0
Person will die	27	11.0

Note: - [a] =Multiple responses

Regarding overall knowledge of tuberculosis 93% responded that they had knowledge of TB. They were further assessed for individual symptoms i.e. knowledge about symptoms. 85% were aware of a cough for more than 2 weeks, 54% aware of chest pain, 56% aware of fever, and 84% were aware of haemoptysis plus other symptoms respectively (Table 5). Regarding knowledge in terms of risk factors of tuberculosis: 18% responded that poverty is the cause of TB, whereas 36% responded hard work, and 56% said that alcohol consumption may cause TB. Knowledge of TB was not same between ethnic groups and was found to be least (92%) among Magar (Table 4).

Table 6. Relationship between knowledge and practices of tuberculosis among male and female respondents of the study population.

Characteristics	Total (n=242)	Male	Female	P value
Overall Knowledge of TB	225(93.0%)	167(69.0%)	75(31.0%)	0.239
Awareness of TB drug Free (DOTS)	181(75.0%)	132((73.1%)	48(26.9%)	0.000
Smoking habits	177(73.1%)	154(87%)	23(13%)	0.000
BCG vaccination	166(68.6%)	128(77.1%)	38(22.9%)	0.080
history of TB (life time)	103(42.6%)	80(77.7%)	23(22.3%)	0.455

Overall 93% of the respondent had knowledge of tuberculosis where as 75% of the study population was aware of free drugs supply under DOTS. Regarding awareness of TB drug supply it was found significantly higher among males (73.1 %). Significantly high study population had history of tuberculosis in life time 42.6 % (Table 4).

Discussion

The ultimate goal of PLHA and high risk people is to influence their health behavior by providing them adequate information that motivates them to follow in relation to tuberculosis and DOTS program. Before introduction of DOTS, there was no uniformity regarding diagnosis and treatment but after implementation of DOTS in 1994, this was gradually made easier and provided effective treatment throughout the country. To date, very few studies have been conducted among the high risk population including PLHA in eastern Nepal, where tuberculosis is highly prevalent. According to the study done by Yadav DK et al, the prevalence of tuberculosis among HIV is around 28% and 4.5% among high risk population i.e. IV drug users, commercial sex workers, truck drivers, clients of sex workers. The result of this study shows that the majority of the respondents (93%) were aware of tuberculosis. Similarly, in the study carried out by Bhatt CP et al, titled knowledge of tuberculosis and treatment in Nepal, the authors have documented that 83% of respondents knew that TB is a curable disease, 82% were found to be aware of the duration of TB treatment. When the respondents were separately evaluated for the their knowledge of signs and symptoms in this study, 84.9% were aware of a cough of more than two weeks, haemoptysis 83.8%, loss of appetite 62.8%, fever 56.7%, and loss of weight 42.8% respectively. The majority (85%) had knowledge about the duration of TB treatment but still 15% were not clear of the treatment regime. This observation is concerning, as patients who did not know the total duration of the treatment, might at any stage stop taking the medication. This interruption results in emergence of drug resistance to anti-TB drugs. This result supports the findings of a study conducted in Nepal by Bhatt CP *et al*, where 82% of the respondents knew the correct total duration of the treatment.[19]

Regarding knowledge of the consequences of the incomplete treatment, only 2.2% of the respondent knew that incomplete treatment may lead to the development of MDR-TB; the results were in agreement with the reports of Bhatt CP *et al*. This finding suggests that the knowledge of the consequences of incomplete treatment of the high risk population is very poor. Majority (71.7%) of the respondents agreed that the disease will not be cured, whereas 17% knew that the disease will attack again with incomplete treatment. These findings suggest that more emphasis should be given on counseling about the consequences of drug adherence. Regarding knowledge in relation to risk factors, the majority of the respondents (76.5%) knew smoking as a common risk factor followed by contact with TB patients 75.2%, alcohol consumption 55%, and malnutrition 36.6%. Some of them had misconception that eating together, (41.9%) similarly hard work (53.7%) also can cause TB. One of the important findings of this study is that overall knowledge of tuberculosis among females were significantly less than the male population. Similarly for awareness of TB drugs supply and DOTS clinic in the community, males were more aware than females (statically significant P=0.005), shown in table 4. Practices of prevention in relation to BCG vaccination, the majority of the vaccinated population were male in comparison to female, it is statically significant (P=0.051). The study shows high variation of past history of the TB disease among males and females in life time, (statically significant P=0.004).

Conclusion

This study reveals that overall knowledge of TB is not significantly associated with sex, but BCG vaccination and past exposure of tuberculosis infection was significantly associated with sex. Knowledge about consequences of treatment and drugs in relation to MDR was very poor. Therefore, there is a need for an awareness program about TB, signs and symptoms, treatment regimen and drugs compliance through advocacy communication and social mobilization (ACSM) focusing to female population. Every VCT, ART centers should provide counseling of diagnosis and treatment facilities of HIV as well as tuberculosis for all PLHA in Eastern Nepal.

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