

## Knowledge and Preventive Practice of Pulmonary Tuberculosis Among Tuberculosis Patients in Chitwan District

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### ABSTRACT

**Background:** Tuberculosis (TB) is one of the world's most serious infectious diseases caused by Mycobacterium tuberculosis. Tuberculosis typically attacks the lungs, but can also affect other parts of the body.

**Methods:** An analytical cross-sectional study was conducted patients who were suffering from tuberculosis and taking Anti-TB medicine from different DOTS center of Chitwan District during the 22nd August to 3rd September 2021. Data was analyzed using descriptive and inferential statistical tools in SPSS-20. p-value <0.05 was considered as statistically significant.

**Results:** Out of 285 respondents regarding age majority (41.8%) of respondents belong to the age group of 20–34 years. The mean and SD of age was 42.77±1.019 years. More than 60% respondents had good level of practice on preventive measure. None of the variables was found to be statistically significant.

**Conclusion:** Most of the tuberculosis patients had not good level of knowledge and preventive practices so DOTS center and local government need to make strategy on preventive measure.

**Keywords:** tuberculosis; knowledge; preventive; chitwan.

### INTRODUCTION

Tuberculosis (TB) is one of the most ancient diseases of mankind and has co-evolved with humans for many thousands of years or perhaps for several million years.<sup>1</sup> Tuberculosis (TB) is one of the world's most serious infectious diseases caused by Mycobacterium tuberculosis. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. The disease has become rare in high income countries, but is still a major public health problem in low- and middle-income countries. According to the World Health Organization (WHO), one-third of the world's populations are infected with TB. Each year, there are over nine million cases of TB and almost 1.8 million TB-related deaths worldwide. Furthermore, TB is one of the leading causes of death in HIV-infected people.<sup>2</sup> Tuberculosis is the most widespread infectious disease in Nepal and poses a serious threat to the health and development of the country. Incidences of drug resistant tuberculosis in Nepal are increasing and this tuberculosis a major threat to successfully controlling tuberculosis.<sup>3</sup> Tuberculosis are increasing challenge to public health and to TB prevention is that of transmission of drug resistant strains of M. tuberculosis, Initial evidence suggested reduced transmissibility of resistant strains; however, it is now clear that primary trans-

mission of drug-resistant bacteria (as opposed to acquired resistance) is the dominant mechanism sustaining the global transmission of drug-resistant TB (DR-TB) cases.<sup>4</sup>

### METHODS

An analytical cross-sectional study was conducted among patients who were suffering from tuberculosis and taking Anti-TB medicine from different DOTS center of Chitwan District during the 22<sup>nd</sup> August to 3<sup>rd</sup> September 2021. Sample size was calculated by taking the prevalence as 59.8% from the Bansal et al.<sup>5</sup> with a 6% level of significance (The z-score value at 95% Confidence interval is 1.96), with 5% margin of error and 10% non-response error the optimal sample size of this study was 285. Sample size was determined by using the formula  $(n) = Z^2 pq / \{e^2 + (Z^2 pq / N)\} = (1.96 * 1.96 * 0.598 * 0.391) / (0.06 * 0.06) + \{(1.96 * 1.96 * 0.598 * 0.402) / 285\} = 257$ . Adding 10% non response error this study was conducted among 285. Cronbach's alpha was calculated to check the reliability of tool, its value was 0.779. Also, after the consultation with research experts, research advisors, and DOTS center focal person, the questionnaire was modified and then finalized. Then, the well Semi-structured questionnaire was used as a tool for this research. Ethical approval

was taken and also formal written approval was obtained from the concerned authority of DOTS center. Informed and written consent was taken from all the participant. Data was analyzed using descriptive and inferential statistical tools in SPSS-20. p-value <0.05 was considered as statistically significant.

## RESULTS

Out of 285 respondents regarding age majority, 41.8% of respondents belong to the age group of 20–34 years, and at least 16.5% of respondents belong to the age group above 60 years of age. The mean value and SD of age were  $42.77 \pm 1.019$  years. Regarding religion, the majority of respondents were Hinduism, 64.2% by religion and Janajati, 57.2% by ethnicity (Table 1).

Variables	Frequency(%)
<b>Age (In years)</b>	
< 20	18(6.3)
20-40	119(41.8)
40-60	101(35.4)
> 60	47(16.5)
Mean $\pm$ SD	42.77 $\pm$ 17.20
<b>Gender</b>	
Male	189(66.3)
Female	96(33.7)
<b>Ethnicity</b>	
Brahmin /Chhetri	63(22.1)
Madesi	3(1.1)
Dalit	45(15.8)
Newar	10(3.5)
Janajati	163(57.2)
Muslim	1(0.4)
<b>Religion</b>	
Hinduism	183(64.2)
Buddhism	67(23.5)
Muslim	1(0.4)
Christianity	34(11.9)

Above table shows respondents' socio-demographic information regarding preventive practices of tuberculosis (type of family, occupation, income, types of family). Highlighting the head of the family, with labor accounting for 31.6% and students accounting for 6.7%. Regarding occupation, the majority highlighting the income of the respondents, the highest was 87.4% below Rs 500000, whereas the lowest was 2.5% above Rs 100000. Regarding the types of the family of the respondent, the highest was 49.1% joint family, and

the lowest of the respondents were from 2.1% of extended family (Table 2).

**Table. 2 Respondents' Socio-demographic information regarding preventive practice of tuberculosis patient. (n=285)**

Variables	Frequency(%)
<b>Head of family member</b>	
Father	173(60.7)
Mother	2(0.7)
Grandparents	11(3.9)
Self	74(26)
son/daughter	25(8.8)
<b>Main occupation</b>	
Service	37(13)
Labour	90(31.6)
Foreign employment	38(13.3)
Farming	73(25.6)
Housewife	14(4.9)
Student	19(6.7)
<b>Monthly Income (Thousand)</b>	
less than 50	249(87.4)
50000-100000	7(2.5)
More than 100000	29(10.2)
<b>Type of the Family</b>	
Nuclear Family	139(48.8)
Joint Family	140(49.1)
Extended Family	6(2.1)

Among the total respondents regarding marital status, 64.6% of respondents were married, and 3.5% of respondents were widow. In terms of education, the majority of respondents (93.3%) were literate, while 6.7% were illiterate. 87.4% of respondents had pulmonary tuberculosis and 12.6% of respondents had extra-pulmonary tuberculosis. The majority of respondents to DOTS category 63.9% of new PBC cases and the lowest percentage of respondents were from after loss to follow up cases (2.8% of respondents). Also, 44.9% of smears positive for microscopic examination and the lowest of respondent was 2.8% of CT scan for respondent's final treatment result. Regarding of respondents to choice was 100% of the government DOTS center (Table 3). Regarding respondents' knowledge on tuberculosis information, majority (93.3%) of the respondents had heard about preventive practices for tuberculosis. While 76.8% reported persistent coughing for more than two weeks and (21.4%) said weight loss. Among them, the majority (92.8%)% through the air when coughing or sneezing and (4.0%)% of patients said tuberculosis spread from one person to another they don't know.

<b>Table 3. Respondent's Socio-demographic information regarding preventive practice of tuberculosis patient. (n=285)</b>	
<b>Variables</b>	<b>Frequency (%)</b>
<b>Marital Status</b>	
Married	184(64.6)
Unmarried	77(27)
Window	10(3.5)
Separated	14(4.9)
<b>Education status</b>	
Literate	266(93.3)
Illiterate	19(6.7)
<b>Academic qualification (n=266)</b>	
Only Read and Write	60(21.1)
Basic level (1-8)	75(26.3)
Secondary (9-12)	90(31.6)
Higher secondary up to 12	41(14.4)
<b>Types of tuberculosis</b>	
Pulmonary tuberculosis	249(87.4)
Extra-pulmonary tuberculosis	36(12.6)
<b>DOTS category</b>	
New PBC case	182(63.9)
Relapse PBC case	35(12.3)
Treatment failure	10(3.5)
Loss to follow up	8(2.8)
New PCD case	20(7)
Extra pulmonary case	30(10.5)
<b>Final treatment procedure result</b>	
Smear positive for microscopic examination	128(44.9)
Sputum for gene x port positive	117(41.1)
Chest x-ray	20(7)
ADA test for blood	12(4.2)
CT-Scan	8(2.8)
<b>Dots center</b>	
Government dots center	285(100)

The majority of respondents (96.8%) were satisfied with the DOTS Centre service (Table 4). Regarding practice measure, 78.4% of the respondents for indiscriminate spitting and at least 11.3% of the respondents for sputum disposal before diagnosis for disposing in dustbin/waste. (Table 5). This study revealed that 63.6% tuberculosis patients had good level of practice. There was no association between preventive practice of tuberculosis patients with socio-demographic (p-value<0.05) (Table 7).

**Table 4. Respondents' Knowledge information regarding preventive practice of tuberculosis. (n=285)**

<b>Variables</b>	<b>Frequency(%)</b>
<b>Heard about Preventive practice of Tuberculosis</b>	
Yes	265(93)
No	20(7)
<b>If yes, from where (Multiple response)</b>	
Teacher/Friends	54(20.4)
Media	120(45.3)
Health person	262(98.9)
<b>Cause of Tuberculosis (Multiple response)</b>	
Pathogenic organism	224(78.6)
Traditional belief	14(4.9)
Lack of sanitation	159(55.8)
Cigarettes and alcohol	121(42.5)
<b>Symptoms Of Tuberculosis (Multiple response)</b>	
Fever	203(71.2)
Blood in the sputum	200(70.2)
Chest pain	232(81.4)
Persistent coughing for more than two weeks	219(76.8)
Don't want to eat	127(44.6)
Weight loss	61(21.4)
<b>Tuberculosis spread from (Multiple response)</b>	
One person to another	10(4)
One person to another for through food	52(20.8)
Through the air when coughing	232(92.8)
Through touching a person with TB	55(22)
Through mosquito bite	87(34.8)
Through sharing clothes	32(12.8)
<b>Satisfied with the DOTS center service</b>	
Yes	276(96.8)
No	9(3.2)
<b>History of TB in the family member</b>	
Yes	27(9.5)
No	258(90.5)
<b>If yes did he/she complete the TB treatment</b>	
Yes	19(70.37)
No	8(29.62)

## DISCUSSION

In this study, we found that majority 41.8% of the respondents were in 20-40 years age group. Maximum respondents were literate. A study of Bansal et al, found that majority (45.2%) of the patients were in 20-40 years age group, ratio of male to female was 0.8:1, maximum patients were literate and most of them were house workers by occupation. In

**Table 5. Respondents' practice regarding preventive practice of tuberculosis. (n=285)**

Variables	n(%)
<b>Duration of treatment at time</b>	
< 1 months	6(2.1)
1-3 months	47(16.4)
>3 months	232(81.5)
<b>Received education on preventive measure</b>	
Yes	259(90.9)
No	26(9.1)
<b>Preventive methods are you practicing (MR)</b>	
Use of separate utensil	141(50)
Self isolation	176(62.4)
Use of mask	214(75.9)
Covering face while coughing and sneezing	118(41.8)
Safe sputum disposal	113(40.1)
Keeping your surrounding clean	65(23)
Screening of contact and family member	77(27.3)
Do not practice	4(1.4)
Do not know	1(0.4)
<b>Practice for sputum disposal before (MR)</b>	
Indiscriminate spitting	222(78.4)
Using paper/handkerchief	57(20.1)
Disposing in dustbin/waste	32(11.3)
<b>Practice for the disposal of sputum now</b>	
Indiscriminate spitting	73(25.61)
Using paper/handkerchief	90(31.5)
Disposing in dustbin	79(27.7)
Burning	54(18.94)
Pouring boiled water in container	17(5.9)
Burying	13(4.56)
Use of 5% cresol	7(2.4)
Not applicable	14(2.8)

a study by Mei et al., the ratio of male to female patients was 2.36:1.15 We found that 67.10% of patients had received health education on preventive measures of TB and 32.90% did not. Similarly, Mei et al., found 67.4% of patients received health education and 32.6% did not.<sup>5</sup>In this study, the majority of 31.6% of labor and literate respondents had 93.3% of the highest prevalence of tuberculosis. A study by Amgain et al. revealed that the highest prevalence of PTB was found among farmers (49.1%) and the highest prevalence of TB among illiterate people (28.1%).<sup>11</sup>In this study 36.5% respondents had poor practice and 63.5% had good practice. A study of Bansal et al found that 59.8%

**Table 6. Respondents level of practice.(n=285)**

Level of preventive practice	n(%)
Good practice	181(63.6)
Poor practice	104(36.4)

of the respondents had good practice on preventive measures of TB while 40.2% of the respondents had poor practice on preventive behaviour on TB. Similarly, F. M. Yusuf showed 67.2% of the respondents had good practice on prevention behaviour on TB while 32.8% of the respondents had poor practice on preventive behaviour on TB.<sup>5</sup>In this study 78.5% patients disposed sputum by indiscriminate spitting before diagnosis of TB. While Bansal,et. Al found that 45.1% of patients disposed sputum by indiscriminate spitting. Lin Mei et al., also found that maximum respondents spit casually before diagnosis of TB.<sup>15</sup> In this study 42.5% respondents had believed that consuming excessive alcohol & cigarettes and 78.6% respondents believed that khew pathogenic organisms of TB in this Districts, Amgain et al, found that 71.9% believed that consuming excessive alcohol was the cause of TB and 70.1% believed that smoking was the cause TB. Only 17.5% peoples knew Mycobacterium tuberculosis is the causative organism of TB in this VDC.<sup>6</sup>Present study 63.6% respondents tested HIV after diagnosis TB in this districts. It has nourished the development of active TB among the immune-compromised and has intensified TB deaths.<sup>32,33</sup> Despite the huge efforts, HIV testing among TB patients has increased rapidly 7%.<sup>7</sup>Present study 84.8% respondents used separate utensils and paper / handkerchief. Krishnadas et al, found that 78.3% of the study subjects used separate utensils to prevent dissemination of infection among the family members, which is not at all required.<sup>8</sup>

## CONCLUSION

Most of the tuberculosis patients had poor level of knowledge and preventive practice To minimize the burden of tuberculosis DOTS center and local government need to make strategy on preventive measure.

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**Conflict of Interest:** None

Variables	Preventive Practices		Chi-square	p-value
	Good	Poor		
<b>Age (year)</b>				
<20	9(50)	9(50)	1.91	0.591
20-40	40(33.6)	79(66.4)		
40-60	37(36.6)	64(63.4)		
>60	18(38.6)	29(61.7)		
<b>Ethnicity</b>				
Brahimin/Chettry	32(50.8)	31(49.2)	0.088	0.957
Janajati	110(67.5)	53(32.5)		
Other(Dalit,Muslim)	39(66.10)	20(33.9)		
<b>Religion</b>				
Hindu	116(63.4)	67(36.6)	1.649	0.439
Buddhism	44(64.7)	24(35.3)		
Other(Mulism, Chistianity)	21(61.8)	13(38.2)		
<b>Gender</b>				
Male	117(61.9)	72(38.1)	0.623	0.43
Female	64(66.7)	32(33.3)		
<b>Occupation</b>				
Service	24(64.9)	13(35.1)	5.07	0.024
Labor	64(71.1)	26(28.9)		
Foreign employment	24(63.2)	14(36.8)		
Farming	46(63.0)	27(37.0)		
Others (Housewife, Student)	14(42.2)	19(57.57)		
<b>Family type</b>				
Nuclear	46(33.1)	93(66.9)	6.486	0.041*
Joint	87(62.1)	53(37.9)		
Extended	1(16.7)	5(83.3)		
<b>Marital status</b>				
Married	116(63.0)	68(37.0)	0.142	0.986*
Unmarried	50(64.9)	27(35.1)		
Widow	6(60.0)	4(40.0)		
Separated	9(64.3)	5(35.7)		
<b>Academic qualification</b>				
Literate	168(63.2)	98(36.8)	0.212	0.645
Illiterate	13(68.4)	6(31.6)		

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