



# SAARC

(South Asian Association for Regional Cooperation)

Journal of Tuberculosis, Lung Diseases and HIV/AIDS



## EDITORIAL

### Original Articles

1. **A STUDY ON KNOWLEDGE OF PULMONARY TUBERCULOSIS AND DOTS AMONG PULMONARY TUBERCULOSIS PATIENTS IN WEST TRIPURA DISTRICT, INDIA** 1  
*Das R, Baidya S*
  2. **KNOWLEDGE AND ATTITUDE TOWARDS HIV/AIDS AMONGST NURSING STUDENTS IN NEPAL** 8  
*Adhikari K, Gupta N, Koshy AK, Jain VM, Ghimire A, Jnawali K, Paneru DP*
  3. **A GENDER BASED STUDY OF HIV/AIDS RELATED KNOWLEDGE AND SEXUAL ATTITUDES IN STUDENTS FROM LADDAKH** 14  
*Sood S*
  4. **RESURGENCE OF EXTRA PULMONARY TUBERCULOSIS** 20  
*Bag S, Deep N, Padhy S*
  5. **SURVEILLANCE OF HIV INFECTION AMONG PATIENTS WITH TUBERCULOSIS IN NEPAL** 25  
*Sah SK, Verma SC, Bhattarai R, Bhandari K, Bhatta GK*
  6. **STUDY ON UNDERSTANDING, AWARENESS AND PERCEIVED BEHAVIOR OF HIV/AIDS AMONG RETURNEE SEASONAL MIGRANT WORKERS FROM INDIA TO FAR WESTERN REGION OF NEPAL** 31  
*Paudel DP, Ayre R*
- Case study**
7. **A CASE OF ASPERGILLOMA WITH MUCIN SECRETING ADENOCARCINOMA IN THE CAVITY WALL** 39  
*Agarwal S, Gupta K, Mullick S, Dewan RK*



**Editorial Board**

**Chief Editor**

Sharat Chandra Verma

**Editors**

Ghanshyam Kumar Bhatta  
Gajananda Prakash Bhandari

**Advisory Board**

**National TB Control Programme**

Shahwali Maroofi, Afghanistan  
Md. Mozammel Haque, Bangladesh  
Tashi Dendup, Bhutan  
Sunil D. Khaparde, India  
Abdul Hameed Hasan, Maldives  
Bikash Lamichhane, Nepal  
Ejaz Qadeer, Pakistan  
Gamini Seneviratne, Sri Lanka

**National HIV/AIDS Control Programme**

Shahwali Maroofi, Afghanistan  
Md. Anisur Rahman, Bangladesh  
Sonam Wangdi, Bhutan  
Shri N. S. Kang, India  
Abdul Hameed Hasan, Maldives  
Dipendra Raman Singh, Nepal  
Abdul Baseer Khan Achakzai, Pakistan  
Sisira Liyanage, Sri Lanka

**Published and distributed by:**

SAARC Tuberculosis and HIV/AIDS Centre (STAC)  
Thimi, Bhaktapur  
G.P.O. Box 9517, Kathmandu, Nepal  
Tel.: 00977-01-6632601, 6632477, 6631048  
Fax: 00977-1-6634379  
E-mail: saarctb@mos.com.np  
Website: www.saarctb.org

**EDITORIAL**

**Original Articles**

1. **A STUDY ON KNOWLEDGE OF PULMONARY TUBERCULOSIS AND DOTS AMONG PULMONARY TUBERCULOSIS PATIENTS IN WEST TRIPURA DISTRICT, INDIA**-----1  
*Das R, Baidya S*
  2. **KNOWLEDGE AND ATTITUDE TOWARDS HIV/AIDS AMONGST NURSING STUDENTS IN NEPAL** -----8  
*Adhikari K, Gupta N, Koshy AK, Jain VM, Ghimire A, Jnawali K, Paneru DP*
  3. **A GENDER BASED STUDY OF HIV/AIDS RELATED KNOWLEDGE AND SEXUAL ATTITUDES IN STUDENTS FROM LADDAKH**----- 14  
*Sood S*
  4. **RESURGENCE OF EXTRA PULMONARY TUBERCULOSIS**----- 20  
*Bag S, Deep N, Padhy S*
  5. **SURVEILLANCE OF HIV INFECTION AMONG PATIENTS WITH TUBERCULOSIS IN NEPAL** ----- 25  
*Sah SK, Verma SC, Bhattarai R, Bhandari K, Bhatta GK*
  6. **STUDY ON UNDERSTANDING, AWARENESS AND PERCEIVED BEHAVIOR OF HIV/AIDS AMONG RETURNEE SEASONAL MIGRANT WORKERS FROM INDIA TO FAR WESTERN REGION OF NEPAL**----- 31  
*Paudel DP, Ayre R*
- Case study**
7. **A CASE OF ASPERGILLOMA WITH MUCIN SECRETING ADENOCARCINOMA IN THE CAVITY WALL**----- 39  
*Agarwal S, Gupta K, Mullick S, Dewan RK*

## **AIMS AND SCOPE:**

The SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS is the official journal of the STAC. The Journal's main aim is the continuing education of personnel and the dissemination of the most up-to-date information in the field of tuberculosis, lung diseases and HIV/AIDS. It is devoted to dissemination of knowledge concerning various aspects of tuberculosis, lung diseases and HIV/AIDS. All articles relevant to the practice of this Journal and quality health research are published. The Journal is an appropriate forum for the publication of articles concerning the social, economic, public health, epidemiology, diagnostics, genetics etc. in the area of tuberculosis, lung diseases and HIV/AIDS. The scientific manuscripts presenting the results of public health importance are encouraged. The novel case reports which adds to the existing knowledge and consistent with the scope of Journal will be considered for publication. The Journal accepts review/mini-review, case report, short communications, and letters to editors within the scope of the journal.

## **DISCLAIMER:**

Any opinions expressed or policies advocated do not necessarily reflect those of the STAC.

## **INSTRUCTIONS TO AUTHORS:**

Instructions on manuscript submission can be obtained from the STAC website [www.saarctb.org](http://www.saarctb.org)

## **FULL TEXT VERSION ONLINE:**

The full text of the Journal is published online. Free access to all published issues. Address: [www.saarctb.org/stacjournal.php](http://www.saarctb.org/stacjournal.php)

Copyright © The STAC 2014. All rights reserved, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior permission of the STAC.

Print ISSN 1818-9741

Online ISSN 2091-0959

## Editorial

### Health Sector Response to HIV in the SAARC Region

For nearly 15 years, the Millennium Development Goals (MDGs) have been a guiding force on many issues affecting the lives of children, young people and their families. Much progress has been made in getting more needy people into treatment coverage, reducing new HIV infection and AIDS related death in SAARC Region.

The Health Sector of Member States of SAARC Region has been playing a pivotal role in the national response to HIV. Member States have enormous opportunities, in the context of universal health coverage, to further scale up their response to HIV with innovative service delivery models, including mass coverage and decentralization of HIV testing and treatment services. Some Member States also initiated integration of HIV services with maternal and child health services, family planning and tuberculosis control programme.

At the end of 2013, the SAARC Region have estimated 2.20 million people living with HIV/AIDS and more people than ever are receiving live saving antiretroviral treatment. Optimizing the outcome of HIV prevention, diagnosis treatment and care, Member States have focused on strengthening the health system too. The effective integration of health services is to ensure availability, access, affordability and quality, including strengthening of human resources, providing innovative approaches to service delivery and utilizing laboratory support. Also creating a supportive and enabling environment to ensure equitable access to HIV services and reducing HIV-related stigma and discrimination.

The significant results achieved over the last ten years can be largely attributed to the scientific, programmatic and governance innovations of the AIDS response. While the significant achievements in the AIDS response are encouraging, the epidemic is far from over and entrenched challenges still remain. Globally, HIV is the sixth leading cause of adult mortality and the largest killer among women aged 15– 49 years.

Health systems in many low- and middle-income countries need strengthening, as they are still unable to provide necessary HIV-related health services to the general population. Evidence suggests that an AIDS investment has improved not only the delivery of HIV-related services but strengthened health systems in many countries. At the same time, much more still need to be done to ensure this integrated and synergistic activities with health services particularly around sexual and reproductive health and maternal and child health.

MDGs era coming to an end this year, 2015, the Region has a historic opportunity to set a course for the next era of human development that is transformational for both people and planet.



# A STUDY ON KNOWLEDGE OF PULMONARY TUBERCULOSIS AND DOTS AMONG PULMONARY TUBERCULOSIS PATIENTS IN WEST TRIPURA DISTRICT, INDIA

Das R<sup>1</sup>, Baidya S<sup>2</sup>

<sup>1</sup> Department of Community Medicine, Tripura Medical College and Dr BRAM Teaching Hospital, Tripura, India

<sup>2</sup> Department of Community Medicine, Agartala Govt. Medical College, India

## ABSTRACT

**Introduction:** A study was conducted for six randomly selected designated Microscopy Centre areas of West Tripura District of India with objectives to assess the knowledge regarding Pulmonary Tuberculosis (PTB) and DOTS among the PTB patients and to identify the factors determining the knowledge.

**Methodology:** This cross-sectional study was conducted among 220 PTB patients registered for treatment with DOTS therapy during July 2011 to June 2012.

**Results:** The study showed that 29.10% of the patients had satisfactory knowledge of the disease and its treatment. Only 14.10% patients had the correct knowledge regarding the cause of the disease and 53.60% of the patients had the knowledge regarding the mode of transmission and measures for prevention. Again, 6.40% of the patients had the knowledge regarding the drug dosage schedule and 52.70% patients knew the duration of treatment. Satisfactory knowledge was found to be significantly higher among patients with education level of Higher Secondary or above, and patients who had prior knowledge of tuberculosis [OR-17.60(1.68-183.90)]. Again patients who had less income had 86% [OR-0.14 (0.03-0.64)] less chance of having satisfactory knowledge.

**Conclusion:** The overall knowledge level among the patients is unsatisfactory and there is urgent need of advocating educational activities among the patients.

**Key words:** Tuberculosis, DOTS, Knowledge, India

## INTRODUCTION

Tuberculosis is a chronic infectious disease that primarily affects the lungs and causes pulmonary tuberculosis.<sup>1</sup> It is well acclaimed that the perceptions regarding tuberculosis among the patients suffering from the disease influence their health seeking behaviour and increase the acceptance to the control measures and decrease the spread of the disease in community. But, a mass survey carried out by Central TB Division, Ministry of Health, Government of India, reported poor level of awareness regarding tuberculosis among

general population and very poor awareness among disadvantaged section of the society.<sup>2</sup>

However, no information was available in West Tripura District regarding the awareness of the disease among the pulmonary tuberculosis patients registered under Revised National Tuberculosis Control Program (RNTCP), which can reflect the current status of the patients in this district. Hence, the present study was conducted with the objective to assess the knowledge regarding the pulmonary tuberculosis and Directly Observed Treatment Short course (DOTS) chemotherapy among the patients; and to identify the factors determining the knowledge.

## Correspondence:

Dr. Rituparna Das  
Assistant Professor  
Department of Community Medicine  
Tripura Medical College and Dr. B.R.A.M. Teaching  
Hospital, Agartala -799014, Tripura, India.  
E mail: drrituparnad@gmail.com

## METHODOLOGY

This is a Cross-sectional study conducted among Pulmonary TB patients registered under RNTCP

in West Tripura District, Tripura, India. The district has 12 Designated Microscopy Centers (DMC), out of which six DMC was chosen by simple random sampling and the study was conducted among PTB patients registered for treatment, in all the 50 (fifty) DOT centers under the six selected designated microscopy centers. The study was conducted during November 2011 to October 2013.

Considering the adequate knowledge of pulmonary tuberculosis and its treatment among the PTB patients to be 69.75 percent (P), as found in a study conducted by Vijay S. et al<sup>3</sup> and an allowance of an error (E) of 10 percent of the knowledge and level of significance as 5 percent, the minimum required sample size for assessing the knowledge of pulmonary tuberculosis and its treatment among the patients was calculated to be 167, using the formulae:

$$\frac{Z^2_{\alpha/2} pq}{E^2}$$

However, the present study included 220 PTB patients registered under RNTCP within July 2011 to June 2012, in the six DMC, through systematic random sampling considering every second patient registered in the tuberculosis register maintained in each DMC.

The study included pulmonary tuberculosis patients who were ≥15 years of age and registered for treatment with DOTS therapy at least 3 months before from the date of interview. Those patients who were transferred out or transferred into the DMC area, who did not give consent for the interview and who could not be traced to their homes in spite of making 2 home visits were excluded from the study.

Data was collected by interviewing the randomly selected pulmonary tuberculosis patients in their home, using a structured, pre-tested, interview schedule and treatment documents of the patients; after taking written informed consent from them.

Data analysis has been done using Epi info version 7.0. Data were expressed in frequency, percentage and statistical analysis has been done using multiple logistic regression analysis.

**Measurement of knowledge:** Knowledge was

assessed through seven basic questions about the disease tuberculosis and its treatment (name of the disease prior to acquiring it, causative agent, disease infectivity, mode of transmission, curability, preventive measures taken by the patient and duration of treatment) as used by Mohammad Al et al.<sup>4</sup> A scoring system was designed to assess the level of satisfactory knowledge and each correct answer was awarded one point and each wrong answer was awarded as zero. Answering four out of the seven questions correctly was taken as a cut-off point between satisfactory and unsatisfactory knowledge since the median score was found to be four. Those scoring above four were considered to have satisfactory knowledge and those scoring 0 to 4 were considered to have unsatisfactory knowledge.

This study is a part of an original study which was sponsored by the Department of Biotechnology and was approved by the institutional ethics committee of Agartala Govt. Medical College.

## RESULTS

The present study conducted among 220 pulmonary tuberculosis patients registered under RNTCP revealed that majority of the patients were between 15 to 45 year age group and 76.40

**Table 1.** Socio-demographic profile of the study respondents

		Frequency (N=220)	%
Age group (in years)	15-30	73	33.20
	31-45	74	33.60
	46-60	48	21.80
	>60	25	11.40
Sex	Male	168	76.40
	Female	52	23.60
Educational status	Illiterate	67	30.40
	Primary	89	40.50
	Secondary	45	20.50
	H/S and above	19	8.60
Occupational Status	Unskilled	58	26.40
	Skilled	58	26.40
	Business	42	19.10
	Service/Pension	23	10.00
	Student	16	7.30
	Housewife	24	10.90



		Frequency (N=220)	%
Per capita income per month	<=500	81	36.81
	501-1000	63	28.63
	1001-1500	27	12.27
	1501-2000	19	8.63
	2001-2500	11	5.00
	>2500	19	8.63

Regarding the knowledge of pulmonary tuberculosis prior to acquiring it, 92.28 percent study participants had acquaintance to the name of the disease and majority of them heard of it, from the community (35.90%), and health personals (32.30%).

Regarding the knowledge of pulmonary tuberculosis, the study showed that 14.10 percent patients had the correct knowledge regarding the cause of the disease as microbial agent, and considered it an infectious disease, whereas majority of the patients (62.30%) had no idea regarding the causation of the disease. (table 2) The study also revealed that 53.60 percent of the patients had the correct knowledge regarding the mode of transmission and measures for prevention of the disease. Regarding the knowledge of the symptoms, all of the patients could mention one or the other symptom of tuberculosis, but the most common symptom known to them was cough (86.40%) followed by fever (50.50%). Regarding the knowledge of the curability of the disease majority of the respondents (95%) had the knowledge that the disease is curable with treatment, table 2.

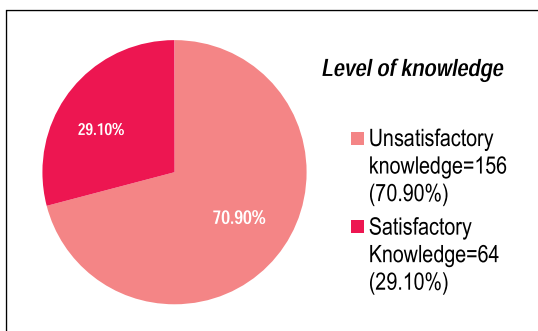
The study also revealed a poor knowledge regarding the name of the programme and the name of the therapy among the patients. However, 61.40 percent patients had the knowledge that the medicine has to be taken under supervision of the DOT provider and 52.70 percent of the patients had the correct knowledge regarding the duration of treatment. But the study also showed that majority (61%) of the patients had no idea whether the treatment can be stopped or not when the symptoms subside. Again the study also revealed that only 6.40 percent of the patients had the knowledge regarding the drug dosage schedule, which is an alarming fact, as the continuation phase of treatment mostly goes unsupervised, table 2.

Regarding their overall knowledge of pulmonary tuberculosis and DOTS, the study revealed that

29.10 percent of the patients had satisfactory knowledge of the disease and its treatment (figure 1). The mean Knowledge score of the participants was  $3.76 \pm 1.65$  (range 0 to 7, median score= 4).

**Table 2.** Distribution of patients according to the knowledge of Pulmonary Tuberculosis and DOTS

		Frequency (N=220)	%
Is TB an infectious disease	Yes	31	14.10
Cause of Tuberculosis	Microbes	31	14.10
	Smoking and alcohol	33	15.00
	Others	19	8.63
	Don't Know	137	62.30
Mode of transmission	Coughing and sneezing	118	53.60
	Physical Contact	37	16.80
	Sharing Utensils	16	7.30
	Others	14	6.36
	Don't know	72	32.70
Mode of Prevention	Cough etiquettes	118	53.60
	Safe disposal of sputum	29	13.20
	Avoiding Physical Contact	42	19.10
	Avoiding Sharing Utensils	34	15.50
	Don't know	54	24.50
Symptoms	Cough	190	86.40
	Fever	111	50.50
	Weight loss	32	14.50
	Chest pain	34	15.50
	Blood stained sputum	48	21.80
	Shortness of breath	13	5.90
Disease Curable	Yes	209	95.00
Name of the Program	Known as RNTCP	1	0.50
Name of the therapy	Known as DOTS	38	17.30
Supervised therapy	Knowledge present	135	61.40
Dosage Schedule	Knowledge present	14	6.40
Duration of therapy	Correctly said	116	52.70
Treatment can be stopped when symptoms subside	Yes	134	61.00



**Figure 1.** Pie chart showing the level of knowledge among the patients regarding PTB

Multiple logistic regression analysis showing factors affecting satisfactory knowledge revealed that, patients who were illiterate or had primary or secondary education had 95 percent [OR- 0.05 (0.00-0.33)], 89 percent [OR- 0.11 (0.02-0.57)] and 81 percent [OR- 0.19 (0.04-0.85)] less chance respectively of having satisfactory knowledge compared to those who were educated up to Higher Secondary or above, table 3.

**Table 3.** Multiple Logistic Regression analysis showing factors affecting satisfactory knowledge of pulmonary tuberculosis and DOTS

		P value	Odds Ratio (OR)	95% Confidence Interval for OR	
Age group (in years)	15-30	0.10	3.71	0.76	18.09
	31-45	0.67	1.38	0.30	6.36
	46-60	0.16	3.05	0.62	14.80
	>60	.	.	.	.
Sex	Male	0.50	0.70	0.24	1.99
	Female	.	.	.	.
Education	Illiterate	0.00	0.05	0.00	0.33
	Primary education	0.00	0.11	0.02	0.57
	Secondary education	0.03	0.19	0.04	0.85
	H/S and above	.	.	.	.
Occupation	Labor	0.00	4.75	1.56	14.45
	Household work	0.42	1.76	0.43	7.17
	Student	0.41	2.22	0.33	14.61
	Service / Business	.	.	.	.
Per capita family income (in Rupees)	<=500	0.01	0.14	0.03	0.64
	501-1000	0.36	0.52	0.12	2.11
	1001-1500	0.07	0.23	0.04	1.18
	1501-2000	0.59	0.630	0.11	3.48
	2001-2500	0.45	2.27	0.26	19.39
	>2500	.	.	.	.
Category of treatment	Cat- I	0.25	0.57	0.22	1.49
	Cat-II	.	.	.	.
Drugs taken in-	Home	0.15	1.91	0.77	4.72
	DOTS Centre	.	.	.	.
Prior Knowledge of TB	Yes	0.01	17.60	1.68	183.90
	No	.	.	.	.
Family History of TB	Yes	0.86	0.92	0.40	2.15
	No	.	.	.	.

The study also revealed that patients who were labor by occupation were found to be 4.75 times (1.56-14.45) more knowledgeable regarding tuberculosis compared to serviceman and businessman category. Again patients who had a per capita monthly income of ≤Rs 500 had 86 percent [OR- 0.14 (0.03-0.64)] less chance of having satisfactory knowledge compared to those who had a per capita monthly income of >Rs 2500. Table 3 also showed that those patients who had prior knowledge of tuberculosis before acquiring it, were 17.60 times (1.68-183.90) more knowledgeable regarding tuberculosis and its treatment.

## DISCUSSION

The present study conducted among 220 pulmonary tuberculosis patients revealed that majority of the patients had heard of tuberculosis prior to acquiring it; and the major source of information were community and health personals followed by media. This is consistent with a study conducted in Bengal by Das P et al<sup>5</sup> which showed that 91.30 percent of the patients had the acquaintance prior to acquiring the disease and the source of information was mostly from community. Again in another study conducted in Vietnam<sup>6</sup> 93 percent of the patients had information regarding tuberculosis from health worker followed by media. Thus we can see that beside informal contacts, health worker and media can act as major source of information regarding the disease among people at the grass root level.

In the present study the cause of the disease was known to 14.10 percent of the patients as germs whereas majority (62.30%) replied that they had no idea regarding the causation of the disease. The knowledge regarding the cause of the disease was found to be higher in our study compared to a study conducted in Rajasthan by Yadav et al<sup>7</sup>, where only 1.60 percent of the patients had the correct knowledge of the cause of the disease. But similar finding was obtained from studies conducted in Sudan<sup>4</sup> and Pakistan<sup>8</sup> where only 1.90 percent and 7.00 percent patients had the knowledge regarding the cause. But the study finding is lower than studies conducted in Aligarh<sup>9</sup>, Vietnam<sup>6</sup>, Libya<sup>10</sup>, Croatia<sup>11</sup> and Delhi<sup>12</sup> where 47.70 percent to 95 percent of the patients were aware regarding the cause of the disease.

The present study revealed that 53.60 percent of the patients had the knowledge regarding the transmission of the disease. The knowledge was higher compared to studies conducted in Pune<sup>13</sup>, Aligarh<sup>9</sup> and Bihar.<sup>14</sup> But the knowledge was lower than a study conducted in Vietnam<sup>6</sup> where 69.78 percent of the patients had the knowledge regarding the mode of transmission. Regarding the measures of prevention majority of the patients had the knowledge that by avoiding uncovered coughing (53.60%) and by safe disposal of sputum (13.20%) the disease transmission can be prevented. In a study conducted in Aligarh<sup>9</sup>, uncovered cough as a measure of prevention was said by 25 percent of the patients and safe disposal of sputum was said by 29.50 percent of the patients. Again the present study also revealed that many of the patients had the wrong concept that by avoiding physical contact (19.10%) and avoiding sharing utensils (15.50%), they could prevent the disease transmission. Similar finding was obtained in a study conducted in Libya<sup>10</sup> where 22.60 percent patients considered avoidance of the patient as a mode of prevention. This study thus showed that even in our state, there is an existing gap in the knowledge of the mode of transmission and the measures of prevention, showing an urgent need to advocate IEC activities to prevent transmission of infection in the community. The present study also showed that the most common symptom known to the patients was cough and fever. Similar finding was obtained from a study conducted in Aligarh<sup>9</sup> and Croatia.<sup>11</sup>

Regarding the curability of the disease 95 percent of the patients in West Tripura District had the knowledge that tuberculosis is curable. This finding is consistent with studies conducted in Aligarh<sup>9</sup> and Surat<sup>15</sup> where 95.50 percent of the pulmonary tuberculosis patients had the knowledge regarding the curability of the disease. Similarly, few studies conducted outside India in Croatia<sup>11</sup>, Bangladesh<sup>16</sup>, and Moroccan region<sup>17</sup> also showed that more than 95 percent of the patients considered the disease curable. Thus like other parts of the world the present study also revealed that the knowledge regarding the curability of the disease among the patients was very high.

The study again revealed that the patients had a poor knowledge regarding the name of the programme under which they were receiving the

free treatment, and also regarding the name of the therapy and the drug dosage schedule. But the patients had a fair knowledge that the medicine has to be taken under supervision.

Again, 39.10 percent of the PTB patients in the present study had the perception that the treatment can be stopped when symptoms subside. This was much higher than what has been found in Pakistan<sup>8</sup> where 18 percent patients had the same wrong perception. The correct duration of treatment was known to 52.70 percent of the patients in the present study. This finding is similar to a study conducted at Safdarjung Hospital, New Delhi, where 53.30 percent patients had the knowledge of the duration of treatment.<sup>18</sup> The study findings were also similar to what has been obtained from Sudan<sup>4</sup>, Vietnam,<sup>6</sup> and Aligarh<sup>9</sup>. But this was much below from what has been found in a study conducted in Croatia<sup>11</sup> and Nepal<sup>19</sup> where 82 percent and 82.40 percent of the patients had the correct knowledge regarding the duration of treatment respectively. Thus this study shows a definite gap regarding the knowledge among the patients on duration of the treatment and the necessity of advocating IEC activities among the patients.

When the knowledge of the patients was categorized into satisfactory and unsatisfactory, the present study showed that 29.10 percent of the patients had satisfactory knowledge regarding tuberculosis and DOTS therapy. Similarly a study conducted in Sudan by Mohammad A.I. et al<sup>4</sup> showed that 36.20 percent of the patients had satisfactory knowledge about tuberculosis and its treatment. Thus, the present study also showed that the knowledge of pulmonary tuberculosis and its treatment among the PTB patients is poor, like different studies conducted in different parts of the world.

The present study also revealed that satisfactory knowledge among the patients was significantly higher among educated patients, and patients with higher income. Similarly, education and income had significantly higher scores in a study conducted in Libya.<sup>10</sup> Similar finding was obtained from a study conducted in Vietnam<sup>6</sup>, where the knowledge of the patients were significantly associated with age and education of the patients.

The study also showed that those patients, who had prior knowledge of tuberculosis before acquiring it,

were 17.60 times more knowledgeable regarding tuberculosis. Similar finding was obtained from a study conducted in Tanzania by Wandwalo E.R. et al<sup>20</sup> which showed that patients with prior knowledge of tuberculosis were 9.28 times more knowledgeable regarding tuberculosis and its treatment.

## CONCLUSION

Thus this cross-sectional study highlighted that there is a definite knowledge gap among the patients regarding the cause, mode of transmission, preventive measures of the disease, and the duration and dosage schedule of the therapy; which should be definitely addressed by the DOTS providers and IEC materials.

**Acknowledgement:** An earnest thanks for this study goes to the Department of Biotechnology who sponsored the main study titled "A study on factors affecting treatment adherence and knowledge of pulmonary tuberculosis and DOTS among pulmonary tuberculosis patients in West Tripura District" of which the present study is a part. The authors are also grateful to the District Tuberculosis Centre (W) for their support and help in conducting the study.

## REFERENCE

1. Kasper DL, Braunwald E, Fauci A, Hauser S, Longo D, Jameson JL. Harrison's principles of internal medicine. 16<sup>th</sup>ed. New York: McGraw Hill Medical publishing division 2005;953-65.
2. IEC Baseline survey: Central TB Division; August 2007.
3. Vijay S, Kumar P, Chauhan LS, Vollepore BH, Kizhakkethil UP, Rao SG. Risk Factors Associated with Default among New Smear Positive TB Patients Treated Under DOTS in India. PLoS ONE 2010; 5:10043:10:1371.
4. Mohamed A.I, Yousif M.A., Ottoa P., Bayoumi A. Knowledge of Tuberculosis: A Survey among Tuberculosis Patients in Omdurman, Sudan. Sudanese Journal of Public Health 2007;2:21-28.
5. Das P., Basu M., Dutta S., Das D. Perception of tuberculosis among general patients of tertiary care hospitals of Bengal. Lung India. 2012;29:319-324.

6. Hoa N. P., Diwan V. K., Co N. V., Thorson A. E. K. Knowledge about tuberculosis and its treatment among new pulmonary TB patients in the north and central regions of Vietnam. *Int J Tuberc Lung Dis* 2004;8:603–608.
7. Fochsen G, Deshpande K, Diwan V, Mishra A, Diwan VK, Thorson A. Health care seeking among individuals with cough and tuberculosis: a population-based study from rural India. *Int J Tuberc Lung Dis*. 2006;10:995-1000.
8. Khan JA., Irfan M., Zaki A., Beg M., Hussain SF., Rizvi N. Knowledge, Attitude and Misconceptions regarding Tuberculosis in Pakistani Patients. *J Pak Med Assoc*. 2006;56:211-14.
9. Khalil S., Ahmad E., Khan Z., Perwin N. A study of knowledge and awareness regarding pulmonary tuberculosis in patients under treatment for tuberculosis in a rural area of Aligarh – UP. *Indian J of Community Health* 2011;23:93-95.
10. Solliman M.A., Hassali M.A., Al-Haddad M, et al. Assessment of Knowledge towards Tuberculosis among general population in North East Libya. *Journal of Applied Pharmaceutical Science* 2012;24-30.
11. Savicevic AJ., Popovic-Grle S., Milovac S., et al. Tuberculosis knowledge among patients in out-patient settings in Split, Croatia. *Int J Tuberc Lung Dis*. 2008;12:780–85
12. Fochsen G, Deshpande K, Diwan V, Mishra A, Diwan VK, Thorson A. Health care seeking among individuals with cough and tuberculosis: a population-based study from rural India. *Int J Tuberc Lung Dis*. 2006;10:995-1000.
13. Bogam R. Knowledge of Tuberculosis: A Survey among Tuberculosis Patients at Tertiary Health Care Center in Pune City. *GRA*. 2013;2:128-29.
14. Devey J. Report on a knowledge, attitude, and practice (KAP) survey regarding tuberculosis conducted in Northern Bihar. 23 April 2001.
15. Vidhani M., Vadgama P. Awareness regarding pulmonary tuberculosis - a study among patient taking treatment of tuberculosis in rural Surat, Gujarat. *National Journal of Medical Research*. 2012;2:452-55.
16. Tasnim S., Rahman A., Hoque FMA. Patient's Knowledge and Attitude towards Tuberculosis in an Urban Setting. *Pulmonary Medicine*. 2012;1-5.
17. Tachfouti N, Slama K, Berraho M, Nejari C. The impact of knowledge and attitudes on adherence to tuberculosis treatment: a case-control study in a Moroccan region. *Pan African Medical Journal*. 2012;12:52.
18. Matta S, Singh D, Bhalla S, Rasania S, Singh S and Sachdev TR. A study on knowledge and family attitude of patients regarding Pulmonary Tuberculosis attending the DOTS Center of Safdarjang Hospital, New Delhi. *Indian J. Prev. Soc. Med*. 2005;36:16-20.
19. Bhatt CP, Bhatt AB, Shrestha. Knowledge of Tuberculosis Treatment – A Survey among Tuberculosis Patients in (Dots) Program In Nepal. *SAARC J. Tuberc. Lung Dis. HIV/AIDS* 2010;7:10-14.
20. Wandwalo E. R., Morkve O. Knowledge of disease and treatment among tuberculosis patients in Mwanza, Tanzania. *Int J Tuberc Lung Dis* 2000;4:1041–46.

## KNOWLEDGE AND ATTITUDE TOWARDS HIV/AIDS AMONGST NURSING STUDENTS IN NEPAL

Adhikari K<sup>1</sup>, Gupta N<sup>2</sup>, Koshy AK<sup>3</sup>, Jain VM<sup>4</sup>, Ghimire A<sup>5</sup>, Jnawali K<sup>6</sup>, Paneru DP<sup>7</sup>

<sup>1</sup> Department of Community Medicine, National Medical College and Teaching Hospital, Birgunj, Nepal

<sup>2</sup> Department of Health Sciences, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad, India

<sup>3</sup> Department of Community Medicine, National Medical College and Teaching Hospital, Birgunj, Nepal

<sup>4</sup> Department of Health Sciences, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad, India

<sup>5</sup> Department of Nursing, The Himal Institute of Health sciences, Birgunj, Nepal

<sup>6</sup> School of PMER, Ghattekulo, Kathmandu, Nepal

<sup>7</sup> School of Health and Allied Sciences, Pokhara University, Kaski Nepal

### ABSTRACT

**Introduction:** Effective nursing care by well-trained hands and affectionate heart constitute the backbone of medical intervention in HIV/AIDS. The apprehension often articulated by health professionals while dealing with people living with HIV/AIDS hampers in health care. The purpose of the present study was to assess the extent of knowledge and attitude towards HIV/AIDS amongst nursing students.

**Methodology:** The present cross-sectional study was conducted among 113 selected proficiency certificate level nursing students of Parsa district of Nepal. Pre-tested anonymous questionnaire was administered to collect the responses necessary to infer the extent of knowledge on HIV/AIDS and nature of attitude towards PLWHA. The extent of knowledge was measured through an overall knowledge index constructed based on the responses to 10 objective questions. To ascertain the respondent's overall attitude, responses to various opinions were scored and summed upto form an attitude index.

**Results:** Almost half of the nursing students had good knowledge while almost a quintile numbers had incomplete knowledge about HIV/AIDS. Majority of them had negative attitude towards the care of PLWHA.

**Conclusions:** In aggregate, nearly half of the respondents had good knowledge about the various aspects of HIV/AIDS; however, majority of them had negative attitude towards the care of PLWHA. The overall knowledge and attitude of senior class was better than their junior counterparts. The training programmes for nurses should aim at confidence and skill building to deal with HIV issues.

**Key words:** Knowledge, Attitude, HIV/AIDS, Nursing students

### INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) is a devastating condition which is alarmingly progressing globally. HIV infection in Nepal is characterised as concentrated epidemic with the prevalence of 0.30 per cent among adult aged 15–49 years in 2011.<sup>1</sup>The consequences of AIDS is

disastrous as the young and productive age groups of the population are at the centre of the HIV/AIDS epidemic.<sup>2</sup>Lack of universal adherence to infection control protocols, such as injection safety, poses a great risk for occupational exposure to HIV infection.<sup>3-6</sup> Deviation from protocol in practices during nursing care of the HIV infected patients maximize the vulnerability of care providers to the HIV infection.<sup>7</sup>

Nursing care of HIV/AIDS patients appears to be surrounded by some form of mystique, as it is different from nursing care of other patients. Truly, the actual difference lies not in the actual care itself, but has evolved from the various psycho-social

#### Correspondence:

Dr. Damaru Prasad Paneru  
School of Health and Allied Sciences, Pokhara University,  
Kaski Nepal  
E-mail: damaru.paneru@gmail.com



and ethical issues surrounding AIDS. An 'attitude' is the mental fitness to engage in the execution of the task.<sup>8</sup> The process of changing attitudes requires that the individual objectively examine the critical elements of the attitude and identify those components that are valid and those that are prejudgements.<sup>9</sup> The non-supportive attitude of the nurses towards the care of HIV/AIDS patients can adversely affect the nursing procedure and as such the overall case management. Positive encouragement and reassurance is of great value to the patient since many HIV/AIDS patients see their diagnosis as a death sentence.<sup>10</sup> Considering the sensitivity of the issues involved within the nursing care of the person affected by AIDS and nursing professions itself, the authors in this study attempted to assess the knowledge and attitude among Proficiency Certificate Level (PCL) nursing students regarding HIV/AIDS.

## METHODS

This was a cross-sectional quantitative study conducted among the PCL nursing students during January 2011. As per the provisions, an educational institute offers admission to a maximum of 40 students every year. A pre-tested, close ended anonymous questionnaire was distributed to all the 120 nursing students of the Parsa district of Nepal with an objective of assessing their knowledge and attitudes towards HIV/AIDS. The respondents were explained the objectives of the study and invited to participate. Written consent was taken from all the respondents after explaining the purpose of study. Ethical approval was taken from the Institutional Review Board (IRB) of National Medical College and Teaching Hospital, Birgunj, Nepal. The extent of knowledge of an individual student on HIV/AIDS was measured on the basis of the given response to 10 objective questions, the correct response to each question was given the score '1' and incorrect or not-sure response the score '0'. To categorize the student's overall level of knowledge, a knowledge index was constructed and scaled as: poor knowledge (index score  $\leq 3$ ), moderate knowledge (index score 4-6) and good knowledge (index score  $\geq 7$ ).

To ascertain the respondent's attitude, an overall attitude index was constructed based on the

individual respondent's degree of agreement or disagreement (the 5 point Likert scale was adopted) with the 10 given opinion statements. The scores obtained against each statement were summed up to assign the total index score for an individual respondent. Finally, the overall attitude index was scaled (in order to categorize an individual's overall attitude towards PLWHA) as: score  $< 2$ : poor (negative) attitude, score 2 – 2.9: moderate (somewhat positive) attitude and score  $\geq 3$ : good (strong positive) attitude. Data were compiled and then entered into Microsoft excel. Thus, entered data was transferred to Statistical Package for Social Science (SPSS 16.0 version) for the analysis. P value less than 0.05 was considered significant.

## RESULTS

Of the total 120 nursing students approached to participate in the present study, 113(94%) had returned the completed questionnaire.

Out of total 113 respondents who had returned the questionnaire with their responses, 38 (33.63%) were the students of first year, 35 (30.97%) were of second year and 40 (35.40%) were of the third year PLC in nursing. Their mean age was  $17.56 \pm 2.71$  years. Majority of the participants (69.13%) had their schooling from English medium schools and most of the parents or guardians of these students (71.67%) were job holders. About three quarters of all the respondents (76.99%) knew correctly the full form of AIDS. Significant variation was noticed among students of different years. Only 55.00% students of first year as compared to 95.00% among the third year students could give the correct response. Knowledge level among various levels of students was found significantly different ( $p=0.01$ ) as shown in table 1. Students had comparatively good knowledge on modes of transmission of HIV infection. Overall, 95.00% of students had knowledge of HIV transmission through unprotected sexual contact while 75.00% were known about the mother to child transmission. There was significant difference between the knowledge of first, second and third year nursing students on mode of HIV transmission ( $p=0.01$ ) (table 2).

**Table 1.** Student's knowledge on full form of AIDS

Course Year	Correct response	Incorrect response	Total	P&df value
First (n=38)	21(55.26)	17(44.74)	38(100.00)	P=0.01, df=2
Second (n=35)	28(80.00)	7(20.00)	35(100.00)	
Third (n=40)	38 (95.00)	2(5.00)	40 (100.00)	
Total (n=113)	87(76.99)	26(23.01)	113(100.00)	

**Table 2.** Correct knowledge on mode of transmission of HIV infection

Course Year	Sexual contact	Blood transmission	Con-taminated needle and syringe	Infected Mother to baby	P&df value
1 <sup>st</sup> (n=38)	33(86.84)	28(73.68)	30(78.94)	18(47.37)	P=0.01 df=6
2 <sup>nd</sup> (n=35)	34(97.14)	31(88.57)	32(91.43)	27(77.14)	
3 <sup>rd</sup> (n=40)	40(100.00)	38(95.00)	36(90.00)	38(95.00)	
* Total	107(94.69)	97(85.84)	98(86.73)	83(73.45)	

\*Multiple responses, Figures in the parenthesis denote percentages

Only half of the respondents had good knowledge on methods of disposal of needles and syringes after use. Only about 31.00%, 46.00% and 75.00% had good knowledge on this regard on first, second and third year students respectively. The knowledge difference between various years students was statistically significant ( $p=0.001$ ) (table 3).

**Table 3.** Knowledge regarding methods of disposal of needles and syringes after use

Year	Bend the needle and throw in the dustbin	Disposed in proof container with disinfectant	Throw in the dustbin directly	Recap the used needles and throw in the dustbin	P&df value
First (n=38)	10 (26.32)	12 (31.58)	8(21.05)	8 (21.05)	p=0.001 df=6
Second (n=35)	7 (20.00)	16 (45.71)	7(20.00)	5 (14.29)	
Third (n=40)	3 (7.50)	29 (72.50)	6(15.00)	2 (5.00)	
Total	20 (17.70)	57 (50.44)	21(18.58)	15(13.27)	

(Figures in the parenthesis denote percentages)

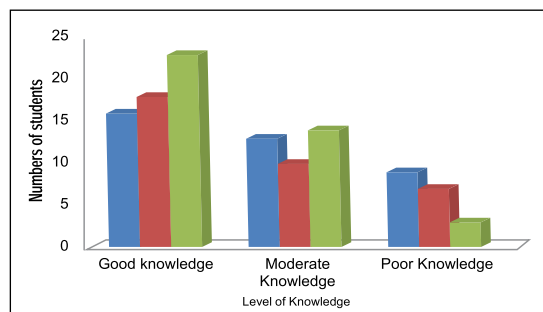
Nearly 57.00% of total respondents were aware that youths are commonly affected by HIV infection. The majority of third year students (83.00%) were aware of this fact as compared to second

year (57.00%) and first year (35.00%). These differences were statistically significant ( $p=0.003$ ) (table 4).

**Table 4.** HIV/AIDS knowledge of respondents about most commonly affected age group

Commonly affected age group	First Year (n=38)		Second Year (n=35)		Third Year (n=40)		Total		P&df value
	No	%	No	%	No	%	No	%	
Infant	8	21.05	6	17.14	1	2.50	15	13.27	P=0.003, df=6
Child	12	31.58	5	14.28	4	10.00	21	18.58	
Youth	13	34.21	20	57.15	33	82.50	66	58.42	
Old age	5	13.16	4	11.43	2	5.00	11	9.73	
Total	38	100	35	100	40	100	113	100	

On the account of overall knowledge level, nearly half of the nursing students had good knowledge followed by moderate knowledge (33.00%). Surprisingly, there were nearly 17.00% of the respondents had poor knowledge on HIV/AIDS. The overall knowledge level was higher amongst the seniors nursing students than their junior counterparts and these knowledge differences were statistically significant ( $p=0.03$ ) (figure 1). Though, majority of nursing students were having positive attitude towards the care of PLWHA in hospital, Very high proportion of nursing students had negative attitude. Many of them had fear of getting HIV infection due to their day to day clinical practices (56.70%). Many of respondents had prejudices regarding the care for PLWHA (28.40%) (table 5).



**Figure 1.** Knowledge among the students regarding HIV/AIDS



Attitude related statements	1st Year		2nd Year		3rd Year		Total	
	Agree/ Strongly agree	Disagree/ strongly disagree	Agree/ Strongly agree	Disagree/ strongly disagree	Agree/ Strongly agree	Disagree/ strongly disagree	Agree/ Strongly agree	Disagree /strongly disagree
A nurse should keep distance during the care of a HIV positive patient	24 (63.16)	12 (31.58)	17 (48.57)	18(51.43)	8 (20.00)	29 (72.50)	49(43.36)	59 (52.21)
The body of an AIDS patient should not be touched without wearing the gloves	19 (50.00)	14 (36.84)	13 (37.14)	21(60.00)	10(25.00)	27 (67.50)	42(37.17)	62 (54.87)
HIV patients should be referred to other centers or support groups for treatment	22 (57.9)	11 (28.95)	14 (40.00)	17 (48.57)	6 (15.00)	31 (77.50)	42(37.17)	59 (52.21)
HIV infected patients are allowed to school or work	16 (42.11)	18 (47.37)	23 (65.71)	10 (28.58)	34 (85.00)	4 (10.00)	73(64.60)	32 (28.32)
Nurses should have a right not to care for AIDS patients	26 (68.42)	8 (21.05)	14 (40.00)	22 (62.86)	5 (12.50)	30 (75.00)	45(39.82)	60 (53.10)
After graduation, you will not hesitate working on a unit that has a high numbers of HIV positive patients	9 (23.68)	23 (60.53)	27 (77.14)	7 (20.00)	38 (95.00)	1 (2.50)	74(65.49)	31 (27.43)
Because of your clinical practices, you worry about being exposed to HIV infection.	21(55.26)	7 (18.42)	12 (34.29)	21 (60.00)	3 (7.50)	36 (90.00)	36(31.86)	64 (56.64)
The nurses who work in the department having high numbers of HIV positive patients should get more salary.	23 (60.52)	9 (23.68)	14 (40.00)	17 (48.57)	6 (15.00)	32 (80.00)	43(38.05)	58 (51.33)
Even with the high precautions on infection prevention methods, HIV can be transmitted during patient care.	24 (63.18)	11 (28.95)	11 (31.43)	23 (65.71)	8 (20.00)	27 (67.50)	43(38.05)	61 (53.98)
It is better to refrain caring to PLWHA in hospital than regretting after being infected.	26 (68.42)	7 (18.42)	12 (34.29)	21 (60.00)	7 (17.50)	29 (72.50)	45(39.82)	57 (50.44)

(Figures in the parenthesis denote percentages)

Overall, 39.80% of students (23.70% of first year, 68.60% of second and 55.00% of third year) had positive attitude towards the care of AIDS patient. Nearly 31.00% of students (29.00% for first year, 31.40% of second year and 32.53% of third year) had moderate attitude towards HIV and AIDS patients. Surprisingly, a very high percentage (29.20%) of nursing students had negative

attitudes towards the care of PLWHA. The overall attitude of senior class nursing students was better than their junior counterparts and these attitude differences were statistically significant. ( $p=0.01$ ) There was positive correlation between knowledge and attitude of all the first, second and third year nursing students having ( $r$ ) values of 0.59, 0.78 and 0.81 respectively (table 6).

Table 6. Level of attitude towards HIV and PLWHA							
Year	Good		Moderate		Poor		P&df value
	No	%	No	%	No	%	
First (n=38)	9	23.68	11	28.95	18	47.37	P= 0.01 df=4
Second (n=35)	14	68.57	11	31.43	10	28.57	
Third (n=40)	22	55.00	13	32.50	5	12.50	
Total	45	39.82	35	30.97	33	29.20	

Mean knowledge score and SD of first, second and third year nursing students were  $5.07 \pm 1.91$ ,  $5.71 \pm 1.38$  and  $6.72 \pm 1.56$  respectively whereas attitude score and SD were  $2.05 \pm 0.72$ ,  $2.48 \pm 0.77$  and  $3.03 \pm 0.52$  respectively (table 7).

Table 7. Overall knowledge and attitude score of respondents					
Knowledge scores					
Variable	Mean	Median	S.D	Range	Mode
First year	5.07	5.0	1.91	7	5
Second year	5.71	6.0	1.38	6	6
Third year	6.72	7	1.56	7	8
Attitude scores					
Variable	Mean	Median	S.D	Range	Mode
First year	2.05	2.05	0.72	2.6	2
Second year	2.48	2.5	0.77	2.6	3.1
Third year	3.03	3.2	0.52	1.6	3.6

## DISCUSSION

Our findings show generally good knowledge of the HIV/AIDS; however, a large number of them had incomplete knowledge and misconceptions especially with regard to full form of AIDS, pathogenicity of HIV/AIDS, mode of transmission, and methods of prevention. In aggregate, nearly half of the respondents were having good knowledge at the same time one third of all respondents were having moderate knowledge. The above observation support the findings of previous studies carried out among different categories of health care and management professionals.<sup>11,12</sup> However, this observation needs attention of the health policy makers and authorities of the Nursing Colleges.

The level of knowledge was found different among various years nursing students where overall

knowledge level of senior level students was high from their junior counterpart and these knowledge differences were statistically highly significant. Similar study conducted on Turkey revealed identical findings that Scores increased parallel with students' grade.<sup>13</sup>

It was found a willingness of majority of nursing students to attend HIV infected and AIDS patients. This finding revealed that the majority of the nursing students have no reservation in accepting any offer in regard to caring for HIV/AIDS patients after completion of the study. (65.5%) However, few of them had prejudices regarding treatment of the HIV infected patient due to fear of transmission of HIV. However, it is apparent that additional information is required regarding the transmissibility of HIV infection; to correct the noted misconceptions such as HIV could be transmitted by shaking hands, staying in the same room, studying in the same school etc. There problem therefore, appears to be inadequate knowledge of HIV and AIDS infection control rather than lack of enthusiasm.

Majority of the nursing students have shown the interest to accept any offer in regard to caring for HIV/AIDS patients in their future nursing life which shows the commitments of the nursing students towards their profession. Their attitude and outlook really deserve appreciation. There was positive co-relationship between knowledge and attitude of the all first, second and third year nursing students which is consistent with the findings in some other studies.<sup>14-15</sup> However, some researchers observed contradictory attitude of health care professionals in this regard.<sup>16-18</sup> The present study findings contradict with the observation of two previous studies might be because of they are yet to be exposed to real job situation. The overall attitude of senior class was good from their junior counterpart and these attitude differences were found statistically highly significant. There was an association between the dependent variables and nursing grade levels, in that the higher the grade of the nurse, the more positive attitudes they had. Whether this is a purely educational association remains to be ascertained. Closely identical results were revealed from some other studies conducted among nursing students.<sup>19</sup>

It is apparent that many health care professionals like doctors and nurses feel they have inadequate clinical and counselling skills to deal with HIV and

its implications. Thus, the training programmes for health care professionals like nurses, doctors and other categories of health workers should aim at increasing the confidence and skills so that they can cope with HIV issues.

There were some limitations of the study such as considerably small size of study population and only inclusion of PCL nursing students from the college.

## CONCLUSION

Nursing students had good knowledge in various aspects of HIV/AIDS; however, level wise differences in the knowledge were evident amongst them. In aggregate, nearly half of the respondents had good knowledge. Majority of them had negative attitude towards the care of PLWHA. The overall attitude of senior class was better than their junior counterparts. Thus, the training programmes for nurse should aim at increasing the confidence and skills so that they can cope with HIV issues.

## ACKNOWLEDGEMENTS

We are very grateful to Ms. Babita Singh, Vice-Principal, NMC Birgunj and Ms. Jyoti Kapar, Nursing Instructor for helping us during collection of data.

## REFERENCE

1. Ministry of Health and Population, Nepal. Country Progress Report, National Centre for AIDS and STD Control, Kathmandu, Nepal 2012.
2. Joshi DR, Khatri DB, Rosyara KP, Malla B. Do behavioural patterns of university students of Nepal make them vulnerable to HIV/AIDS? *J Inst of Med.* 2007;29:13-17.
3. Kermode M. Unsafe injections in low-income country health settings: need for injection safety promotion to prevent the spread of blood-borne viruses. *Health Promot Int.* 2004;19:95-103.
4. Nsubuga FM, Jaakkola MS. Needle sticks injuries among nurses in sub-Saharan Africa. *Trop Med Int Health* 2005;10:773-81.
5. Oyeyemi A, Oyeyemi B, Bello I. Caring for patients living with AIDS: knowledge, attitude and global level of comfort. *J Adv Nurs.*2006;3:196-204.
6. Ehlers VJ. Challenges nurses face in coping with the HIV/AIDS pandemic in Africa. *Int J Nurs Stud* 2006;43:657-62.
7. Mbanya DN, Zebaze R, Kengne AP, Minkoulou EM, Awah PB. Knowledge, attitudes and practices of nursing staff in a rural hospital of Cameroon: how much does the health care provider know about the human immunodeficiency virus/acquired immune deficiency syndrome? *Int Nurs Rev.* 2001;48:241-9.
8. Reber AS. *The Penguin Dictionary of Psychology*, London: Penguin Books.
9. Sowunmi A and Ikhemuemhe G. "Playing the ostrich", *Policy (Lagos)*, 1988;22:9-14.
10. Gross RD. *Psychology-The science of mind and behaviour*, London: Edward Arnold 1987 - 658.
11. Beedham H and Wilson-bernet J. HIV and AIDS care: consumers' views on needs and services. *J AdvNurs* 1995;22:677-86.
12. Kudbe SS, Zodpey SD, Vasudeo ND. AIDS awareness among nursing students. *Ind J Pub Health.* 1995;39:109-11.
13. Dobe M. Awareness on AIDS among health care professionals. *Ind J Pub Health.* 1995;39:105-08.
14. Bektaş HA, Kulakaç O. Knowledge and attitudes of nursing students toward patients living with HIV/AIDS (PLHIV): a Turkish perspective. *AIDS Care* 2007;19:888-94.
15. Ross MW. Distribution of knowledge of AIDS: a national study. *Soc Sci Med* 1988;27:1295-98.
16. Abdeyazdan Z, Sadeghi N. Knowledge and attitude toward AIDS/HIV among senior school students in Isfahan. *Iran J Clini Infect Dis.* 2008;3:93-98.
17. Klimse I, Catalan J, Day A. Knowledge and attitudes of health care staff about HIV infection in a health district with low HIV prevalence. *AIDS Care.* 1989;1:313-317.
18. Wormser GP, Joline C. Would you eat cookies prepared by an AIDS patient? Survey reveals harmful attitudes among professionals. *Postgrad Med.* 1989;86:174-83.
19. Mccann TV. Reluctance amongst nurses and doctors to care for and treat patients with HIV/AIDS. *AIDS Care* 1999;11:355-59.
20. Melby V, Boore J, Murray M. Acquired immunodeficiency syndrome: knowledge and attitudes of nurses in Northern Ireland. *J AdvNurs.* 1992;17:1068-77.

## A GENDER BASED STUDY OF HIV/AIDS RELATED KNOWLEDGE AND SEXUAL ATTITUDES IN STUDENTS FROM LADDAKH

Sood S

P.G. Department of Psychology, University of Jammu, Jammu, Jammu and Kashmir, India

### ABSTRACT

**Introduction:** A review of studies conducted on sexuality in India has revealed that premarital sex in youth is prevalent in 0-10 percent of women and 15-30 percent men and it is on rise. The young people indulge in risky behavior pattern such as infrequent or irregular contraceptive use. Youth is facing a significant risk of sexual health and lack in making informed sexual choice. The objective of this study is to explore the HIV/AIDS related knowledge and sexual attitudes held by young students from Laddakh

**Methodology:** Systematic sampling was used to collect data from 100 Laddakhi students living in Jammu in the age range 18-29 years. The mean age of the sample was 22.28. Sexual Attitude Scale and HIV Related Knowledge Questionnaire were applied in this study.

**Results:** The results of test indicate significant gender differences in sexual attitudes. The male Laddakhi students held more favourable attitude towards pre marital sex, polygamy and pornography than their female counterparts. In comparison to male participants, the young female participants reflected favorable attitude towards establishing same sex relationships. The participants in the study also hold misconceptions about HIV/AIDS.

**Conclusions:** In addition to low level of awareness on HIV/AIDS, holding favorable sexual attitudes might result in involvement in risky sexual behavior. Organizing awareness campaigns at school level to focus the youth might be useful in curbing the potential involvement of young students in risky sexual behavior.

**Key words:** Gender difference, HIV/AIDS, Risky behavior, Sexual attitudes, Youth

### INTRODUCTION

Sexual behavior is innate and based on drive, though modified by social factors. Cultural conditioning accounts for sexual expression.<sup>1</sup> Indian culture based on rigid norms governing sexuality assumes that premarital sex is rare. However, increase in sexually transmitted infections, unintended teenage pregnancies and threat of HIV/AIDS draws our attention to explore the current trends in sexuality in India. A review of studies conducted on

sexuality in India has revealed that premarital sex in youth is prevalent in 0-10 percent of women and 15-30 percent men<sup>2,3</sup> and it is on rise.<sup>4,5</sup> The young people indulge in risky behavior pattern such as infrequent or irregular contraceptive use.<sup>2</sup> Youth is facing a significant risk of sexual health and lack in making informed sexual choice.<sup>6</sup> A study conducted on youth in Mumbai revealed that young people had limited awareness of most of the sexual matters such as HIV/AIDS and safe sex practices.<sup>7</sup> In depth awareness of HIV/AIDS is limited in youth though 91 percent of young men and 73 percent of young women had heard about it.<sup>7</sup>

Knowledge of HIV/AIDS and sexual attitudes among youth are of particular interest as the period between menarche and marriage is for many young people a time of sexual experimentation that may involve high-risk behaviours.<sup>8</sup> The majority of people with HIV/AIDS can be associated with

### Correspondence:

Dr. Sarita Sood  
Assistant Professor  
P.G. Department of Psychology,  
University of Jammu, Jammu  
Jammu and Kashmir, India.  
Email: sarita.sood@yahoo.com

certain lifestyle risks. Gender differences are reflected in previous studies conducted to assess sexual attitudes and risky behavior. More than 60 percent college students from China approved of premarital sex showing favorable attitude of the youth.<sup>9</sup> In a study on young female migrant workers in China, low level of sex-related knowledge has been demonstrated along with nearly 13% of participants holding favorable attitude towards premarital sexual intercourse.<sup>10</sup> Gender differences were reported in sexual attitudes and behavior reflecting more liberal attitudes and more frequent behaviors among male participants than females.<sup>11</sup> In a study conducted in China too, the males reflected more favorable attitude towards premarital sex.<sup>12</sup> Similarly, in a literature review conducted on sexual attitudes, it was found that permissive sexual attitudes in men was higher than in women<sup>13</sup> whereas conservative attitudes toward sexuality were reported to be more in women.<sup>14,15</sup> In a survey on 265 college students, high HIV related knowledge was reported but gender differences became evident with larger number of males holding unfavorable sexual attitudes.<sup>16</sup> Gender differences are evident in young people in North India with respect to more permissive attitudes for involvement of males in premarital sex, homosexual acts and extramarital sex.<sup>17</sup> In a study on university students in Malawi no differences were evident.<sup>18</sup> Mixed results were reported in a study conducted in Nigeria on the University students having knowledge about transmission and symptomatology but some misconceptions about transmission were also reported.<sup>19</sup> Similar findings were reported showing sound knowledge of HIV but with some misperceptions about transmission.<sup>20</sup> Gender differences in knowledge about HIV/AIDS in young college going population in India were reported with boys having better knowledge than girls.<sup>21</sup>

In the light of findings from previous research, this study was designed to explore gender differences in HIV related knowledge and sexual attitudes of young students hailing from Laddakh region of the state of Jammu and Kashmir (India). The population in the age-group 15-29 years, referred to as 'Youth', as per National Youth Policy-2014<sup>[22]</sup> is regarded as being the most vulnerable to HIV/AIDS. Additionally the people who stay away from their home or have migrated are likely to be at greater risk since the experiences of isolation and loneliness might elevate the risky behavior which

in turn might account for vulnerability to HIV/AIDS.<sup>[23]</sup> Therefore, the current study also aims to assess HIV/AIDS awareness in the young students who have moved away from their home and are staying elsewhere.

## METHODOLOGY

Cross sectional design was followed for the collection of data. Using the systematic random sampling technique, the data was collected from the young students belonging to Laddakh region. The first participant in each area where the Laddakhi students stayed was selected randomly and thereafter, every tenth young Laddakhi student was selected. Only the students who were residing in Jammu city, away from their home, either in hostel or on rent (paid accommodation) were considered for the study. The consent of the participants was sought and the purpose of research was explained to them prior to administration of the tools. Confidentiality of the responses and personal information was assured. The young students unwilling to participate were not compelled. The collection of data was completed in ten days.

The tools used in the study were sexual Attitudes Scale<sup>24</sup> measures attitudes in five areas of human sexuality namely premarital sex, polygamy, pornography, lesbianism (for women) and homosexuality (for men). Responses are marked on five point scale ranging from strongly agree to strongly disagree. The lower scores indicate unfavorable attitudes towards particular scale. HIV Related Knowledge Questionnaire<sup>25</sup> adopted from Health Initiatives for Youth and the Measurement Group was employed. It comprises of eighteen statements with two options true and false. The participants were required to check out the appropriate option. The hypotheses were; there will be significant differences in sexual attitudes of young male and female Laddakhi students, there will be significant differences in HIV related knowledge of young male and female Laddakhi students and the young Laddakhi students will be having correct HIV related knowledge.

Regarding the sample; due to harsh weather conditions and inadequate facilities in Laddakh region, the young people move out of their home and approach the institutions about other regions to get proper education in the state Jammu and Kashmir. The sample chosen for the current study



comprised of 100 Laddakhi students staying in Jammu of which 50 were male and 50 were female. These students had solely moved from their native place for seeking higher education. These students were from Leh or Kargil districts in Laddakh region of the state of Jammu and Kashmir (India). All the participants were either staying in rented or paying guest accommodation or hostel away from their own family. The age range of the sample was 18 to 29 years with the mean age 22.28.

## RESULTS

The data collected using the tools were coded and analyzed using SPSS version 20. Mean and S. D. were calculated and Independent Samples *t* test was employed to obtain any significant gender differences. The frequencies and percentages were also obtained to assess the HIV/AIDS related knowledge held by the youth. The demographic details of the sample are presented in table 1.

**Table 1.** Demographic characteristics of the sample

Variable	Category	N (100)
Gender	Male	50
	Female	50
Age Range	18-23	66
	24-29	34
Religion	Buddhist	94
	Muslim	6
Education	Senior Secondary	67
	Graduate	12
	Post Graduate	21
Place of Residence	Hostel	50
	Rented Accommodation	50

**Table 2.** Gender Differences in Sexual Attitudes and HIV Related Knowledge in Young Laddakhi Students

Variable	Sex	N	Mean	S.D.	t	P Value
Pre-marital Sex	Male	50	28.72	10.764	3.883**	0.000
	Female	50	20.48	10.453		
Polygamy	Male	50	20.68	6.234	3.161**	0.002
	Female	50	16.32	7.498		
Pornography	Male	50	29.96	5.491	4.035**	0.000
	Female	50	25.48	5.610		
Lesbianism / Homosexuality	Male	50	19.40	4.707	2.446*	0.016
	Female	50	22.94	9.087		
Overall Sexual Attitudes	Male	50	99.20	19.430	3.244**	0.002
	Female	50	84.98	24.144		
HIV Related Knowledge	Male	50	10.62	2.069	0.438	0.662
	Female	50	10.80	2.040		

Gender differences in sexual attitudes and HIV related knowledge were analyzed through applying independent samples *t* test. Results presented in Table 2 clearly reveal that there are no gender differences in HIV related knowledge. However, gender differences are apparent in sexual attitudes. On the three dimensions of sexual attitude scale namely, pre-marital sex, polygamy, and pornography, the male participants have shown favorable attitude. The overall score on sexual attitudes also is higher among males. This reflects that the study population is more likely to involve in risky behaviors as they might be sexually active prior to matrimony. They might establish several sexual relationships or involve in sexual activities with more than one partner simultaneously. The viewing of erotic material is also likely to be higher in males. An opposite trend was noticed in case of attitude toward lesbianism and homosexuality. As compared to males, the female participants have shown favorable attitude only in establishing same sex relationships. These findings are in line with previous studies.<sup>12,13,14, 15,16, 21</sup> see table 3.

**Table 3.** Summary of the previous findings

Dimension	Authors/ Researchers	Year	Findings
Pre-marital Sex	• Wang B, Li X, Stanton B, et al.	2007	Favorable and permissive attitude for males
	• Bhugra D, Mehra R, deSilva, P et al.	2007	
Polygamy	• Bhugra D, Mehra R, deSilva, P et al.	2007	Permissive attitude for males
Lesbianism/ homosexuality	• Bhugra D, Mehra R, deSilva, P et al.	2007	Permissive attitude for males
Overall Sexual Attitudes	• Fugere M A, Escoto C, Cousins A J et al.	2008	Unfavorable attitudes held by males; Permissive attitudes for males and conservative attitudes for females
	• Askun D, Ataca B.	2007	
	• Jaya J, Hindin M J.	2007	
HIV Related Knowledge	• Lal, SS, Vasan, RS, Sarma, PS et al.	2000	Better knowledge in males

The data were further subjected to assess the correct HIV related knowledge held by the participants. Percentage of the responses of the participants to each statement (item wise) was obtained. Table 4 shows HIV related knowledge in young Laddakhi students. On scrutinizing the data, it is revealed that the participants of the study hold certain misconceptions. The correct response rate on most of the statements is not very high. It is important to assess HIV related knowledge as its understanding and promoting safe behavior. The item stating "Condoms reduce the risk of getting the AIDS virus" and "having sex without a condom increase a person's risk of getting HIV" reflects that majority of the participants know the importance of contraceptive use in HIV prevention.

The low level of awareness on certain statements (Table 4) along with holding favorable sexual attitudes might result in indulgence of the young students in risky sexual behavior. In particular, the males participating in current study seem to be at greater risk as they have more favorable sexual attitudes. The incorrect knowledge about the statement "A person must have lots of sexual partners to be at risk for HIV" shows propensity of

indulging in risky behavior as it is well supported by favorable attitude or polygamous relationships.

## DISCUSSION

The HIV/AIDS awareness campaigns at the state level need to be geared up for such population that falls in age range 18-29 years and are in such phase. The clear and relevant information may be even disseminated at the school level specially when they are at the verge of entering the adulthood and become sexually active. This would also be helpful as it will equip the young students with adequate knowledge before they actually move out of the home, away from their parents, into the setup where they might be on their own taking decisions by themselves.

The findings of this study may be replicated for future research with the larger sample. Moreover, the studies with different ethnic groups will help in establishing if there are similar trends in the young students from distinctive cultural backgrounds and if such issues need to be dealt in culturally specific manner.

No.	HIV related knowledge	Correct response	Incorrect response
1	Blood, Semen, Vaginal fluids, and breast milk are the only fluids that can transmit HIV.	84%	16%
2	Semen has higher concentration of HIV than blood.	33%	67%
3	A hangnail is a potential route of HIV infection.	68%	32%
4	HIV antibodies can take up to 10 years to show up.	66%	34%
5	In confidential testing, name is associated with results.	61%	39%
6	Most babies born to HIV positive mothers are not HIV positive.	13%	87%
7	Mucous membranes in anus are more delicate than the membranes in mouth.	61%	39%
8	Keeping in good physical condition is the best way to prevent getting the AIDS virus.	48%	52%
9	A person can get AIDS by kissing and hugging someone.	88%	12%
10	Condoms reduce the risk of getting the AIDS virus.	97%	3%
11	Most people with the AIDS virus quickly show signs of being sick.	44%	56%
12	Having sex without a condom increase a person's risk of getting HIV.	97%	3%
13	A person must have lots of sexual partners to be at risk for HIV.	7%	93%
14	People who get the AIDS virus through needle sharing cannot spread the virus during sex.	78%	22%
15	There is a cure for HIV.	62%	38%
16	Cleaning injection equipment with water is good way to kill HIV.	70%	30%
17	You can get HIV from oral sex.	22%	78%
18	Keeping in good physical condition can prevent the development of AIDS virus.	58%	42%

## REFERENCE

1. Ford CS, Beach FA. Patterns of Sexual Behavior. New York: Harper & Row, 1951.
2. Abraham L, Kumar KA. Sexual Experiences and their Correlates among College Students in Mumbai City, India. *International Family Planning Perspectives* 1999;25:139-46.
3. Jejeebhoy S. Adolescent Sexual and Reproductive Behaviour: A Review of the Evidence from India. In R. Ramasubban and S. Jejeebhoy, eds., Jaipur: Rawat Publications. Women's Reproductive Health in India 2000;40:101
4. Ghule M., Balaiah D. Correlates of Sexual Behavior of Rural College Youth in Maharashtra, India. *Eastern Journal of Medicine* 2011;16:122-32.
5. Ghule M, Balaiah D & Joshi B. Attitude towards Premarital Sex among Rural College Youth in Maharashtra, India. *Sexuality and Culture* 2007;11:1-17.
6. International Institute of Population Sciences (IIPS) and Population Council. Youth in India: Situation and needs study. Conducted by International Institute of Population Sciences and Population Council 2006. Available from [http://www.popcouncil.org/pdfs/IndiaUpdate/IndiaUpdate\\_YouthStudy.pdf](http://www.popcouncil.org/pdfs/IndiaUpdate/IndiaUpdate_YouthStudy.pdf) [Last accessed on 2012 August 1].
7. International Institute of Population Sciences (IIPS) and Population Council. Youth in India: Situation and needs study 2006-2007. Mumbai: IIPS 2010. Available from [http://www.popcouncil.org/pdfs/2010PGY\\_YouthInIndiaReport.pdf](http://www.popcouncil.org/pdfs/2010PGY_YouthInIndiaReport.pdf) [Last accessed on 2012 August 1].
8. Parasuraman S, Kishor S, Singh, SK, Vaidehi Y. A Profile of Youth in India. National Family Health Survey (NFHS-3), India, Mumbai: International Institute for Population Sciences; Calverton, Maryland, USA: ICF Macro 2005-06, 2009
9. Huang K, Uba L. Premarital Sexual Behavior among Chinese College Students in the United States. *Archives of Sexual Behavior* 1992;21:227-40.
10. Tang J, Xiaohui G, Yu Y, Ahmed et al. Sexual Knowledge, Attitudes and Behaviors among Unmarried Migrant Female Workers in China: A Comparative Analysis. *BMC Public Health* 2011;11:917.
11. Joshi PD. Indian Adolescent Sexuality: Sexual Knowledge, Attitudes and Behaviours among Urban Youth. *Psychological Studies*, 2010;55:181-87.
12. Wang B, Li X, Stanton B, et al. Sexual Attitudes, Pattern of Communication, and Sexual Behavior among Unmarried Out-of-school Youth in China. *BMC Public Health* 2007;7:189.
13. Fugere M A, Escoto C, Cousins A J, Riggs ML, Haerich P. Sexual Attitudes and Double Standards: A Literature Review Focusing on Participant Gender and Ethnic Background. *Sexuality and Culture* 2008;12:169-82.
14. Askun D, Ataca B. Sexuality Related Attitudes and Behaviors of Turkish University Students. *Archives of Sexual Behavior* 2007;36:741-52.
15. Jaya J, Hindin M J. Premarital Romantic Partnerships: Attitudes and Sexual Experiences of Youth in Delhi, India. *International Perspectives on Sexual and Reproductive Health* 2007;35:97-104.
16. Dekin B. Gender Differences in HIV-Related Knowledge, Attitudes, and Behaviours among College Students. *American Journal of Preventive Medicine* 1996;12:61-66.
17. Bhugra D, Mehra R, deSilva, P et al. Sexual Attitudes and Practices in North India: A Qualitative Study. *Sexual and Relationship Therapy* 2007;22:83-90.
18. Natata PR, Muula AS, Siziya S, Kayambazinthu EE. Gender Differences in University Students' HIV/AIDS-Related Knowledge and Sexual Behaviours in Malawi: A pilot Study. *Sahara Journal* 2008;5:201-05.
19. Harding AK, Anadu EC, Gray LA, Champeau DA. Nigerian University Students' Knowledge, Perception, and Behaviours about HIV/AIDS: Are these Students at Risk? *The Journal of Royal Society for the Promotion of Health* 1999;119:23-31.
20. de Beer I H, Gelderblom HC, Schellekens O, et al. University Students and HIV in Namibia: An HIV Prevalence Survey and a Knowledge and Attitude Survey. *Journal of International AIDS Society* 2012;15:9.
21. Lal, SS, Vasan, RS, Sarma, PS et al. Knowledge and Attitude of College Students in Kerala towards HIV/AIDS, Sexually Transmitted Diseases and Sexuality. *The National Medical Journal of India* 2000;13:231-236.



22. National Youth Policy, Ministry of Youth Affairs & Sports, Government of India – 2014.
23. Joint United Nations Programme on HIV/AIDS (UNAIDS)
24. Population Mobility and AIDS, UNAIDS Technical Update UNAIDS, Geneva, Switzerland 2001.
25. Abraham, A. Sexual attitude scale, National Psychological Corporation, Agra, India 1997.
26. Health Initiatives for Youth and the Measurement Group: HIV related knowledge questionnaire 1998. Available from [http://www.themeasurementgroup.com/modules/hify\\_eye/hivknow.pdf](http://www.themeasurementgroup.com/modules/hify_eye/hivknow.pdf) [Last accessed on 2012 May 25].

## RESURGENCE OF EXTRA PULMONARY TUBERCULOSIS

Bag S<sup>1</sup>, Deep N<sup>2</sup>, Padhy S<sup>3</sup>

<sup>1</sup> Medical Education & Training, Odisha, Bhubaneswar, India

<sup>2</sup> AIIMS, Bhubaneswar, India

<sup>3</sup> MKCG Medical College, Berhampur, India

### ABSTRACT

**Introduction:** Pulmonary tuberculosis is a public health challenge in the developing Nations. Extra pulmonary tuberculosis (EPTB) is still more challenging. EPTB with co-infection with human deficiencies virus (HIV) and malnutrition further aggravate the problems, the worst human health scenario in 3<sup>rd</sup> world's nation. The objective of the study was to explore the magnitude of Extra tuberculosis and to assess the challenge faced in encountering the patient with malnutrition, HIV infection etc.

**Method:** All cases of tuberculosis registered under RNTCP in between 2009 - 2012 in MKCG Medical College, Berhampur, Odisha, India were scrutinized, 2596 case of EPTB were fished out. Details clinical, socio-economic, demographic, HIV status & treatment outcome of these patients were subjected to critical analysis.

**Results:** Even though high prevalence of EPTB is encounter in poor socio-economic, rural back ground and people living with HIV and AIDS, upper and middle classes are not exempted complexities of diagnostic and therapeutic challenges are more often then not observed. Outcome is grim in immune weakened cases.

**Conclusion:** This study emphasized the resurgence of extra pulmonary tuberculosis involving all classes of people in Indian sub-continent. Challenges faced are delineated and determinant of clinical outcome in developing Nations have been highlighted.

**Key words:** DOTS, RNTCP, BPL & APL, Socio-economic Status and Malnutrition,

### INTRODUCTION

Tuberculosis remains a biggest public health challenge in India. Nearly two millions new tuberculosis (TB) cases are reported every year, two deaths occur every three minutes making it one of the deadliest in the country.<sup>1</sup> Pulmonary tuberculosis (PTB) essentially experience in rural and poverty background, increasingly extra pulmonary tuberculosis (EPTB) is being diagnosed across the nation, its incidence is 10-15-% in general and more than 50% in HIV co- infection

population.<sup>2</sup> The rate of increase of new EPTB over rides that of the new TB cases. Forms of EPTB envisioned in order of commonness are lymphnode tuberculosis (LNTB), pleural, bones and joint, Urogenital, meningeal, peritoneal and others.<sup>3</sup> The critical issue here in this context is the identifying the magnitude of the problems of EPTB, perceived challenges and then building jointly an adequate answer to them. The objectives of the study were to describe the characteristic of EPTB in Indian subcontinent and to assess on factors that may contribute to disproportionately high prevalence in this population and to explore the association between age, sex socio-economic status and demographic parameter and risk of EPTB in Indian subcontinent. The aims of the study were to provide over view of EPTB in Indian subcontinent, pitfall and challenges while dealing with EPTB and impact assessment of HIV on EPTB and vice-versa and RNTCP on EPTB.

### Correspondence:

Dr. S. Bag,  
Director,  
Medical Education & Training Odisha,  
Bhubaneswar - 751001, India  
Email - sonamalibag04@gmail.com

Although many identifiable factors like poverty & malnutrition, overcrowding frequent, migration of labour, diabetes mellitus, alcohol, smoking have been discriminated to PTB<sup>4,5</sup>, host specific vulnerability are lacking in EPTB. Non specific symptoms and low yield of mycobacteria from presume site of involvement pose greater challenges, even though the basis principle of seeking mycobacterium tuberculosis isolation at every opportunity applies to EPTB as well. Histopathological, smear microscopy and culture, validated cartridge - base nucleic amplification test, adenosine deaminase are acceptable option.<sup>6</sup>

In the era before HIV pandemic, EPTB constitute 10-15% of all cases of TB in general practice. Resurgence of EPTB in post HIV pandemic delineates twin significant observation. HIV infected persons have markedly increased risk for primary or reactivation TB and second episodes of TB from exogenously re-infection. Thus EPTB accounts for very high prevalence in HIV +ve individuals.<sup>2,9</sup>

The treatment of EPTB follows standard Revised National Tuberculosis control programme (RNTCP). Guidelines depending on categorization and is consistent with international recommendation by WHO and International Union against Tuberculosis and Lung Disease (IUATLD). RNTCP is based on directly observe therapy short course (DOTS) and are instituted thrice weekly for six months.<sup>10</sup> In tuberculosis meningitis (TBM) injection streptomycin instead of ethambutol and continuation phase up to six or seven months extending the total duration of treatment to eight to nine months. Steroid used and tapered over a period of six to eight weeks. It's worth mentioned here that EPTB seriously ill/not seriously ill depends on site of disease and condition of the patients.

**Table 1.** Sources RNTC classification of EPTB

Seriously ill	Not seriously ill
TB meningitis disease	Lymph node TB (LNTB)
TB pericarditis	Unilateral plural effuses
Bilateral and extensive plural effuse on	Bone excluding spine
Spinal TB with neurological complication (potts paraplegia)	Peripheral Jt
Genito-urinary TB	

Recently there has been change in categorization, new Cat- I & Retreatment (Cat-II) with abolition of Cat-III but it is yet to be geared up.<sup>10</sup> With growing evidence it is globally recommended, that HIV infected TB patients should be treated with daily regimen.<sup>11</sup>

## METHODOLOGY

Cases of tuberculosis have been reported in MKCG Medical College India over a period of five years from 2009-2013 were analyzed. Relevant diagnosis protocol adopted, treatment records and its outcome were diligently viewed and recorded.

Socio-economic status (Below Poverty Line (BPL) and Above Poverty Line (APL) and demographic profile Age, Sex, urban/rural background, poverty and malnutrition, migration of labour, overcrowded slums/homeless, alcoholism /smoker drug abuse and other relevant finding were documented. Proportion of EPTB, patients tested for HIV +ve were scaled out.

## Observation

Of the 14032, cases of new tuberculosis reported, 2596 (18.51%) had extra pulmonary involvement of tuberculosis including 2492 with exclusive extra pulmonary disease and 104 with pulmonary and extra pulmonary tuberculosis. HIV tested were positive for 541 (20.83%).

**Table 2.** Site specific EPTB

Site	Total	%	HIV +ve (Sero positive)
Lymphonode	1525	58.74	315
Pleural	515	19.83	48
Abdominal	218	8.38	48
Disseminated TB	106	4.06	36
Spine TB	84	3.23	58
TBM	94	3.62	32
Skin/eye	18	0.69	2
Renal/GUT	32	1.23	NIL
Tuberculoma	4	0.15	2
<b>Total</b>	<b>2596</b>		<b>541(20.83)</b>

## Socio-economic and demographic profile

The mean age of EPTB was 32years (SD 18.5year) with male preponderance (male 1516

(58.39%), female-1080 (14.6%). seventy eight percent belongs to BPL category, remaining are from affluent background (APL). Eighty percent (80%) were with rural back ground mostly labour classes and slum dwellers. Alcohol consumption and smoking habit are invariably observed.

Vague generalized aesthenia with low grade irregular fever were the common clinical presentation seen 93.5% of cases followed by nodular swelling, abdominal and nonspecific chest pain. The site of involvement is represented in table 2.

### Diagnostic Profile of patients

<b>Table 3.</b> Laboratory investigation-multiple investigation done in some cases, overlapping avoided			
S. No.	Diagnostic Profile	No of patients HIV +ve = 541	
A	Clinical profile	All	- Outcome
B	FNAC/Biopsy smear and histopath study (HP)	1498	HP confirmed in 1250 HIV -ve 58 HIV+ve cases.
C	Isolation of AFB/culture Sputum AFB smear +ve	408 pleural fluid and 42 disseminated	- 18pleural fluid (14HIV negative, 4HIV+ve) and 22 HIV -ve sputum + 12 HIV + ve sputum =52 smear for AFB+ve)
D	Bio-chemical cytological	Pleural fluid- 408 cases Cerebrospinal fluid 44 cases Ascitic fluid 98 cases	- All cases pleocytosis with lymphocytic pre dominance - Protein is raised - Glucose level normal.
E	Radiological X-ray chest Ultrasound CT scan	TB abdomen 98 TB Spine78 Disseminated TB 42 TBM 44 Other 10	Disease specific imaging features detected.
		2596	1360(52.38%)

Among the 2596 EPTB including 541 HIV positive cases, isolation of AFB possible in 18cases from pleural fluid & 34 from sputum in disseminated tuberculosis respectively. LNTB had FNAC/biopsy done showed tubercular granulomatous changes in smear/ Histopathology suggesting confirmation of diagnosis in 1250 HIV negative and 58 HIV positive cases.

All case of plural effusion and spine TB had undergone X-ray of the affected parts.

All cases of the abdominal (98) TB Spine 78, TBM (44) & others 10 had undergone disease specific imaging of the presumed site of involvement.

Over all 52.38% had confirmation of diagnosis through isolation of AFB bacteria from body fluid and with HP evaluation (1360 of 2596) cases. Remaining 1236 cases (47.61%) diagnosis was based on clinical ground with indirect supportive evidence (biochemical, cytological and radiological, of which majority are HIV +ve cases, 467 of 541 (86.32%).

### Outcome of RNTCP DOTS therapy

<b>Table 4.</b> Not all patients had relevant records some patient lost followed up, hence the total present in the table do not tally with total number of patient. N-2596				
Site	Treatment completed (HIV-ve)	Death	Treatment completed (HIV+ve)	Death
LNTB	1498	NIL	248	48
Plural effusion	408	6	38	10
Spine TB	78	2	40	4
Abominated	98	NIL	42	4
Disseminated	42	4	12	6
TBM	44	8	30	10
Others	10	NIL	1	NIL
<b>Total</b>	<b>2178 (83.8)</b>	<b>20 (0.91)</b>	<b>411 (78.8)</b>	<b>82 (19.91%)</b>

The 2178 out of 2596 (83.8%) EPTB, HIV Negative TB including 411 out of 541 (75.97 %) HIV positive cases completed the prescribed treatment protocol. The death rate outnumbered (19.91) in the later group then the former 0.91% lost to follow up was a major problem.

## DISCUSSION

Pulmonary tuberculosis (PTB) is the most common form of tuberculosis<sup>12</sup> of all types of TB in India accounting for 70-90% (12), EPTB constitute 10-15% of TB. The situation is further grim in people living with HIV and AIDS (PLWHA) 52-67%,<sup>13</sup> when compared to the distribution of all newly diagnosed cases of tuberculosis in the population in the developing countries, a greater proportion of newly diagnosed EPTB occur in India<sup>9</sup> while TB can develop at any CD<sub>4</sub> T cell count, EPTB and disseminated form rise as immunodeficiency increase.<sup>15</sup> There is decreased incidence of TB in HAART compared to ART-naïve HIV infected persons. Since 1987, EPTB has been accepted as an AIDS defining disease.<sup>14</sup> HIV infected persons have markedly increased for primary or reactivation TB and for second episodes of TB from exogenous re-infection.<sup>2,3</sup> The current study also experience high incidence of EPTB (20.83) in patient with HIV co-infection. This increase in number has social and economic consequence in developing economy.

Socio-economic factors like poverty, malnutrition and tuberculosis are both problems of considerable magnitude in India. It is important to consider, how these problems tend to interact with each other. The link between tuberculosis and malnutrition has long been recognized; malnutrition may predisposed people to the development of clinical disease and tuberculosis can contribute to malnutrition. The direct evidence of effect of nutrition on tuberculosis is difficult because of whole complex of coincident environmental factors, never the less the weight of evidence still favours the view that malnutrition may be an important factor in the high mortality and morbidity from tuberculosis, three import questions are. Does malnutrition predispose to tuberculosis infection? Does malnutrition influence or modify the course of establish tuberculosis infection? Do nutritional factors influence their response to chemotherapy?

In the instance study, EPTB prevalence is very high in BPL and rural background (78%) suggests low income leading to nutritional deficiencies, a contributing factor for such a high prevalence.

Substantial experimental evidence suggests that malnutrition can lead to secondary immune

deficiency that increases the host susceptibility to infection. Increased risk of tuberculosis can result from alteration in the individual protective function of lymphocytes and macrophages because of nutritional insult. Thus Nutritional supplementation may represent a novel approach for test recovery in tuberculosis patients, raising nutritional status of population may prove to be an effective measure to control tuberculosis in developing nation.<sup>15,16,17</sup>

Overcrowding, slum, migration of labour, homeless, drug abused, alcoholic and smoker are equally linked to HIV and TB. TB & HIV act in deadly synergy. HIV infection increase the risk exposure to TB, progression of latent to active and death if HIV are not treated timely manner.<sup>5</sup>

Contrary to the previous belief "TB being a poor man disease", more and more EPTB are notified in affluent societies. It affects people across all socio-economic strata, no group is exempt. Logically HIV is common amongst affluent societies and TB is common infection in People PLWHA. Thus TB can affect middle and upper class as well. If the immune system is not impaired, a person infected in tubercular bacillus has 10% risk during their life time of developing activities. The co-infection with HIV & TB possesses numerous risks, 10% risk per year of contracting TB.<sup>18</sup> HIV epidemic has been main reason for resurgence of the EPTB. Expose to TB is in evitable in the developing nation. But natural immunity keeps the germ at bay but often factors like the modern work culture, stressful work erratic life style weakened the immune and trigger disease, accounting for such high prevalence of EPTB in APL groups.<sup>16,17</sup>

Of the 2596 patients with EPTB, 2187 including 411-HIV positive cases successfully completed. DOTS therapy as prescribed, lost to follow up was a major problems. Response to treatment, morbidity and mortality differ significantly between HIV negative and HIV positive group (0.91% Vrs19.91%). There has been increased rate of Drug Resistant TB, Multi Drug Resistant (MDR) and extremely drug Resistant (XDR) in HIV positive population which is difficult to treat and contribute to increase mortality. Treatment of HIV-TB co-infection is complex and associated with high drug toxicity and challenge related to adherence. Worldwide TB is most common opportunistic infection affecting HIV sero-positive individual and it is most common

cause of death in patients with AIDS.<sup>18</sup> The overall favourable response varied from 87 to 99 % and all forms of EPTB except TB. Meningitis and other HIV associated EPTB where one third of the patients responded to treatment.<sup>5,8 &14</sup>

In present series response viewed 83.31 percent in all form of EPTB except TB meningitis and other HIV associated EPTB where one third of patients responded to treatment. These findings are similar to those reported.<sup>19</sup>

In summary extra pulmonary tuberculosis is more common in people living with HIV and AIDS, Malnutrition, Poverty with rural background are predisposing factors. Even though it is prevalent in people with Below Poverty Line (BPL) group, upper and middle class (APL) are not exempted from the disease. The extra-pulmonary tuberculosis underlines the important of developing acumen for early diagnosis and institution therapy within the existing systems. It is recommended that HIV is one of the common co-infection and the deadliest combination of the two devastating killer disease, needs a diligent fresh look. Its diagnostic challenge is difficult to treat; drug toxicity and Drug resistant warrant immediate exploration.

## REFERENCE

- Lopez AD, Mothers CD, Ezzali M, Jamison DT. Global and regional burden of disease and risk factor 2001; systematic analysis of population health data lancet 2006;367:1747-57.
- Mohan A, Sharma SK. Epidemiology in Sharma SK, Mohan A, (Editor) Tuberculosis New Delhi, Jaypee Brother's Brother Medical Publisher 2001 P-14-29.
- Sharma SK, Mohan A. Extra pulmonary tuberculosis, *Indian J of Med Res* 2004;120:316-53.
- Muriyandi M, Ramchandran R, Balasubrananian R, Narayan PR. Socio-economic dimension of Tuberculosis: Review of study over two decade from TRC. *J. comn Dis* 2006;38:204-15.
- Dollin PJ, Ravignone MC & Kochi A. Global Tuberculosis and mortality during 1990-2000, Bull World Health Organization 1994;72:213-20.
- World Health Organization Standards for TB care in India, standard testing for extra pulmonary tuberculosis 2014;30-32.
- Deepjyoti V, Usha R sing, Kamlesh Sexena, Arate Bhatia, Bibha Talwar. Diagnosis of tubercular cervical lymphadenitis by FNAC, Microbiology & Culture, *Indian J Tuberculosis* 1991;38:25.
- Jain R, Sawhneys, Bhargava DK, Berry M. Diagnosis of Abdominal Tuberculosis : sonographic finding in patient with early disease. *Am J : Roentgenol* 1995;165:1391-5
- Freser Ware, Balasubrananian R, A. Mohan, SK. Sharma. Extra-pulmonary Tuberculosis: management and control, Tuberculosis control in India 2010;95-114.
- WHO guideline for treatment of tuberculosis 2010 update. www.tbcindia.org
- World Health Organisation (WHO) in standard for TB care in India – addressing TB & HIV condition and co-morbid condition 2014; 51.
- S Tripathy, A Ananda, V. Inamadar. Clinical response of newly diagnosis HIV sero positive and sero negative pulmonary tuberculosis patient with RNTCP - short course regiment in Pune in India. *Indian J Med Research* 2011;521-528.
- Corbett E.L., watt CJ, Walker N et al growing Burden of tuberculosis global trends and inter action with HIV epidemic Arch Intern Med 2003;163:1009.
- Sharma Sk. Mohan A. Co-infection with human immune deficiency virus (HIV and Tuberculosis, Indian prospective. *Indian J Tuberculosis* 2004;51-16.
- HIV TB in India-By Soumya Swaminathan and V. Narendra. Deptt. of Clinical Research, TB Research Centre, India.
- Rao KN, Gopalan C. The role of nutritional factors in tuberculosis, *Indian J Tuberculosis* 1966;13:102-6.
- Krishna Behari Gupta, Rajesh Gupta, Atulya Atreja, Manishverma, Suman V. Tuberculosis and nutrition. *Lung India* 2009;26:9-16.
- Godfrey fausette P and H. Ayles. Can we control tuberculosis in high HIV prevalence setting? *Tuberculosis (Edins)* 2003; 83:68-76.
- K. Venugopal, PR srelatha, Sairu Philip & Vijaya Kumar. Treatment outcome of Neuro Tuberculosis patients put on DOTS, *Indian J of tuberculosis* 2008;55:1990-2002.



## SURVEILLANCE OF HIV INFECTION AMONG PATIENTS WITH TUBERCULOSIS IN NEPAL

Sah SK<sup>1</sup>, Verma SC<sup>1</sup>, Bhattarai R<sup>1</sup>, Bhandari K<sup>2</sup>, Bhatta GK<sup>3</sup>

<sup>1</sup> National Tuberculosis Centre, Thimi, Bhaktapur, Nepal

<sup>2</sup> National Centre for AIDS and STD control, Teku, Kathmandu, Nepal

<sup>3</sup> SAARC Tuberculosis and HIV/AIDS Centre, Thimi, Bhaktapur, Nepal

### ABSTRACT

**Introduction:** Tuberculosis is one of the most prevalent infectious disease and significant public health problem in Nepal. The importance of HIV surveillance among tuberculosis (TB) patients is increasingly being recognized as the HIV epidemic continues to fuel the global TB epidemic. In many countries the HIV prevalence in TB patients is a sensitive indicator of the spread of HIV into the general population. The aim of this study is to find out the HIV epidemic among TB patients.

**Methodology:** This was a periodic sentinel survey, i.e. cross-sectional HIV Sero-prevalence survey of all newly registered TB cases above 15 year old to provide point estimate. This survey was carried out in six major diagnostic centres of tuberculosis of Nepal from July 2012 to February 2013. The calculated sample size for the surveillance study was 1000. The findings were processed/analyzed using SPSS (version 16) computer software. Descriptive statistics was used to observe the pattern in each variable.

**Results:** The study revealed that four-fifth (80.9%) TB patients investigated were pulmonary positive and one-fifth (19.1%) extra pulmonary. Prevalence of HIV among tested TB patients was 2.4% and prevalence was comparatively more (2.8%) in Male than Female (1.4%). Sentinel site wise prevalence of HIV was higher (6.7%) in United Mission to Nepal (UMN), Palpa followed by 3.1%, 2.9% and 2.7% in District Public Health Office (DPHO), Kanchanpur, International Nepal Fellowship (INF), Nepalgunj and Regional tuberculosis Centre (RTC), Pokhara respectively. Comparatively prevalence was low (1.3%) in National Tuberculosis Centre (NTC), Thimi and not a single case of HIV among tested TB patients was found in Nepal Anti-TB Association (NATA), Biratnagar. Significant proportion (7.8%) of HIV prevalence was found in the age group of 35-39 years followed by 4.6%, 3.6% and 2.8% among the age group of 40-44 years, 50-54 years and 30-34 years age group respectively.

**Conclusion:** Among all TB/HIV co-infected, significant proportion is found in 35-39 years and lowest in 20-24 age group. Therefore, it is important to implement targeted interventions in the age group between 30-55 years age group. Provider Initiated Testing and Counseling (PITC) in TB clinical setting plays important role to enroll more TB patients for HIV test.

**Key words:** HIV clients, TB/HIV Co-infection, Pulmonary and Extra Pulmonary TB, ART, PITC

### INTRODUCTION

Tuberculosis (TB) is one of the most prevalent infectious disease and significant public health

problem in Nepal and continues to pose serious threat to the health of the population and development of the country. Tuberculosis usually affects the lungs (Pulmonary TB) but it can also occur in other parts of the body (Extra-pulmonary TB). Every person who inhales the droplets will not develop TB disease unless his immunity status is poor. It is estimated that only 10% of infected people will develop the disease. Extra pulmonary TB is virtually never infectious.

#### Correspondence:

Mr. Sujit Kumar Sah  
TB/HIV Coordination Officer  
National Tuberculosis Centre, Thimi, Bhaktapur,  
E-mail: sujitmph12@gmail.com

WHO estimates prevalence of all types of tuberculosis cases for Nepal at 74,000 (223/100K) while the number of all forms of incidence cases is estimated around 50,000 (163/100K). With the introduction of Directly Observed Treatment Short course (DOTS) number of deaths has dramatically reduced from 9712 (51/100K) in 1990 to 6200 in 2010 (21/100K).<sup>1,2</sup>

The HIV pandemic presents a massive challenge to the control of TB at all levels. These two diseases are inextricably linked. There is an unprecedented scale of epidemic of HIV-related tuberculosis that demands effective and urgent action. TB is the leading cause of death among People Living with HIV/AIDS (PLWHA) and HIV, through immune suppression, fuels the TB epidemic. Currently, the most powerful risk factor for developing TB disease is HIV. After TB infection, a person with HIV have 10% annual risk and 60% life-time risk of developing TB disease, compared with a 10% life-time risk for person's without HIV. The HIV epidemic, therefore, creates a large pool of persons at high risk of developing TB and, as a result, increases the pool of persons who will ultimately develops TB and transmit TB to HIV-infected and HIV uninfected persons. HIV-infected patients can develop TB at any level of immune-suppression.<sup>3,4</sup>

Thus HIV prevention and care must be a priority concern for TB Prevention and Control Programmers and TB care and prevention should be a priority concern for HIV/AIDS Prevention and Control programmers. As the HIV/AIDS and TB epidemics have progressed, surveillance has become a critical activity in understanding the trends of the epidemics and in enabling sound strategies to be developed for responding to these challenges. Surveillance of HIV among TB patients is important as the HIV epidemic has continued to fuel the TB problem. Since 1996 NTP has conducted five rounds of HIV prevalence surveys among TB patients with two to three year interval. The first survey conducted in 1995/96 established HIV prevalence among TB patients at 0.60% while in the latest survey (2006/07) this has risen to 2.40%.

## METHODOLOGY

This was a periodic sentinel sero-prevalence survey for measuring HIV prevalence among TB patients. This survey was carried out among all

new smear positive, smear negative and extra pulmonary TB patients who were consenting and >15 year old. Survey was carried out in six major diagnostic centres of tuberculosis of Nepal from July 2012 to February 2013. None consenting and patients less than 15 year of age were excluded from the survey.

The calculated sample size for the surveillance study was 1,000. These 1000 samples were obtained from the 6 different diagnostic centers; samples were distributed according to prevailing workload of the selected sites. Consecutive sampling method were used i.e. every patient who met the eligibility criteria at a particular site was included in the survey until the required sample size was reached. All subjects was accessible to pre and post counseling and testing for HIV infection. All patient intended to take part in the survey signed a written consent form. All patient related information was decoded and personal information was kept confidential and secured.

Considering the sensitivity and specificity of HIV tests, NTP used blood testing to allow for a relatively high positive predictive value. NTP used National AIDS Programme/National Public Health Laboratory/MOHP recommended testing strategy for diagnosis of HIV.

Collected data were verified and coded daily after completing the activities. Prior to the data entry, data were cleaned with the consultation of concerned supervisor in the respective sites. During data processing, there were constant check for relevancy, consistency, and accuracy of the data sets. Data quality was monitored through periodic examination of each step in the collection, collation and analysis process.

Collected data were verified and coded with the consultation of concerned sentinel site's technical personnel. The findings were processed/analyzed using SPSS (version16) computer software to determine the distribution of and associations between key variables. Data were analyzed for each sentinel site and for defined age groups and gender. Descriptive statistics was also used to observe the pattern in each variable.

## RESULTS

National Tuberculosis Centre has conducted the study in six sentinel sites with the objective



to ascertain the prevalence of HIV among TB patients who were tested for HIV. Based upon the study conducted among 995 TB patients who were tested for HIV and analysis were performed accordingly as shown in below tables:

<b>Table 1. Sentinel Sites and Sex wise distribution of TB patients (N=995)</b>				
Sentinel Sites	Male (%)	Female (%)	No	%
NATA Biratnagar	74.6	25.4	134	13.5
NTC Thimi	74.8	25.2	305	30.7
RTC Pokhara	68.3	31.7	186	18.7
UMN Palpa	67.6	32.4	105	10.6
INF Nepalgunj	82.7	17.3	104	10.5
DPHO Kanchanpur	64.6	35.4	161	16.2
<b>Total</b>	<b>72</b>	<b>28</b>	<b>995</b>	<b>100</b>

The above table 1 analyzes the facility and sex wise distribution of the TB patients. Out of the total TB patients, the higher percent (30.7%) were from NTC Thimi followed by RTC Pokhara (18.7%) and DPHO Kanchanpur (16.2%). In all six sentinel sites, among the total male TB patients visited, higher percentage was found in INF Nepalgunj (82.7%) and lowest male TB patients' percent was seen in DPHO Kanchanpur. Among the female TB patients, highest percent visited was found in DPHO Kanchanpur and lowest percent was in INF Nepalgunj (17.3%)

<b>Table 2. Age Group distribution of TB patients</b>				
Age group	Male (%)	Female (%)	No	%
10-14 years	0.4	0.7	5	0.5
15-19 years	8.8	15.8	107	10.8
20-24 years	16.6	20.1	175	17.6
25-29 years	15.8	10.8	144	14.4
30-34 years	9.8	14.0	109	11.0
35-39 years	10.6	9.3	103	10.3
40-44 years	8.4	9.7	87	8.7
45-49 years	8.2	6.5	77	7.7
50-54 years	8.7	7.5	83	8.3
55-59 years	8.1	5.4	73	7.3
60-64 years	1.1	0.4	9	0.9
65 and above	0.7	0.0	5	0.5
Not mentioned	2.0	0.0	20	2.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>995</b>	<b>100.0</b>

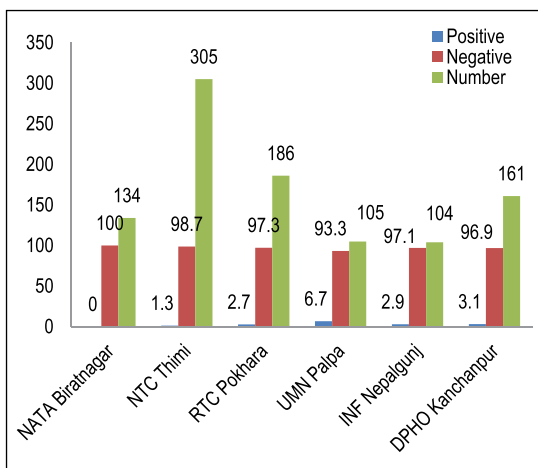
The above table 2 depicts that the percent of TB patients were comparatively more between the age group 20 to 39 years. The age above 65 years have less TB problem and 2 percent of the patients have not mentioned of their status.

<b>Table 3. Distribution of TB patients with clinical presentations (N=995)</b>				
Study site	Pulmonary (%)	Extra pulmonary (%)	No	Chi-Square Test Statistics
NATA Biratnagar	83.6	16.4	134	P Value =0.000
NTC Thimi	90.2	9.8	305	
RTC Pokhara	67.2	32.8	186	
UMN Palpa	62.9	37.1	105	
INF Nepalgunj	94.2	5.8	104	
DPHO Kanchanpur	80.1	19.9	161	
<b>Total</b>	<b>80.9</b>	<b>19.1</b>	<b>995</b>	

Above table 3 shows that among total TB patients tested for HIV, 80.9 percent were pulmonary positive and rest 19.1 percent were extra pulmonary TB patients. The finding of the above table is statistically significant.

<b>Table 4. Sex wise status of HIV positive among tested TB patients</b>				
Sex	Positive (%)	Negative (%)	N=995	Chi-Square test Statistics
Male	2.8	97.2	716	P Value=0.209
Female	1.4	98.6	279	
<b>Total</b>	<b>2.4</b>	<b>97.6</b>	<b>995</b>	

From above table 4 male female analysis of HIV status among 995 tested TB patients can be observed. All 995 (male and female) TB patients opted out HIV testing during the surveillance period because eligibility criteria to part in surveillance for HIV testing is all consenting newly registered TB patients (smear positive, smear negative and extra-pulmonary) >15 years of age. Among the total 716 male TB patients tested for HIV, 2.8 percent were HIV positive whereas among total 279 female tested TB patients, 1.4 percent were HIV positive. All HIV positive TB patients were linked with National AIDS Control Programme and enrolled in ART to receive care and support.



**Figure 1.** Knowledge among the students regarding HIV/AIDS

The above figure 1 showed that prevalence of HIV among tested TB patients was found high in UMN, Palpa (6.7) followed by 3.1, 2.9, 2.7 and 1.3 in DPHO, Kanchanpur, INF, Nepalgunj, RTC, Pokhara and NTC Thimi, Bhaktapur respectively and not a single case found in NATA, Biratnagar. 2.4 percent of tested TB patients were found HIV positive whereas 97.6 percent remained HIV negative.

Age Group	Positive %	Negative %	Count
10-14 years	0.0	100.0	5
15-19 years	0.0	100.0	107
20-24 years	1.1	98.9	175
25-29 years	0.7	99.3	143
30-34 years	2.8	97.2	109
35-39 years	7.8	92.2	102
40-44 years	4.6	95.4	87
45-49 years	1.3	98.7	77
50-54 years	3.6	96.4	83
55-59 years	2.7	97.3	73
60-64 years	0.0	100.0	9
65 and above	0.0	100.0	5
Not mentioned	0.0	100.0	20
<b>Total</b>	<b>2.4</b>	<b>97.6</b>	<b>995</b>

The table 5 shows the age group wise distribution of TB patients who have been tested and found HIV positive. It was found that 7.8 percent of the HIV positive among tested TB patients were between age group of 35-39 years which is again followed by 4.6%, 3.6% and 2.8% among the age group of 40-44 years, 50-54 years and 30-34 years age group respectively. The prevalence of HIV among

tested TB patients was lowest between age group of 20-24 years and not a single case of HIV positive found in the age group of 10-19 years and above 60 years.

Sentinel Sites	Yes (%)	No (%)	Number
NATA Biratnagar	92.5	7.5	134
NTC Thimi	2.3	97.7	305
RTC Pokhara	81.7	18.3	186
UMN Palpa	15.2	84.8	105
INF Nepalgunj	100.0	0.0	104
DPHO Kanchanpur	100.0	0.0	161
<b>Total</b>	<b>56.7</b>	<b>43.3</b>	<b>995</b>

From above table 6, it is evident that more than half (56.7%) of the HIV tested TB patients received the post test counselling whereas more than two-fifth (43.3%) of the HIV tested TB patients didn't receive post test counselling. Cent percent of the HIV tested TB patients had received post test in INF Nepalgunj and DPHO Kanchanpur and lowest in NTC (2.3%) followed by UMN Palpa (15.2%). Counselling is crucial aspect of the HIV testing, thus pre and post test counselling is very much important to incorporate in HIV testing programme. Therefore the future interventions in these areas must give due importance for HIV testing programme.

## DISCUSSION

HIV co-infection among TB patients is well recognized as a major public health problem worldwide. HIV/AIDS pandemic has caused a resurgence of TB, resulting in increased morbidity and mortality worldwide.<sup>5</sup> From the epidemiological point of view, our TB/HIV patients differed in some respects from those present in other parts of the world.

In this study, the prevalence of HIV co-infection among TB patients was 2.4%. However, this finding is by far higher than that of studies reported from central European countries (0–1%). In England, the prevalence of HIV co-infection among TB patients rose from 5% in 2000 to 8% in 2005, with a peak at 9% in 2003–2004. These figures are at the higher end of what is observed in Europe. France, Iceland and Portugal (11–15%) had higher co-infection levels. A rise in co-infection levels was seen in Estonia, Latvia, Lithuania, the UK and

Belgium, while decreases were seen in Spain and Portugal.<sup>6</sup> The findings of this study is slightly lower than that of reported from India (4.85%) in 2007.<sup>7</sup> The burden was higher in countries reporting high levels of HIV testing and countries with a higher HIV burden. Similar recent studies conducted in northwest Ethiopia (7.5%), and the 2012 WHO report for Ethiopia (8.0%).<sup>8</sup> However, according to the 2012 WHO report, prevalence of HIV co-infection among TB patients (13.0%).<sup>9</sup>

Sentinel site wise prevalence of HIV among tested TB patients was found high in UMN, Palpa (6.7) followed by 3.1, 2.9, 2.7 and 1.3 in DPHO, Kanchanpur, INF, Nepalgunj, RTC, Pokhara and National Tuberculosis Centre (NTC) Thimi, Bhaktapur respectively. This study is consistent with the findings of other studies i.e., the rate of HIV infection in TB patients was ranging from 8.3% (in Silte zone) to 35.3% (in South Omo zone).<sup>10</sup> This high prevalence of HIV co-infection among TB patients in the study area signifies the urgent need for programmatic revision, strengthening the health system infrastructure, staff capacity building, increasing public awareness, decreasing social and perceived stigma associated with TB and HIV and innovating for patient-friendly and cultural sensitive intervention approaches.<sup>11</sup>

Male female analysis of HIV status among tested TB patients indicates that 2.8% male and 1.4% female were HIV positive. Other studies support this finding (Dagnra AY et al., 2011; Alaneme Uzoma et al., 2008-9).<sup>12,13</sup> Currently there has been a conflicting report of occurrence of TB/HIV co-infection with regards to sex. For instance Adji et al. in Cameroon showed that women had significantly more TB/HIV co-infected than men (42%).<sup>14</sup> However Demissie et al. in Ethiopia indicated that TB/HIV co-infection did not have any significance difference with sex.<sup>15</sup>

In this study, 7.8 percent of the HIV positive among tested TB patients were between age group of 35-39 years followed by 4.6%, 3.6% and 2.8% among the age group of 40-44 years, 50-54 years and 30-34 years age group respectively. The prevalence of HIV among tested TB patients was lowest between age group of 20-24 years. This findings is similar to other study i.e., the highest prevalence of co-infection was recorded among aged 30-39 (Alaneme Uzoma et al., 2008-9) and another indicated the age group of 15-39 years.<sup>16</sup>

This study also depicted similar findings which is consistent with the findings of other studies (Pennap et al., 2010; Kamenju et al., 2011).<sup>17,18</sup> This age prevalence of HIV co-infection among TB patients probably reflects the age-specific prevalence of HIV in the community. This may be related to patients' being in a sexually active age group in which both TB and HIV prevail most (Tessema et al., 2009; Berhe et al., 2012).<sup>19,20</sup> The other possible explanation for this may be their increased family, organizational, and societal responsibilities as people in this age group involve themselves in various extraneous daily activities in order to win the socio-economic hardship which increases the frequency of their contact with other patients in their society.

## CONCLUSION

Regarding type of TB patients tested for HIV, four-fifth (80.9%) were pulmonary positive and rest less than one-fifth (19.1%) percent were diagnosed as extra pulmonary TB patients. The percent of TB patients was comparatively more between the age group 20 to 39 years. Study revealed that 2.4 percent prevalence of HIV found among tested TB patients whereas 97.6 percent found HIV negative.

Significant proportion (7.8%) of the TB patients found HIV positive was between age group of 35-39 years and lowest between age group of 20-24 years. Therefore, it is important to implement targeted interventions in the age group between 30-55 years age group.

Majority (56.7%) of the HIV tested TB patients received the post test counselling whereas less than half (43.3%) of the HIV tested TB patients were didn't received. Thus, it is concluded that post test counselling interventions should be scaled up in all the sentinel sites to ensure that HIV positive TB patients receive proper counselling.

Thus, the prevalence HIV co-infection among TB patients was high. This calls for emergency response through strengthening the TB and HIV collaborative activities, decentralizing the diagnostic and treatment centers to reach the periphery, providing women and young age targeted interventions, initiating early diagnosis and treatment, improving nutritional supplementation to boost immunity, and providing prophylaxis to prevent opportunistic infections.

## REFERENCES

1. National Tuberculosis Program, Nepal - General Manual – Third Edition 2012
2. Tuberculosis Control in the South-East Asia Region – 2012 WHO Report – [www.searo.who.int/tb](http://www.searo.who.int/tb)
3. Ministry of Health, Government of Ethiopia. July 2005. TB/HIV Implementation Guidelines.
4. Implementing collaborative TB/HIV activities – A programmatic Guideline 2012, published by International Union against Tuberculosis and Lung Disease.
5. Sharma SK, Mohan A, Kadiravan T. HIV-TB co-infection: Epidemiology, diagnosis and management. *Ind J Med Res.* 2005;121:550–67.
6. M E Kruijshaar et al; TB-HIV co-infection: how does the UK compare to Europe? *Thorax* 2010;65:A150 doi:10.1136/thx.2010.151043.21
7. TB India. RNTCP status report. Available from: <http://www.tb.cindia.org/pdfs/TB%20India%202010> [Last accessed on 2010 Apr 24]
8. Wondimeneh Y, Muluye D, Belyhun S Prevalence of pulmonary tuberculosis and immunological profile of HIV co-infected patients in Northwest Ethiopia. *BMC Research Notes* 2012;5:331.
9. WHO Global Tuberculosis Control, Geneva 2012.
10. Daniel G Datiko, Mohammed A Yassin, Luelseged T Chekol, Lopisso E Kabeto and Bernt Lindtjörn: The rate of TB-HIV co-infection depends on the prevalence of HIV infection in a community. *BMC Public Health* 2008;8:266doi:10.1186/1471-2458-8-266.
11. Deribew A, Hailemichael Y, Tesfaye M, Desalegn D, Wogi A, Daba S. The synergy between TB and HIV co-infection on perceived stigma in Ethiopia. *BMC Research Notes* 2010;3:249. Doi: 10.1186/1756-0500-3-249.
12. Dagnra AY, Adjoh K, et al Prevalence of HIV-TB co-infection and impact of HIV infection on pulmonary tuberculosis outcome in Togo. 2011;104:342-6.doi: 10.1007/s13149-010-0079-3. Epub 2010 Sep 4.
13. Alaneme Uzoma, Aki Shadrack, Akata Nkechi, Akande Ifeoluwa: Prevalence and socio-demographic characteristics of TB/HIV co-infection using chest unit, UNTH, as a case study College of Medicine, University of Nigeria, Enugu Campus, Nigeria 2008-2009.
14. Pefura Yone EW, Kuaban C, Kengne AP HIV testing. HIV status and outcomes of treatment for tuberculosis in a major diagnosis and treatment centre in Yaounde, Cameroon: a retrospective cohort study. *BMC Infect Dis* 2012;12:190.
15. Demissie M, Lindtjörn B, Tegbaru B. Human immunodeficiency virus (HIV) infection in tuberculosis patients in Addis Ababa. *Ethiop. J. Health Dev* 2000;14:277-82.
16. Sebsibe Tadesse, Takele Tadesse. HIV co-infection among tuberculosis patients in Dabat, northwest Ethiopia 2013;5:29-32
17. Pennap G, Makpa S, Ogbu S. The Prevalence of HIV/AIDS among tuberculosis patients In a Tuberculosis/Leprosy Referral Center in Alushi, Nasarawa State, Nigeria. *Int. J. Epidemi* 2010;8:10.
18. Kamenju P, Aboud S. Tuberculosis - HIV co-infection among patients admitted at Muhimbili National Hospital in Dares Salaam, Tanzania. *Tanzan. J. Health Res.* 2011;13:25-31.
19. Tessema B, Muche A, Bekele A, Reissig D, Emmrich F, Sack U. Treatment outcome of tuberculosis patients at Gondar University Teaching Hospital, Northwest Ethiopia: a five-year retrospective study. *BMC Public Health* 2009;9:371.
20. Berhe G, Enquesselassie F, Aseffa. A Treatment outcome of smear positive pulmonary tuberculosis patients in Tigray Region, Northern Ethiopia. *BMC Public Health.* 2012;12:537.

## STUDY ON UNDERSTANDING, AWARENESS AND PERCEIVED BEHAVIOR OF HIV/AIDS AMONG RETURNEE SEASONAL MIGRANT WORKERS FROM INDIA TO FAR WESTERN REGION OF NEPAL

Paudel DP<sup>1</sup>, Ayre R<sup>2</sup>

<sup>1</sup> Nepal Public Health Association, Babarmahal, Kathmandu, Nepal

<sup>2</sup> Nepal Health Research Council, Ramshah Path, Kathmandu, Nepal

### ABSTRACT

**Introduction:** HIV/AIDS is an emerging challenge to public health, social development and modern human civilization. Thousands of Nepalese people are migrating to India and other countries every year in order to seek employment. Migrants are often a medically underserved population and are getting more exposed to unsafe sexual activities, increasing their risk for HIV/AIDS. Awareness is a powerful weapon to combat such problems like HIV/AIDS. Hence this study was conducted to explore the understanding, awareness and perceived behavior of migrant workers on HIV/AIDS.

**Methodology:** This Population based cross-sectional study was carried out in the border area of Far-Western region of Nepal. Altogether 372 returnee migrants who were selected randomly were interviewed after obtaining their written consent. Aggregation of correct knowledge on HIV/AIDS was considered as good understanding, positive perception as good perceived behavior and good understanding with positive perceived behavior as good awareness. Data were analyzed using SPSS-16 applying appropriate statistics. Criterion for statistical significance was set at test value  $P < 0.05$ .

**Results:** Total, 372 male migrant workers (mean age  $\pm$  SD:  $29.6 \pm 1.9$  years; range: 18-47 years) participated in the study. Majority (29.84%) were 28-32 years. Half (50.81%) were from primary and informal educational background and 74.20 percent were Hindus. About 41.94 percent of the participants' earning was  $< 3000$  NRs. /month and 53.22 percent were scheduled caste. About 46.77 percent were porters followed by 29.84 percent who work as construction workers. Almost 81percent had heard about the HIV/AIDS with 45.9 percent reporting virus as an etiology. Similarly 65 percent reported that unsafe sexual contact is the major mode of HIV transmission and one-quarter had the idea that HIV cannot be transmitted through hugging/kissing or shaking hands. Almost 80.0% reported that condom use is the most important preventive measure. Nearly half (49.20%) were found to be aware of HIV/AIDS. Age of participants ( $\chi^2= 13.09$ ,  $p < 0.001$ ), educational background ( $\chi^2=10.65$ ,  $p < 0.001$ ), religion ( $\chi^2= 8.03$ ,  $p < 0.02$ ), monthly income ( $\chi^2= 12.38$ ,  $p < 0.001$ ) and nature of job/work performed ( $\chi^2 = 7$ ,  $p < 0.02$ ) during staying in India were found to be significant factors affecting the level of awareness.

**Conclusion:** Nearly half of the participants were found to be aware on HIV/AIDS. The level of awareness was significantly affected by the age of participants, educational background, religion, monthly income and nature of job/work performed during staying in India. Awareness creating package programs like behavior change communication (BCC) on HIV/AIDS are supportive to decrease the vulnerability of HIV/AIDS among migrant workers.

**Key words:** Understanding, Awareness, Perceived, Behavior, HIV/AIDS, Seasonal, Migrant, Workers

### Correspondence:

Dr. Dillee Prasad Paudel  
Executive Editor, JNEPHA  
Central Office, Nepal Public Health Association  
Babarmahal, Kathmandu, Nepal  
E-mail: [paudeldp@gmail.com](mailto:paudeldp@gmail.com)

### INTRODUCTION

The Human Immunodeficiency Virus (HIV) Acquired Immuno-deficiency Syndrome (AIDS) is an epidemic and has emerged as a formidable



challenge to public health, development and modern human civilization. Within a few decades, HIV has spread rapidly from a few widely scattered “hot spots” to virtually every country in the world including Nepal. Though many efforts have been taken globally, its devastating effects can be seen in many areas such as human productivity, public health, and human rights.<sup>1</sup> Globally, by the end of 2013, 35 millions of people were affected by HIV; 30.8 million were adult population and 5.2 percent of them died due to AIDS. About 4.1 million people were affected only in South East Asia region.<sup>2</sup>

Data from the IBBS (2009-11) in Nepal suggested that HIV is continuing to be confined within key affected population groups. People who inject drugs (PWIDs), gay men and other men who have sex with men (MSM), sex workers (both male and female), and male labor migrants (particularly to India, where they likely visit sex workers) are at the centre of the epidemic, with a higher risk of acquiring HIV. Overall, the epidemic is largely driven by sexual transmission that accounts for more than 85 percent of the total new HIV infections. According to the new estimates, there are around 50,000 people living with HIV in Nepal with an overall national HIV prevalence of 0.3% among adults aged 15-49 years.<sup>3</sup>

The possibility of transmission of HIV and STIs from these high-risk groups to the general population is a serious health concern.<sup>4</sup> Migrants are often a medically underserved population. So, national and international migration plays an important role in the spreading of HIV infection throughout the world. There are multiple concerns about the relationship between migration and HIV/AIDS.

Large number of population from remote part of western region of Nepal leave their households for seasonal or long-term labor migration to urban centers or to the neighboring countries, in search of short term jobs. About 0.6-1.3 million workers migrate annually from Nepal to different places of India especially, Uttaranchal, Maharashtra, Uttar Pradesh, and Delhi States to do labor work for a certain period (4-6 months) and then go back to Nepal via different transit points. High prevalence rates of STIs and HIV infection was found in such population (returnee migrant workers).<sup>5</sup> According to Nepal's 2007 United Nations General Assembly report, labor migrants make up 41.0% of the total known HIV infections in the country, followed by

clients of sex workers (15.5%). The far western region of Nepal accounts for 16 percent of the total HIV cases; of which nearly three-quarter (74.0%) was covered by migrant workers only.<sup>6</sup>

Separated from their spouses, family and adrift from the social bindings, many of these migrants indulge in unsafe sexual practices at their working centers. Regular monitoring and health assistance to this population is lacking especially in the case of those who migrate in neighboring countries like India compared to those who receive authorized permission to work in third world countries.<sup>7</sup> Unsafe sexual behavior is a major leading cause of the increasing HIV/AIDS and STIs incidence among the migrant workers and their family. Knowledge and awareness is a powerful weapon to combat with problems related HIV/AIDS in the 21<sup>st</sup> century. Due to the lack of knowledge and awareness of good health practices and their right to use facilities, the issue of HIV/AIDS and STIs among migrant workers is mushrooming as a malicious public health problem and a formidable challenge to the national economy, social development and human rights in particular and the human civilization in general.<sup>2</sup> Application of preventive awareness is most essential to reduce the risk of spreading HIV/AIDS and STI in the population. Hence, the main purpose of this study was to assess the level of understanding, awareness and perceived behaviour on HIV/AIDS among returnees' migrant workers/laborers in Nepal.

## METHODOLOGY

Descriptive cross-sectional study was carried out in the Mahendra Nagar-Banbasa border area of Far-Western Region (FWR) of Nepal. Banbasa is the main entry/exit point to India and Nepal in this region. Hundreds of people from different parts of Nepal and India cross the border every day to search for seasonal jobs. The study participants were the migrants having permanent residence in FWR and have visited India at least twice and stayed as a laborer for a season (4-6 months/season) at each visit, and went back to Nepal during the period of August to October 2010. All eligible people were individually screened at the entry point of Nepal by taking the information regarding duration of staying in India and working status during the stay with support of a leading social organization; Maiti Nepal.

The sample size was calculated by using the proportion-based statistical formula;  $n = z^2p(1-p)/d^2$  with 5 percent absolute error and 95 percent confidence interval (CI) level. On the basis proportion of good knowledge ( $P = 33\%$ ) on HIV/AIDS and STIs of the migrant workers in previous similar type of study, the minimum sample size was 339. Adding 10 percent non-response rate, the final sample size was 372. Systematic random sampling technique was applied to select the sample from screened migrant workers. The participation in the study was voluntary, and necessary informed consent was obtained. The participants were briefed about the aim and process of the study and privacy was fully maintained throughout the process by interviewing them in a confidential environment. Ten percent of the questionnaire was pretested in Nepalgunj border area to check the consistency, outlier, and missing values before starting the final study. The questionnaire covered several aspects of knowledge and perceived behaviour related to HIV/AIDS and socio-demographic profile. To find out the level of different parameters such as; knowledge, perceived behavior and awareness, many questions related to HIV/AIDS (14 knowledge related and 9 perception related) were asked to the respondents and matched with the correct and wrong answer. The correct answer/statement of each question was scored as 1 and wrong answer/statement was scored as 0. The level of understanding was found with comparing the mean value of right and wrong scores of total asked questions. The value  $>16.8$  (Mean + SD) was considered the good understanding and less than that was considered poor understanding. Similarly, the level of perceived behavior was found with comparing the mean value of positive perception and negative perception of total statements. The value  $>21.2$  (Mean + SD) was considered good perceived behavior and less than that was considered poor perceived behavior. In addition, the aggregation of correct knowledge and good perceived behavior was considered as good awareness and lacking of either good knowledge or good perception or both were considered as poor awareness.

Data were checked and re-checked and entered into the computer on the same day by using the statistical software SPSS (version-16). Both descriptive (percentage, mean, median, mode, range, and standard deviation) and inferential

statistic ( $\chi^2$  test) was applied to analyze the data. The criterion for statistical significance was set at test value ( $P < 0.05$ ). The analyzed data were presented in tables, graphs, charts and narrative description as per necessity.

## RESULTS

### Socio demographic profile of the study participants

Altogether, 372 male migrant workers (mean age  $\pm$  SD:  $29.6 \pm 1.9$  years ; range: 18-47 years) participated in the study, and the majority (29.84%) of the participants were in the age group 28-32 years followed by 25.81 percent in 33-37 years. Half (50.81%) of the participants were from primary and informal educational background whereas nearly (19.35%) were illiterate and 4.84 percent from secondary and higher. More than (61.29%) of the participants were married, and nearly three-quarter (74.20%) were from the Hindu religious background followed by; 21percent Buddhists and 4.03 percent Christians and others. More or less 41.94 percent participant's monthly income was  $< 3000$  NRs. and remaining other (58.06%) earned  $> 3000$  NRs (3000-1000)/month. Nearly, three-quarter (70.17%) of participants had nuclear type of family structure and more than half (53.22%) were of scheduled caste. According to their nature of job during staying in India; about 46.77 percent were porters followed by; 29.84 percent construction workers; 12.1 percent home servant and 11.29 percent hotel/supermarket helper as illustrating in table 1.

Socio-demographic characteristics		Frequency	%
Age group in years	18-22	63	16.94
	23-27	111	29.84
	28-32	96	25.81
	33-37	30	8.06
	38-42	39	10.48
	43-47	33	8.87
	Total	372	100.00
Education level	Illiterate	72	19.35
	Informal education	60	16.13
	Primary education	129	34.68
	Lower secondary	75	20.16
	Secondary	18	4.84
	Higher secondary	12	3.23
	Higher studies	6	1.61
	Total	372	100.00

Socio-demographic characteristics		Frequency	%
Marital status	Married	228	61.29
	Unmarried	144	38.71
	Total	372	100.00
Religion	Hinduism	276	74.20
	Buddhism	81	21.77
	Christianity and others	15	4.03
	Total	372	100.00
Monthly income of the migrant worker (NRs.)	<3000	156	41.94
	≥3000	216	58.06
	Total	372	100.00
Types of family	Nuclear	261	70.16
	Joint	111	29.84
	Total	372	100.00
Cast/ethnicity	Schedule caste	198	53.23
	General category	174	46.77
	Total	372	100.00
Types of work/labor	Construction labor	111	29.84
	Home servant	45	12.10
	Porter/farming	174	46.77
	Helper in hotel/supermarket	42	11.29
	Total	372	100.00

Note: NRs = Nepali Rupees

### Participants' Understanding on HIV/AIDS

Understanding on HIV/AIDS is the status of knowing about its related factors. To find the understanding, different types of questions on causes, transmission, and curability, availability of treatment/medicine and consequences of HIV/AIDS were asked to the respondents and matched with correct and wrong answer of each question. Almost 81 percent of the participants were found to have heard about the HIV/AIDS. About 45.9% reported that virus is an etiology of HIV/AIDS. Nearly two-third (65.0%) of the participants reported that HIV transmits through unsafe sexual contact followed by infected blood transfusion (62.0%), infected mother to baby (51.0%), and sharing of needle (42.0%). Similarly, 42.25 percent reported that HIV is not transmitted through hugging or shaking hands with HIV infected persons, whereas 55 percent reported that HIV is transmitted by kissing an infected person. More than three-fifth of the participants replied that HIV is transmitted through using of unsterile surgical instruments. About 30 percent of participants reported that HIV/AIDS is a curable disease and one quarter (25.0%) had idea about availability of drugs for AIDS. Regarding the preventive measure against HIV/AIDS, 80 percent of the participants reported that using of

condom is a most effective behaviour followed by faithful sexual contact with single partner (72.5%), and abstaining (70.96%) percent. Similarly 61.5 percent knew that death is the final consequence of the HIV/AIDS; table: 2.

Table 2. Understanding on HIV/AIDS (N=372)			
Knowledge related characteristics	Response	Frequency	%
Heard about HIV/AIDS	Yes	302	81.23
	No	70	18.77
Etiology of HIV/AIDS	Bacteria	149	40.10
	Virus	171	45.90
	Don't know	52	14.00
HIV Transmitted by unsafe sexual contact	Yes	242	65.0
	No	78	21.0
	Don't know	52	14.0
HIV transmitted by sharing a needle with HIV infected	Yes	156	42.00
	No	48	13.00
	Don't know	167	45.00
HIV transmitted by Blood transfusion with HIV infection	Yes	231	62.00
	No	56	15.00
	Don't know	86	23.00
HIV transmitted from infected pregnant mother to baby	Yes	190	51.0
	No	113	30.5
	Don't know	69	18.5
HIV transmitted by hugging or shaking hands with person of HIV	Yes	149	40.0
	No	157	42.25
	Don't know	66	17.75
HIV transmitted by kissing with HIV infected person	Yes	205	55.0
	No	149	40.0
	Don't know	19	5.0
HIV transmitted by using un sterile surgical instruments	Yes	227	61.1
	No	80	21.5
	Don't know	65	17.4
HIV/AIDS is curable	Yes	112	30.0
	No	167	45.0
	Don't know	93	25.0
Medicine is available for HIV treatment	Yes	93	25.0
	No	78	21.0
	Don't know	201	54.0
HIV can be prevented by Having sex with single partner	Yes	270	72.58
	No	60	16.12
	Don't know	42	11.29
Condom use protected from HIV transmission	Yes	298	80.0
	No	17	4.6
	Don't know	57	15.4
People protected themselves from HIV by abstaining from sex	Yes	264	70.96
	No	72	19.35
	Don't know	36	9.76
Death is the final consequence of HIV/AIDS	Yes	229	61.5
	No	84	22.5
	Don't know	60	16.0



### Perceived behavior of migrant workers on HIV/AIDS

Perception and related behavior is also the important factor affecting awareness. In this study, perceived behavior of the participants was found by taking the view on HIV/AIDS related universal statements. Out of 372 participants, more than half (53.22%) were found to be perceived that 'HIV infected people need to isolate'. Similarly nearly two-thirds of the participants (64.51%) had positive perception on needing of social and family support to male HIV positive which was more than the female HIV positive (58.06%). More than two-fifths (43.0%) of the participants reported that 'smoking and alcohol use supports to increase unsafe sexual behavior' followed by adult movies (30.0%). Furthermore four-fifth (80.0%) of the participants reflected the negative perception about the condom use during sexual intercourse i.e. 'Condom use during sexual intercourse does not give satisfaction'. Regarding the vulnerability of HIV/AIDS, only 41 percent participants perceived that 'migrant works are vulnerable population' and one third (33.0%) put their view on 'equal responsibility of both male and female to transmit the disease'. Nearly two-thirds (65%) of them were found to be perceived, that 'awareness is the key equipment of controlling HIV/AIDS, table 3.

Table 3. Perceived behavior of migrant workers on HIV/AIDS			
Perceived behavior	Response	Frequency	%
HIV people need to be isolated	yes	198	53.22
	No	74	46.8
HIV positive male people need support and help from family member	yes	240	64.51
	No	132	35.49
HIV positive female people need support from family members	yes	216	58.06
	No	156	42.94
Smoking and alcohol support to increase unsafe sexual behavior	yes	160	43.0
	No	130	35.0
	No idea	82	22.0
Adult movies help to expose with unnatural sexual activities	Yes	112	30.0
	No	167	45.0
	Know Idea	93	25.0

Perceived behavior	Response	Frequency	%
Using condom during sexual contact does not give satisfaction	Yes	298	80.0
	No	45	12.0
	No Idea	30	8.0
Migrant works are the vulnerable population of HIV/AIDS	yes	153	41.0
	No	182	49.0
	No Idea	37	10.0
Male and female both are equally responsible for transmitting HIV/AIDS	yes	123	33.0
	No	167	45.0
	Can't say	82	22.0
Awareness is the key equipment of controlling HIV/AIDS	yes	242	65.0
	No	130	35.0

### Level of Understanding, Perceived behavior and Awareness (UPA) on HIV/AIDS

The level of understanding was found with comparing the mean value of right and wrong answers of total questions. The mean  $\pm$  SD score of the knowledge related questions was  $14.5 \pm 2.3$ . Similarly, the level of perceived behavior was found with comparing the mean value of positive perception and negative perception of total statements. The mean  $\pm$  SD score of the perceived behavior was  $18.01 \pm 3.2$ . In addition, the average of the good understanding and good perceived behavior was considered as good awareness. On the basis of obtained scores, about 54.51 percent of the participants had good understanding, 43.71 percent participants had good perceived behavior and nearly half (49.20%) of the participants had good awareness on HIV/AIDS; table:4.

Table 4. Level of knowledge, perceived behavior and awareness on HIV/AIDS		
Parameters	Levels of parameters with frequency and Percentage	
	Good	Poor
Knowledge	203 (54.59)	169 (45.41)
Perceived behavior	163 (43.71)	209(56.29)
Awareness	183(49.20)	189(50.80)

### Factors affecting to awareness on HIV/AIDS

Awareness on HIV/AIDS is a dependent phenomenon affected directly/indirectly by different socio demographic factors. The study revealed

that the level of awareness depends on the age of the participants ( $\chi^2= 13.09$ ,  $p < 0.001$ ), educational background of the participants ( $\chi^2=10.65$ ,  $p < 0.001$ ), religion ( $\chi^2= 8.03$ ,  $p < 0.02$ ), monthly income of the respondent ( $\chi^2= 12.38$ ,  $p < 0.001$ ) and nature of job/work of participants. ( $\chi^2 = 7$ ,  $p < 0.02$ ). Participants having the age less than median level were found to be 2.14 times more aware (OR= 2.14, 95% CI=1.61-2.69) than the participants having the age more than median level. Similarly participants having the educational level secondary and more were 2.11 times more aware (OR= 2.11, 95% CI: 1.52-2.72) than the participants having the other level of education. Participants from Hindu religious background were 1.84 times more likely to be aware (OR=1.84, 95% CI: 1.07-2.61) than the participants from Buddhist and other religious background. Participants having more income (>Rs. 3000/month) were also found to be 2.11 times more aware (OR=2.11, 95% CI: 1.56-2.67) than the participants who had less income (<RS.3000/month). Furthermore, participants belonged to construction labor and porter were found to be 1.93 times more aware (OR=1.93, 95% CI: 1.22-2.68) than the participants belonged to other works. Meanwhile, the level of awareness was not significantly associated with the other demographic variables like marital status, type of family and ethnicity/cast of participants; ( $p > 0.05$ ); table: 5.

## DISCUSSION

Present study showed that more than four-fifth (81.0 %) of the respondents had heard about the HIV/AIDS which is consistent with the study reported from India, Sri Lanka, Pakistan, Bangladesh and Thailand.<sup>8,9</sup> These studies showed that approximately 70 percent of the participants had heard about HIV/AIDS. Similarly, study from Thailand reported that nearly nine out of ten migrant people had informed about HIV/AIDS.<sup>9</sup>

Regarding the causative agent of HIV, nearly half of the participants (45.9%) reported that virus is the main etiology. Nearly two-

Variables	Level of awareness			Statistical values		
	Good (n=183)	Poor (n=189)	Total (N=372)	$\chi^2$	OR at 95% CI	P value
<b>Age</b>						
<28	98	66	164 (46.78)	13.09 df=1	OR= 2.14, CI: 1.61-2.69	p< 0.001 ***
≥28	85	123	198 (53.22)			
<b>Edu. status</b>				10.65 df=1	OR= 2.11, CI: 1.52-2.72	p<0.001 ***
Secondary or higher	69	42	111 (29.85)			
Primary or less	114	147	261 (70.15)			
<b>Marital Status</b>				0.79 df=1	OR= 0.82 CI:- 1.38-3.04	p> 0.05
Married	108	120	228 (61.29)			
Unmarried	75	69	144 (38.71)			
<b>Religion</b>				6.48 df=1	OR= 1.84 CI: 1.07-2.61	p< 0.05*
Hindus	148	128	276 (74.20)			
Buddhist and Others	37	59	96 (25.80)			
<b>Monthly Fa. Income</b>				12.38, df=1	OR= 2.11 CI: (1.56-2.67)	p< 0.001 ***
> NRs 3000	123	93	216 (58.06)			
≤ NRs 3000	60	96	156 (41.94)			
<b>Types of family</b>				2.54 df=1	OR= 1.43 CI: (0.20-2.66)	p> 0.05
Nuclear	134	124	258 (69.35)			
Joint	49	65	114 (30.65)			
<b>Cast/ Ethnicity</b>				0.91 df=1	OR= 1.09 CI: (3-.60-5.43)	p> 0.05
Higher caste	84	91	175 (46.77)			
Schedule caste	99	98	197 (53.23)			
<b>Types of work/labor</b>				7.0 df=1	OR= 1.93 CI: 1.22-2.68	p< 0.02*
Construction	151	134	285 (75.61)			
Labor/porter House hold labor/helper	32	55	87 (23.39)			

third (65.0%) of the participants reported that HIV is transmitted through unsafe sexual contact followed by transfusion of infected blood; (62.0%), infected mothers to babies; (51.0 %) and sharing of needles; (42.0 %). Similarly about two-fifth (42.2 %) reported that HIV does not transmit through hugging or shaking hands with HIV infected person whereas, 55 percent reported that HIV transmits through infected person by kissing. This finding was better than a study finding reported from Thailand. Almost 30 percent of migrant people in Thailand believed that people who have sexual intercourse with a single faithful partner are in less risk of HIV transmission though the intercourses are without condom use. Just one out of ten people reported that HIV does not transmit through causal-contact such as using the same toilet, kissing and shaking hands.<sup>9</sup>

Nearly one-thirds of the participants in present study reported that HIV/AIDS is a curable disease. Almost one- quarter had idea about availability of VCT service and drugs of AIDS which was poorer than a study finding reported by Dahal et al. in Nepal.<sup>10</sup> Regarding the preventive measure against HIV/AIDS, nearly three- quarter (72.5%) of the participants in this study reported about faithful sexual contact with single partner is the foremost. Similarly, almost four- fifth reported about condom use during multi-partner sex followed by abstaining (70.9 %) are other important measures of preventing HIV transmission. This finding was consistent with other study.<sup>9,10</sup>

Death is the final consequence of HIV/AIDS. If people living with HIV are not diagnosed timely and careless to their minor illness, they may die earlier due to development of AIDS. Present study showed that, more than three-fifth (61.5 %) of the participants were known about such consequence (death) of HIV/AIDS which was in line with similar other studies.<sup>8-10</sup> If people are aware on such consequence, the life expectancy of PLHA can increase by caring them timely.

People show the behavior towards anything on the basis of their perception. More than half of the participants in the present study were found to be perceived that 'HIV infected people need to isolate from other people'. Similarly, nearly two-thirds (64.5%) of the participants perceived that HIV positive male people need support and help

of their family member, whereas nearly three-fifth (58.06%) of them perceived that similar support is needed to HIV infected female people. Such type of perception may play the supportive role to create the awareness and reduction of the stigma HIV/AIDS so that people living with HIV/AIDS can be adjusted in the society. This finding was supported by a study from Ghana.<sup>11</sup> Furthermore present study revealed that, more than two-thirds (43.0 %) of the participants had negative perception on smoking and alcohol use. Such behaviors support to increase unsafe sexual behavior which leads to increase the HIV/AIDS. Similarly, nearly one third (30.0%) of the participants perceived that 'adult movies' help to expose the migrant people with unnatural sexual activities. In addition, four-fifths (80.0%) of the participants reflected their perception about the condom use during sexual contact does not give satisfaction. Such perception support them to initiate the risky sexual behaviors such as multi partner sex, oral and anal sex, male sex with male etc without using condom during sexual intercourse which leads them towards the vulnerability of HIV/AIDS.

Regarding the vulnerability of HIV/AIDS, 41.0 percent of the participants perceived that migrant works are vulnerable population of HIV/AIDS. Similarly, about one third of them perceived that 'both male and female' are equally responsible for transmitting HIV/AIDS. This finding was in line with other study conducted in Nepal.<sup>9</sup>

Awareness is the key equipment of controlling HIV/AIDS. Our study prevailed that nearly two-third of the participants were known about its importance. HIV/AIDS related awareness is a dependent phenomenon affected directly/indirectly by different demographic and bio-social factors. The study revealed that the level of awareness on HIV/AIDS depends on the age of the participants (less than median level Vs. more than median level;  $P<0.001$ , OR= 2.14), educational status (Secondary and more Vs. Primary and less;  $P<0.00$ , OR= 2.11) , religion ( Hindu Vs. Buddhist and other;  $P<0.02$ , OR=1.84), monthly income of the respondent (>Rs. 3000/month Vs.<RS.3000/month;  $P<0.001$ , OR=2.11) and nature of job/work of participants (construction labor and porter Vs. house boy/ shop helper;  $P<0.02$ , OR=1.9). Mean while, the level of awareness was not found to be significantly affected by marital status, type of

family and ethnicity/cast of participants; ( $p>0.05$ ). These findings were more or less supported by other studies from Nepal and abroad.<sup>8-10</sup>

## CONCLUSION

Though more than four-fifth of the participants (migrant workers) heard about the HIV/AIDS, nearly half of them had good understanding and aware on it which is very low with compare to the spreading trend of HIV/AIDS. The level of awareness was significantly affected by different socio-demographic factors including the age of participants, educational background, religion, monthly income and nature of job/work performed during staying in India. Awareness creating special package programs like behavior change communication, training and counseling on HIV/AIDS with the modality of public private partnership (PPP) may supportive to reduce the vulnerability of HIV/AIDS among migrant workers.

## REFERENCES

1. Williams BG, Gouws E, Lurie MN, Crush J. Spaces of vulnerability: migrations and HIV/AIDS in South Africa. Cape Town, South Africa: South African Migration Project 2002.
2. United Nation. UNAIDS report on the global AIDS epidemic 2013. 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.
3. National estimates of Infection. Government of Nepal, Ministry of Health and Population, National Center for AIDS and STD Control, Teku, Kathmandu 2012.
4. FHI. HIV prevention in mobile populations. (accessed September 5,2007), Available from: [www.FHI.org/en/HIVAIDS/pub/fact/mobilepop.htm](http://www.FHI.org/en/HIVAIDS/pub/fact/mobilepop.htm)
5. Coffee M, Lurie MN, Garnett GP. Modeling the impact of migration on the HIV epidemic in South Africa. *AIDS* 2007;21:343-50.
6. Lurie MN. Migration, sexuality and the spread of HIV/AIDS in rural South Africa. Cape Town, South Africa: Southern African Migration Project 2004.
7. Integrated Biological and Behavioural Surveillance survey (IBBS) report among seasonal migrants of western and mid to far western regions, 2006, FHI/ New Era.
8. Gagnon A, Merry L, Bocking J, Rosenberg E. & Oxman-Martinez J. South Asian migrant women and HIV/STIs: Knowledge, attitudes and practices and the role of sexual power. *Health and Place* 2009;16:10-15.
9. Mullany LC, Maung C, Beyrer C. HIV/AIDS knowledge, attitudes and practices among Burmese migrant factory workers in Tak Province, Thailand. *Journal of AIDS Care* 2003;15:63-70.
10. Dahal S, Pokharel PK, Yadav BK. Sexual Behavior and Perceived Risk of HIV/AIDS among Returnee Labour Migrants from Overseas in Nepal. *Health Science journal* 2013;7:218-28
11. Oppong AK. Social support and the psychological wellbeing of people living with HIV/AIDS in Ghana. *African Journal of Psychiatry* 2002;15:240-45

Case study

## A CASE OF ASPERGILLOMA WITH MUCIN SECRETING ADENOCARCINOMA IN THE CAVITY WALL

Agarwal S, Gupta K, Mullick S, Dewan RK

Department of Pathology, National Institute of TB & Resp. Diseases, Sri Aurobindo Marg, New Delhi - 30, India

### ABSTRACT

A Pulmonary aspergillosis and lung cancer rarely occur simultaneously. We report a 63 year old female with complaint of haemoptysis. Contrast enhanced chest revealed a cavity containing fungus ball in the left lung lower lobe suggestive of a fungoma. Left lower lobectomy was done for intractable haemoptysis. The histological examination of the resected specimen showed colonies of aspergilli in the cavity and mucin secreting adenocarcinoma in the cavity wall. Careful gross examination of the patient must be done to rule out metastasis.

**Key words:** Aspergilloma, Adenocarcinoma, Left lower lobe, Cavity wall

### INTRODUCTION

Reported cases of lung cancer with intracavitary aspergillus are rare in literature.<sup>1</sup> Aspergilloma is a well recognized but rare complication of pulmonary carcinoma.<sup>2</sup> In rare cases, lung cancer might arise from preexisting lung scars containing an aspergilloma or they can be induced by the unusually long prevalence of fungus in the lung.<sup>2</sup> Here we report one such rare case where lobectomy was done for long standing aspergilloma and subsequent histopathological examination revealed foci of mucin secreting adenocarcinoma.

### CASE REPORT

A 63 year old female was admitted in our hospital for evaluation of haemoptysis for 2 years. Routine hematological, biochemical investigations and pulmonary function tests were within normal limits. Contrast enhanced computed tomography (CECT) chest showed a small thin walled cavity with fungus ball in posterior basal segment of left lower lobe.

#### Correspondence:

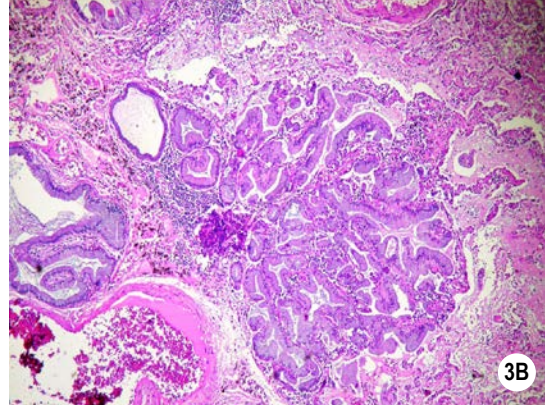
Dr. Shalini Mullick  
Department of Pathology  
National Institute of TB and Respiratory Diseases  
Sri Aurobindo Marg, New Delhi – 30, India  
E-mail: drshalinimullick@gmail.com

Remaining bilateral lung fields showed normal bronchovascular markings and attenuation values. There was no evidence of pleural thickening, calcification, pleural effusion, pneumothorax and mediastinal lymphadenopathy. A diagnosis of fungoma lung was suggested on radiological evaluation and patient was taken up for surgical resection. Left lower lobectomy was performed. On gross lobectomy specimen measured 14x8x4 cms which on serial section showed a single thin walled cavity, noncommunicating with bronchus and filled with dirty brown material, measuring 2x2cms (figure 1). Pericavitary area showed fibrosis. On microscopy microsections from dirty material showed colonized fungal hyphae filling the cavity. The hyphae were septate with acute angle branching typical of aspergillus (figure 2). The cavity wall was lined by stratified squamous epithelium and showed granulation tissue, fibrosis and small collection of tumor cells in subcentimeter area (maximum size in prepared section measured 0.8 cm), which was not appreciable grossly (figure 3a & b). The tumor cells were tall columnar mucin secreting cell with basal nuclei and were arranged in acinar and lepidic pattern. All tumor cells were positive for mucicarmine and CK7 (figure 4a & 4b). No tumor cells were found elsewhere. There was no pleural or vascular invasion. All hilar lymphnode were reactive and negative for tumor cells. Final diagnosis of aspergilloma left lower lobe with mucin secreting adenocarcinoma in the cavity wall was rendered.

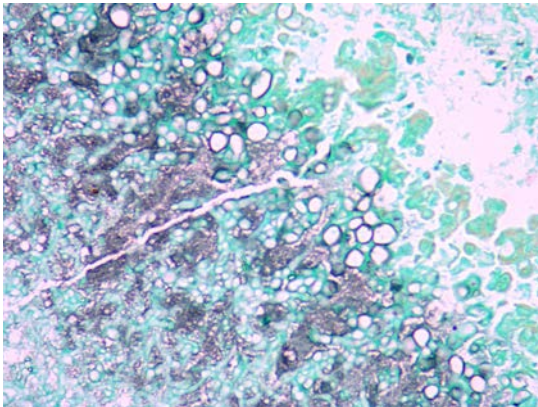




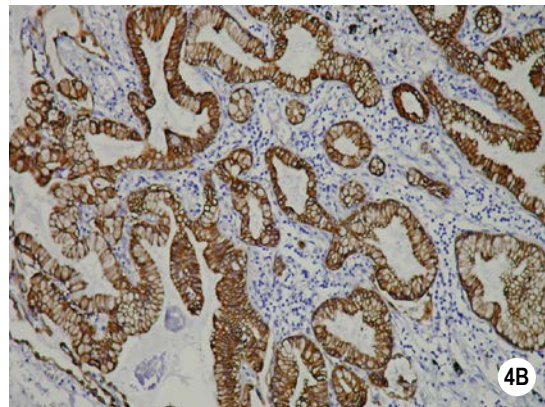
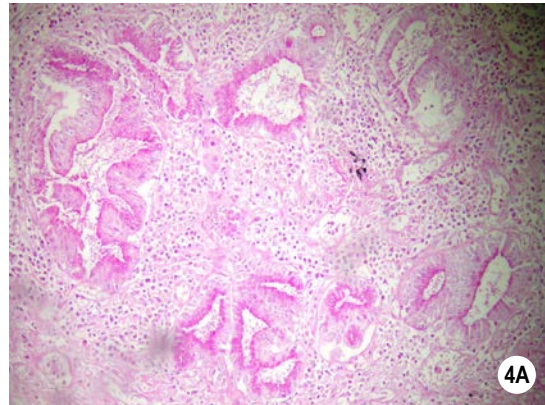
**Figure 1.** Lobectomy specimen showing measured single thin walled cavity measuring 2x2 cms and filled with dirty brown material.



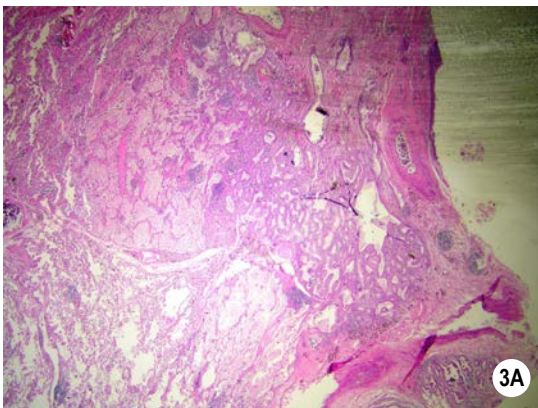
**Figure 3A & 3B.** Cavity wall lined by stratified squamous epithelium and showed granulation tissue, fibrosis and small collection of tumor cells arranged in acinar and lepidic pattern in subcentimeter area (H&E 10x and 40x)



**Figure 2.** Colonized fungal hyphae filling the cavity showing dichotomously branching hyphae compatible with *Aspergillus* (SM 40x)



**Figure 4A & 4B.** Tumor cells positive for mucicarmine (40x) and CK7 40x



## DISCUSSION

Reported cases of lung cancer with intracavitary aspergillus are rare in literature.<sup>1</sup> Regnard et al and Babatasi et al found only one patient with adenocarcinoma in their series of 89 aspergilloma patients.<sup>3,4,5</sup> Similarly only 11 such cases have been reported in Japan.<sup>1</sup> We here report a rare

case of aspergilloma lung with mucin secreting adenocarcinoma in the fungal cavity wall and to the best of our knowledge there are no such cases reported from Indian subcontinent.

It is known that aspergilloma is a well recognized rare complication of pulmonary carcinoma but in none of the cases there is evidence that aspergilloma preceded the tumor.<sup>2</sup> However, Kita



et al reported that lung cancer might arise from preexisting lung scars containing an aspergilloma.<sup>6</sup> Similarly Andrew et al reported that pulmonary carcinoma can be induced by the unusually long prevalence of fungus in the lung.<sup>2</sup> In our case too lobectomy was done for long standing aspergilloma which subsequently revealed mucin secreting adenocarcinoma of subcentimeter size in the cavity wall. Also it has been shown in animal models that aspergillus species have carcinogenic properties particularly in association with pulmonary adenocarcinoma.<sup>2,7,8</sup> Moreover the association between ingestion of aspergillus toxin and hepatocellular carcinoma in man is well synergy between a viral infection (hepatitis B) and aspergillus flavus toxin in the diet.<sup>2,9</sup>

Although, definite diagnosis of aspergilloma can usually be established by the characteristic appearance of fungus ball on the chest radiograph or computed tomography, but the presence of lung cancer with aspergilloma is difficult to detect radiographically.<sup>10,11</sup> Therefore, in the light of our finding and the literature it should be kept in mind, that as pulmonary aspergilloma and carcinoma can occur simultaneously, there is need for careful gross and histopathological examination.

This case highlights two important facts. First, careful gross is to be done in every case of pulmonary aspergilloma. Second, the detail workup of the patient should be done to rule out metastasis whenever a coexisting malignancy is discovered.

## REFERENCES

1. Nishida M, Maebeya S, Bessho T, Yoshimasu T, Miyoshi S, Naito Y. A case of Aspergilloma with Adenocarcinoma in the cavity Wall. *Haigan* 1998;38:733-37
2. Andrew SM, Bhattacharjee M, Keenan DJM, Reid H. Squamous cell carcinoma occurring in the wall of a chronic aspergilloma. *Thorax* 1991;46:542-43
3. Avci BY, Onen A, Kececi Y, Mermut G, Selek E. A case Report: Lung Adenocarcinoma with Pulmonary Aspergilloma. *Turkish Respiratory Journal* 2004;5:43-45
4. Babatasi G, Massetti M, Chapelier A, et al. Surgical treatment of pulmonary aspergilloma. *J Thorac Cardiovasc Surg* 2000;119:906-12
5. Regnard JF, Jcard P, Nicolosi M, et al. Aspergilloma: A Series of 89 Surgical Cases. *Ann Thorac Surg* 2000;69:898-903
6. Kita Y, Kondo D, Nogimura H, et al. Resected early lung cancer with pulmonary aspergilloma. *Jpn J Thorac Cardiovasc Surg* 2000;48:540
7. Blyth W, Hardy JC. Mutagenic and tumourigenic properties of the spores of *Aspergillus clavatus*. *Br J Cancer* 1982;45:10-17
8. Wong FR, Zhong ZD, Jiao B, Wong Z. Experimental studies of lung adenocarcinoma in mice induced by corn flour inoculated with *Aspergillus flavus*. *Chung Hua Chung Liu Tsa* 1981;3:91-3
9. Pattern RC. Aflatoxins and disease. *Am J Trop Med Hyg* 1981;30:422-39
10. Saleh W, Ostry A, Henteleff H. Aspergilloma in combination with adenocarcinoma of the lung. *Can J Surg* 2008;51:E3-E4
11. Tomioka H, Iwasaki H, Okumura N, et al. Undiagnosed lung cancer complicated by intracavitary aspergillosis. *Nihon Kokyuki Gakkai Zasshi* 1999;37:78-82

# Instruction to Authors

## 1. Scope

The SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS is devoted to dissemination of knowledge concerning various aspects of tuberculosis, lung diseases and HIV/AIDS. All articles relevant to the practice of this Journal and quality research are published. The Journal is an appropriate forum for the publication of articles concerning the social, economic, public health, epidemiology, diagnostics, genetics etc. in the area of tuberculosis, lung diseases and HIV/AIDS. The scientific manuscripts presenting the results of public health importance are encouraged. The novel case reports which adds to the existing knowledge and consistent with the scope of Journal will be considered for publication. The Journal accepts review/minireview, case report, short communications, and letters to editors within the scope of the journal.

## 2. Editorial Policy

The SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS will evaluate all the manuscript submitted for publications. The manuscript that might raise issues contrary to human welfare will be thoroughly evaluated. The manuscript submitted must contain sufficient detail, and material/information must be made available, to permit the work to be repeated by others. The editorial decision is final decision to accept or reject such manuscripts. The editor-in-chief has full authority over the editorials content of this Journal and the timing of publication of the content. He is responsible for evaluation, selection and editing of individual articles.

### 2.1. Ethical Guidelines

The SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS requirements for submitted manuscripts are consistent with the Uniform Requirements for Manuscripts Submitted to Biomedical Journals, as updated by international Committee of Medical Journal Editors in April 2010 (<http://www.icmje.org>).

All authors wishing to submit manuscripts in this Journal are expected to adhere to the highest ethical standards. The following sections include detail information about SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS ethical standards. Failure to comply with the policies may result in a suspension of publishing privileges in this Journal. The editorial board decides to clarify the following issues;

**Plagiarism:** Misappropriating another person's intellectual property constitutes plagiarism. This includes copying sentences or paragraphs verbatim (or almost verbatim) from someone else's work, even if the original work is cited in the references. The NIH ORI publication "Avoiding Plagiarism, Self-Plagiarism, and other Questionable Writing Practices: a Guide to Ethical Writing" can be referred to help authors identify questionable writing practices (<http://ori.dhhs.gov/edu/education/product/plagiarism>).

**Primary publication:** By submission of a manuscript is a representation that the manuscript or one with substantially the same content, was not published previously and is not in consideration for publication. It is author's responsibility to acknowledge any prior publication with data contained in a submitted manuscript, including his/her own article. In such cases, a copy of the relevant work should be submitted with the manuscript as a supplemental material. Editorial decision is a final decision to accept or reject the manuscript. The original articles submitted to the Journal must represent reports of original research and the original data must be available for review by the editor if necessary.

The manuscript is not acceptable for submission if it, or its data has been published in conference report, symposium, or any proceedings, a technical bulletin, book or any other retrievable sources. However, the following do not preclude submission; publication of limited amount of original data on a website, publication of method/protocol on a non personal website, dissemination of research findings as posters and publication of data in theses and dissertation on a university hosted website.

## 2.2. Permission

The corresponding author is responsible for obtaining permission from the original author and the publishers if he/she wishes to reproduce or modify any table or figures or to reproduce text in part or as a whole from previous publication. In addition to a signed permission (s) a statement indicating that the material has been reprinted with permission must be mentioned as legend of figure or table footnotes. The reprinted text must be quoted within the quotation mark.

## 2.3. Authorship

An author is the one who has substantially contributed to the concept, overall design, execution of the study/experiments, acquisition of data, writing the manuscript and critically revising the intellectual content. The individuals who provide assistance like, providing strains, reagents, acquisition of funding and collection of data need not to be listed as authors but may be recognized in acknowledgements. All authors must take full responsibility for the initial submission and subsequent revision, including appropriate citation and acknowledgement. They must have agreed upon that corresponding author will have authority to act on all matters related to publication. He/she must communicate all the information related to submission, review and publication to the authors and co-authors. Submitting a manuscript before all co-authors have read it is considered an ethical violation. All authors must agree to the order in which their names are listed in the byline. Statement regarding equal contribution by two or more than two authors should be written as statement below the byline and must be agreed by all authors. The **authorship form** should be submitted along with the manuscript. The change in order of the authors is acceptable only after receiving the signed statement by all authors.

The assistance like, technical help, writing assistance, or a department chairperson who provided general support should be in acknowledgement. Groups of person who have contributed materially to the paper but their contribution do not justify authorship may be listed under headings as, "served as a scientific advisor", "critically reviewed the study proposal", "collected data", provided and cared for study patients" in the acknowledgement.

## 2.4. Conflict of Interest

All authors submitting a manuscript are expected to **declare their conflict** of interest. Conflict of interest in terms of any commercial affiliations as well as consultancies, equity interest, patent-licensing should be expressed. It is the responsibility of authors to provide, in the acknowledgments section, a general statement disclosing financial or other relationships that are relevant to the study. In case if a manuscript uses any commercial products, the name of manufacturer's name should be mentioned in Methodology.

## 2.5. Copyright

On acceptance of the manuscript for publication the corresponding author on behalf of all authors needs to sign the copyright transfer agreement. The article will only be published after signing this agreement. The copyright grants to the author to republish the discrete portion of the article in any other forms like, CD Rom, electronic format, print in the condition that appropriate credit is given to the SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS. Significant portion of the article can not be hosted in the internet without the written permission of the Journal. However, given appropriate credit to the Journal, the article can be published in the University hosted websites.

## 2.6. Use of Human or Animal subjects in research

The use of human subjects or other animals for research purposes is regulated by the SAARC member states and individual institutions within these member states. Manuscripts containing information related to human or animal use should clearly mention that the research has complied with all relevant human subjects and animal right guidelines and institutional policies. If necessary, copies of these guidelines and policy documents should be provided to the editor.

## 2.7. Published statement of informed consent

The SAARC Tuberculosis, Lung Diseases and HIV/AIDS adhere to the Uniform Requirements for Manuscripts for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication. Patient identifiers will not be published, unless written informed consent is given. Photographs of subjects must be accompanied by their signed release authorizing publication. Failure to obtain informed consent of patient prior to submission would result in manuscript rejection.

## 2.8. Submission, review and publication Process

**2.8.1. Submission:** Manuscripts can be submitted online ([www.saarctb.org](http://www.saarctb.org)) or through an email ([saarctb@mos.com.np](mailto:saarctb@mos.com.np) or [stac@saarctb.org](mailto:stac@saarctb.org)) to the chief editor, SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS.

**2.8.2. Review:** All manuscripts submitted to the Journal online or through email are unbiased, confidential and undergoes a critical review. The author will be sent an email acknowledging the receipt of the article. The manuscript will be assigned a number (eg. 01/11; first paper received in the year 2011). Each manuscript is reviewed by the editors, editorial board, and ad hoc reviewers.

All submissions first go through an internal review process. The internal review involves the selection of articles based on some criteria like, articles within the aims and scope of the Journal, subject content, originality/flaws in the scientific validity, ethical issues, conflict of interest, little new information, an unprofessional presentation, sufficient quality of English and the compliance of Instruction to Authors. Once the submitted articles meet the eligibility criteria then the article is sent to a Statistician for statistical review.

The statistical review is provided by Statisticians in a form of a written report containing clear and straightforward suggestions and comments for both Journal editors and authors. A statistical reviewer reads a paper throughout, from the title and abstract, to the body text, to tables, figures, and references and makes notes on anything that requires clarification or explanation, or wherever a question may be raised in the text or data. If study is considered statistically acceptable, the statistical reviewer may suggest acceptance of the manuscript on the statistical grounds. If there are statistical errors in data and wrong use of statistical tools, statistical reviewer provides specific suggestions for the author on how to improve the manuscript. However, if errors are made in the study design, the manuscript is not accepted.

The manuscript is then reviewed by the co-editors (researcher/epidemiologist) in SAARC TB and HIV/AIDS Centre and then by the editor. When all the criteria are met by the manuscript then the editorial board identifies the external reviewer having expertise in the same field. In case some minor changes are needed to be made by the author the manuscript will be returned back to the corresponding author to do so. Corresponding author should be responsible to communicate to other authors.

The manuscript will be uploaded in the website for the review process. The database contains information on reviewing history, including number of current assignments, reviews completed in the past year and length of time taken, date of most recent review, and editor's evaluation of submitted reviews. In case, if articles received in which the regular reviewers are not experienced, we identify reviewers based on their scientific papers published in PUBMED and request to review them.

Inquiries to reviewers are sent via E-mail messages, which include the manuscript and the assignment deadline. When prospective reviewers agree to serve, they are permitted access to the manuscript and reviewing instructions. The time allocated for initial review is 2 weeks and if reviewer fails to do so, three reminders each of one week are allocated. Failure to review manuscript within this time frame will be retracted and sent to another reviewer. Reviewers send their critique back to the office. After receiving the comments from the reviewer it is again analyzed internally. Minimal changes are handled by the editorial team. If there are major changes to be made in the article, the manuscript is send back to the author to make those changes.

Generally, it takes 4-6 weeks from submission to review process and corresponding author will receive the information whether the manuscript has been accepted, rejected or needs minor modification. For the manuscripts rejected by the reviewer the author is informed with the comments of the reviewer. If modification is requested, the corresponding author should resubmit within a week or withdraw the article. Withdrawn articles can be resubmitted with all the issues addressed and the cover letter should clearly mention that it is the resubmission.

**2.8.3. Acceptance:** When the article has been accepted for publication on the scientific merit, the author will be notified of the acceptance of the manuscript. The volume and the year of publication in which the article will be published will also be mentioned. The duration from the submission to the manuscript acceptance will take 4-6 weeks.

**2.9. Page proof:** The manuscript in a PDF file will be send back to the corresponding author for page proof. The PDF page proofs must be printed out and correction should be made in hard copy. The correction needs to listed and sent back to the Journal. Failure to do so will delay the publication.

### 3. Organization and Format

#### 3.1. Principles

All types of articles should be written in English (UK), New Times Roman, font size 12 and in double sized space. The manuscript should be submitted in Microsoft office document .doc or .docx. The text of observational and experimental articles is divided into Introduction, Methodology, Results and Discussion, i.e. IMRAD format. When submitting an article, the first page should contain title of manuscript, author's list, affiliations, and name, affiliation and address of corresponding author. The second page should include abstract with key words. The third page should include the body of article (introduction, methodology, results, discussion, conclusion and acknowledgement). The reference should be in different page. The headings like, ABSTRACT, INTRODUCTION, METHODOLOGY, RESULTS, DISCUSSION, CONCLUSION, ACKNOWLEDGEMENTS, and REFERENCES should be written in upper case and bold faced letters. The tables and figures should be in different page. **Click here** for an example.

**Table:** Type table in separate page. Table should be numbered consequently. Table should be self explanatory with adequate headings and footnotes. The position of the table in the text should be indicated. The heading should be written as, **Table 1**. Title of the table. The table number is in bold faced letters followed by full stop. The table should be cited in the text as (Table 1). The number of tables should be minimized as much as possible with maximum information.

**Illustrations (Figure and Photographs):** Figure should be numbered consequently in the order of their first citation in the text. They can be inserted as a word document or uploaded as a separate image files. Images (photographs or drawings) should be sharp and usually 5 X 7 inches, in jpeg or tiff format and resolution of 300 dpi. Letters, numbers and symbols should be clear and of sufficient size so that it is visible when reduced. Legend should be provided at the bottom of the figure. The legend of the figure and photograph should be written as, **Figure 1**. Legend of the figure. The figure number should be written in bold faced letters followed by full stop and then the legend for the figure. The images (figure and photographs) should be cited in the text as (Figure 1). Photograph of a person should not be identifiable unless it is accompanied by the written permission of the subject. Permission to reproduce illustrations as a whole or in part or with modification should be obtained from the original publishers and authors and submitted with the manuscript.

All units of measurements should be expressed in SI units.

The drug names should be provided in generic names, the use of generic name is not permitted.

Manuscript should avoid contractions like, can't, don't, haven't etc.

The chemical nomenclature should follow the recommendations made by the recognized authority for the names of chemical compounds in Chemical Abstracts (CAS; <http://www.cas.org/>) and its indexes. The biochemical



nomenclature should be in accordance with Biochemical Nomenclature Related Documents available at <http://www.chem.qmul.ac.uk/iupac/bibliog/white.html>.

The enzymes name should be used as recommended by the Nomenclature Committee of the International Union of Biochemistry (IUB) as described in Enzyme Nomenclature available at <http://www.chem.qmul.ac.uk/iubmb/enzyme>.

Binary names, consisting of generic name and a specific epithet (e.g. *Mycobacterium tuberculosis*) must be used for all organisms. A specific epithet must be preceded by a generic name, written out in full in its first appearance (eg. *Mycobacterium tuberculosis*) and can be abbreviated on subsequent uses (e.g. *M. tuberculosis*).

**References:** The referencing style followed by the Journal is Vancouver Style. Follow the link for the reference, <http://www.library.uq.edu.au/training/citation/vancouver.pdf>

Any queries related to organization and format should be addressed to editor SAARC Tuberculosis, Lung Diseases and HIV/AIDS at [saarctb@mos.com.np](mailto:saarctb@mos.com.np) and [stac@saarctb.org](mailto:stac@saarctb.org).

The organization and format for submission of different kinds of manuscript are as follows.

### 3.2. Editorial

Editorial is written by the editorial team and is not open to the external authors.

### 3.3. Original article

**Title page:** This page should contain 1) a concise and informative title not more than 125 characters (including spaces) in bold faced upper case letters and without abbreviations 2) Names and affiliations of all contributing authors in bold faced letters, place an asterisks as a superscript for a corresponding author 3) The full name of corresponding author, designation, affiliation, address, single e-mail should be provided. This will be published in the article to facilitate communication 4) word count of text (not more than 3000 words) excluding titles, references, tables and figures.

**Abstract:** Should be written in structured format (Introduction, Methodology, Results and Conclusion) and should not be more than 250 words excluding the titles. Objectives should be the last sentence of the introduction. Do not write the experimental details. The abstract must be understandable without referring the text. Avoid abbreviations and references. Do not include tables and figures.

**Key words:** Below the abstract identify 3-5 key words to assist indexers in cross-indexing the article. Non-standard abbreviations should be avoided. First letter of each key word should be written in upper case. All the key words should be italicized.

**Introduction:** The introduction should be sufficient to provide the background information to allow reader to understand the hypothesis and rationale for the study without referring to other publications in the topic. Most appropriate references should be selected to provide most salient introduction rather than explicit review of the topic. Explain the abbreviation at its first appearance

**Methodology:** This should include sufficient information including study design, setting, study period, study population, selection of subjects (inclusion and exclusion criteria), scientific basis of selection of sample size, method of sampling, data collection procedures in detail, ethical consideration, data analysis and statistical tools used. The information on source of materials (name and location of manufacturer) must be provided. If numerous methodologies already exist, brief explanation of the procedure and the reference is sufficient. If the procedure is new, all technical details of the procedures should be written. This is to allow the study to be repeated by others. Statistical analysis if any should be mentioned in this section.

**Results:** The result should be presented in a sequential manner in text, tables and figures as concise as possible. Avoid using extensive graphs, tables and figures which can be written in text. Make sure they are all numbered in the order they appear in the text. Whatever has been presented in the table and figure need not to be written in text.

**Discussion:** This section must not extensively repeat the results instead should provide an interpretation of the results in relation to previously published work. The implications of the findings, their limitation and recommendations should be presented. Avoid unqualified statements and conclusions which are not completely supported by data. Avoid claiming priority. New hypothesis may be labeled as recommendations.

**Conclusion (s):** Summarize your findings and highlight the importance of the study. Simply do not repeat what has already been mentioned in previous sections of the manuscript. Based on the findings a recommendation should be made.

**Acknowledgement (s):** The source of any financial support for the work being published must be indicated in this section. Recognition to any personal assistance should also be mentioned in this section. The authors also need to declare financial or competing interest if any.

**References:** The referencing style followed by the Journal is Vancouver Style. Follow the link for the reference <http://www.library.uq.edu.au/training/citation/vancouver.pdf>

### 3.4. Review/Minireview

Reviews should not merely be the collection of previous findings in quotes from journals, reports and text books. It should be up to date, accurate and should contribute significantly to the scientific community. The review should be in depth analysis of the problem, background to this problem, science behind the problem, methodology, discussion, recommendation, conclusion, future perspectives, acknowledgement and references. Abstract should be unformatted and not more than 300 words and the text should not be more than 4500 words. The tables and figures (combined) should not be more than 7. The references should not be more than 40.

The Minireviews should be focused discussions of defined topics relevant to the scope of the SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS. They are not expected to be comprehensive reviews of the literature but rather focused discussions of specific topics. The minireview should include analysis of the problem, background to this problem, science behind the problem, methodology, discussion, recommendation, conclusion, future perspectives, acknowledgement and references. A standard title page should be provided. This is followed by an unformatted abstract which should be not more than 250 words and then the text of the minireview should not be more than 3500. Up to 5 tables, figures, or photographs (combined) may be included. Less than 30 references should be used. Minireviews will be reviewed by the SAARC Tuberculosis, Lung Diseases and HIB/AIDS editors and will be peer reviewed.

### 3.5. Case reports

A Case Report should include five sections; abstract, introduction, case report, discussion and conclusion. The title page must include title, authors list and their affiliations and corresponding author's name, affiliation and address. The abstract should be no more than 150 words. The abstract should be structured and should include introduction, patient, result and conclusion. The abstract should follow by key words, 3-5 key words. The body of case report should not be more than 1000 words and should include introduction, case report, discussion and conclusion. This should be followed by acknowledgement and references (not more than 10). The total number of tables and figures (combined) must not exceed 2.

### 3.6. Letters to editors

Letters to editor should not be more than 500 words and must cite references (not more than 7) to support the writer's argument. For Letters commenting on published articles, the cover letter should state the volume and issue in which the article was published, the title of the article, and the last name of the first author. Letters to the Editor do not have abstracts.

### **3.7. Short communication**

The short communications that are within the scope and are of particular interest to the readers of the SAARC Tuberculosis, Lung Diseases and HIV/AIDS are published. Abstract should be no more than 150 words. Manuscripts are limited to 1000 words, one figure, one table and not more than 10 references.

### **3.8. Errata**

This section provides an opportunity of correcting errors that occurred during the writing, typing, editing, or publication. These errors could be a misspelling, a dropped word or line, or mislabeling in a figure in a published article. Authors can submit errata using the online manuscript submission or via the email (See below).

### **4. Submitting manuscript**

Manuscripts can be submitted online ([www.saarctb.org](http://www.saarctb.org)) or through email to the Chief Editor, SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS. Authors should ensure following documents to be sent if he/she wishes to send manuscript via email or online system. 1) Cover letter 2) Authorship form 3) Declaration form 4) Manuscript (Title page, Abstract, Body of article, References) and 5) Letter of Ethical Approval or A statement of clearance of the study protocol and the study by the Ethical Committee/Board mentioned in Methodology.

### **5. Publication charge**

The SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS is available in printable and online open access electronic versions and is free of charge.



SAARC Tuberculosis and HIV/AIDS Centre (STAC)

Thimi, Bhaktapur

G.P.O. Box 9517, Kathmandu, Nepal

Tel.: 00977-01-6632601, 6632477, 6631048

Fax: 00977-1-6634379

E-mail: [saarctb@mos.com.np](mailto:saarctb@mos.com.np)

Website: [www.saarctb.org](http://www.saarctb.org)