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Knowledge, Attitude and Practice on Tuberculosis among Health Workers in Tribal Community

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ABSTRACT

Background: The research "Knowledge, Attitude and Practice on Tuberculosis among Health Workers in Tribal Community" aims to identify and address the gap for improvement on the knowledge, attitude and practice on tuberculosis management and services by health workers in tribal community of the hilly regions **of** Bangladesh.

Methods: The study employed a cross-sectional design, conducted over twelve months from January to December 2022, by surveying 170 health workers from three upazilas in Rangamati district of Bangladesh. A simple random sampling technique was used to select study area, and participants were selected by cluster sampling. A semi-structured questionnaire (both open and close ended) was used to collect data by face-to-face interview after obtaining informed written consent.

Results: Among the 170 respondents, 146 (85.9%) were female and 24 (14.1%) were male health workers, aged between 30–40 years. More than half (53%) had TB-specific training. The average knowledge score was 9.13 (SD ±2.35), with 52.9% scoring between 60–80% on knowledge about tuberculosis (TB) transmission, symptoms, treatment, and prevention. Most respondents (86%) knew TB is caused by bacteria, and 89.4% identified airborne droplet transmission. Close contacts were recognized as high-risk by 60%, while 86.5% identified cough lasting over two weeks as a symptom. About 60% understood the difference between TB infection and disease. Chest X-ray (61.8%) and sputum AFB smear (50.6%) were commonly mentioned diagnostics. Most (76.5%) correctly identified the need for two sputum samples, though 78.9% believed sputum must be tested immediately. Only 33.5% knew four drugs are used in first-line treatment, while 78.2% knew the treatment duration of six months and 82% were aware of directly observed therapy (DOTS). Awareness of multidrug-resistant tuberculosis (MDR-TB) was low at 14.7%. Among participants, 160 (94%) knew at least one preventive measure for TB, with early diagnosis (61.2%) being the most recognized. A majority (93.5%) expressed a positive attitude toward new TB case detection, community engagement, treatment barriers, stigma, training, and prevention. About 96.5% agreed that TB patients should be asked if anyone in their household has a chronic cough, while 90% emphasized the importance of community engagement in identifying TB cases, and 97.7% supported informing the community about TB problems, treatment, and prevention. Most participants (69%) believed family members should avoid sharing utensils with TB-infected individuals, but only 47.7% agreed that TB patients face greater denial in the community than those with HIV. Prioritizing coughing patients was practiced by 41.2%, while 53.5% ensured coughing patients wore masks, and 25.9% separated them. For confirmed TB cases, 63% of health workers consistently wore masks. Overall, 52.9% of participants had good knowledge (60–80% score), 44.1% showed a positive attitude (≥70% score), and 90% demonstrated good practices (≥60% score).

Conclusion: The study highlights both strengths and areas for improvement in the knowledge, attitude, and practices of health workers managing tuberculosis (TB) in tribal communities of Bangladesh. While many participants demonstrated adequate knowledge of TB transmission, symptoms, and preventive measures, gaps remain in advanced areas like MDR-TB awareness and the implementation of infection control measures such as separating coughing patients and consistent mask usage. Strengthening targeted training programs and promoting community engagement are crucial to bridging these gaps and enhancing TB management and prevention efforts in tribal and hilly regions.

Keywords: Knowledge, Attitude and Practice, Tuberculosis (TB), Health Workers, Tribal Community

Introduction

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis, claiming the highest number of lives around the world as a single infectious agent[1,14,20]. Since 1993, the World Health Organization (WHO) has regarded tuberculosis as a worldwide public health emergency[14,15,20]. Additionally, TB is one of the main illnesses that contribute to severe economic crises in low-income nations [11,13, 21,22].

In 2020, the 30 high TB burden countries accounted for 86% of new TB cases[2,3]. Eight countries among these were responsible for two thirds of the total cases, and the highest number of fatalities worldwide with India leading the count [3,15,18,19]. In WHO South East Asian region, about 4.3 million people contracted TB and 700,000 died as a result of the disease (excluding HIV+TB mortality), accounting for more than half of the worldwide TB death toll of 1.3 million for the year [2,4].

Bangladesh is one of the high TB-burden countries and accounted for 3.6% of new TB cases of the global total [1,2,22]. In 2020, The estimated incidence of TB per 100,000 was 218 with a mortality rate of 27 in Bangladesh 4. Incidence rate was 221 and mortality was 24 per 100,000 population in 2019[4]. WHO reported that due to COVID-19 pandemic there was a rise in TB death and incidence rates, and a major decline in TB case notifications, diagnosis and treatment rates in 2020 globally[2,20,21]. The scenario in Bangladesh mirrors global trends, with low case notifications reported in that year[2]. According to the annual report of 2020, nearly 85.46% cases of TB in Bangladesh were notified from upazilas in 2019 and new pulmonary bacteriologically confirmed cases were more than 55.37%[4].

In Chittagong division case notification rate of new cases was 176 per 100,000 in 2019[4]. Number of new bacteriologically confirmed cases per 100,000 population was 961 in Khagrachari, 791 in Rangamati and 525 in Bandarban of Chittagong Hill Tracts with a treatment outcome of more than 95% in 2019[4]. Although the number of new cases in the hilly districts are comparatively lower than the rest of the districts of Chittagong division, the figures are still concerning. The tribal populations of the three hill districts of Chittagong Hill Tracts (CHT) face unique challenges that increase their vulnerability to TB [25, 26, 27]. Most tribal communities reside in hard-to-reach areas, with high poverty levels, and have limited access to few available healthcare services [25,27]. The available healthcare services often fail to address their unique socio-cultural and linguistic backgrounds[26,27]. These might make identifying and treating diseases like tuberculosis more complicated. Community healthcare workers play a pivotal role in addressing these challenges [21, 22,23].

Bangladesh has achieved a treatment success rate of more than 95 percent through public-private partnerships and the involvement of a large number of health care providers[4,5,12]. Bangladesh adopted the internationally recommended community based Directly Observed Treatments Short Course (DOTs) strategy in 1993 and the STOP TB strategy in 2006 for effective TB control[1,5,6,12]. Since 2015 the country's NTP (National Tuberculosis Program) strategies and policies are aligned with the END TB strategy provided by WHO[4,5]. Since 2015 NTP (National Tuberculosis Program) strategies and policies are aligned with END TB strategy provided by WHO[4,5]. Bangladesh has achieved a treatment success rate of more than 95 percent through public-private partnerships and the involvement of a large number of health care providers[4,5]. The NTP and other non-governmental organizations have made significant contributions to slowing the spread of the illness[1,2,4,5]. But to achieve the milestone of reduction in incidence of TB cases to 50% in 2025, NTP will have to address communities of all levels across the country. Reaching the tribal community and implementing the appropriate targeted interventions are essential if the NTP's objective is to be accomplished[17].

A high level of community awareness and positive perception towards tuberculosis and its management is crucial for the successful outcome of the control measures[13,23]. Sustainability of progress depends on proper understanding of disease and treatment, attitude for patient counselling and education by health workers at community level [3]. The role of health workers' knowledge on tuberculosis, its management and their attitude towards tuberculosis in disease control is not much studied in the hilly areas. The current study was aimed to identify and address the gap for improvement on the knowledge, attitude and practice on tuberculosis management and services by health workers in tribal communities of the hilly regions.

Methods

This cross-sectional study was conducted in Kawkhali, Naniarchar and Rangamati Sadar upazila of Rangamati district of Bangladesh. Total duration of the study was twelve months, from January to December 2022. Rangamati district was chosen purposively and three upazilas (Kawkhali, Naniarchar and Raangamati Sadar) were chosen randomly by lottery method. The study drew upon a survey of 170 health workers selected by cluster sampling process, from three Upazila Health Complexes, seventeen community clinics and seven BRAC health centers of Rangamati district. The study population included both male and female health workers from primary healthcare settings, those who are working in both government and non-government healthcare facilities and those who are directly or indirectly involved in providing health care in tribal community. There were six categories of field level health workers who provide

primary health care in tribal community, which were, Health inspectors (HI), Assistant health inspectors (AHI), Health assistants (HA), Community healthcare provider (CHCP) and BRAC Shasthya Shebika and Shasthya Kormi. Both male and female health workers from primary healthcare settings, those who are working in both government and non-government healthcare facilities and those who are directly or indirectly involved in providing health care in tribal community. Participants who were severely ill, were excluded.

Data were collected by face-to-face interview, by using a pretested, semi-structured (both open and close ended) questionnaire after signing the written informed consent form.

The questionnaire was developed by using selected variables according to Specific objectives respondents' particulars, questions related to background characteristics, questions related to job-related characteristics, questions related to knowledge on tuberculosis, questions related to practice on tuberculosis, questions related to attitude on tuberculosis.

To assess the level of knowledge, 13 questions related to knowledge variables were scored according to correct answers. Every correct answer was given 1 point and negative answer, or unanswered question was given no points[7]. Those who scored more than 10 or 80% of the total attainable score were categorized as having an "excellent" level of knowledge. Those who scored in between 8-10 (60%-80%) and 5-8 (40%-60%) were categorized as having an "Intermediate" and "good" knowledge level respectively, while respondents with score less than 5 or 40% were rated as having a poor level of knowledge[8,9,10].

The attitude section is comprised of 27 statements. The responses to these statements were obtained using a 5-point Likert scale with response categories "Strongly agree", "Agree", "Neutral", "Disagree" and "Strongly disagree" [9,11]. Each of the response was scored as 5-1 respectively. Composite scores were calculated and those scoring ≥70% of highest attained score (76) were considered as having positive attitudes towards tuberculosis[12].

Practices were not directly observed. Practice was assessed by 10 statements with response categories, "Never", "Sometimes". "Most of the times", "Always". These responses were scored as 1 to 4 accordingly. After calculating the composite score, ≥60% of highest attained score (40) was categorized as good practice [7,9].

Results

BACKGROUND CHARACTERISTICS:

Among all of the 170 respondents, 146 (85.9%) were female and 24 (14.1%) were male health workers. Most of the participants (41.2%) were between 30-40 years of age (Mean was 38.45 ± 9.8 years) with minimum age of 18 and maximum 65 years.

Concerning education of the respondent's, majority (27.1%) attended SSC (secondary school certificate). Only 13.5% participants had attained education above honor's level.

Majority (73%) of the health workers were working BRAC health centers while rest (27%) were in government health facilities - UHC (17%), CC (10%) and 86.5% had spent more than a year working in their particular health facility (Table 1). More than half (53%) of the participants participated in TB-specific training. Only 7 participants (4%), had received training in past six months from the time of this study (Table 01).

Table 01: Background characteristics of health workers (n=170)

Variable	Category	Frequency	Percentage (%)
Age	<30	36	21.2
	30-40	70	41.2
	40-50	44	25.9
	>50	20	11.8
Sex	Male	24	14.1
	Female	146	85.9
Level of education	Primary school	19	11.2
	Junior school	45	26.5
	SSC	46	27.1
	HSC	37	21.8
	Honours and above	23	13.5
Previous illness with tuberculosis	Yes	3	1.8
	No	167	98.2
	Yes	139	81.8

Variable	Category	Frequency	Percentage (%)
Previous illness of close contacts with tuberculosis	No	31	18.2
Professional category	Health Inspector	3	1.8
	Asst. Health Inspector	6	3.5
	Health Assistant	20	11.8
	CHCP	17	10.0
	Shasthya Shebika	103	60.6
	Shasthya Kormi	21	12.4
Working station/department	UHC	29	17.1
	Community clinic	17	10.0
	BRAC health centre	124	72.9
Duration of work in current position	<1 year	23	13.5
	>1 year	147	86.5
Training on tuberculosis	Yes	90	52.9
	No	80	47.1
Training on tuberculosis in past six months	Yes	7	4.1
	No	163	95.9

KNOWLEDGE ON TUBERCULOSIS:

The average knowledge score among respondents was 9.13 points (standard deviation = 2.35) out of a total possible score of 13 points, reflecting a generally satisfactory level of understanding of tuberculosis. Only five respondents (2.9%) achieved a perfect score by answering all the questions correctly, while one respondent obtained the minimum score of one, indicating very limited knowledge. More than half of the respondents (52.9%) demonstrated a good level of knowledge, scoring between 60-80% of the total score, with a focus on key areas such as transmission, symptoms, treatment, and prevention of tuberculosis. The 'excellent knowledge' category, comprising those who scored above 80%, accounted for 30% of respondents, highlighting a significant group with advanced understanding. Meanwhile, 9.4% fell into the 'intermediate knowledge' category, reflecting a basic but incomplete grasp of the topic. However, the presence of 22 respondents (7.6%) in the 'poor knowledge' category underscores a notable gap in awareness and understanding, which may need to be addressed through targeted education and training initiatives (Fig 01).

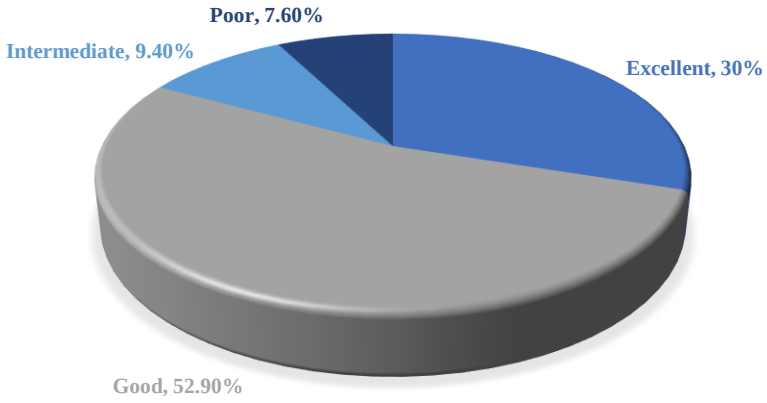

Fig 1: Level of knowledge on tuberculosis among health workers (n=170)

KNOWLEDGE ON TRANSMISSION OF TUBERCULOSIS:

Majority (86%) knew the cause of TB is a bacterium. About 152 (89.4%) answered tuberculosis transmits through droplets via air due to coughing and sneezing while 27.6% answered by sharing food or drink can transmit tuberculosis. About 13.5% and 12.4% also answered tuberculosis transmits by sharing utensils and needles respectively (Table 02).

About 88.2% respondents answered on people that are at higher risk group for tuberculosis transmission. Close contacts of TB patients were at a high risk for transmission was answered by Majority (60%). About 40% answered young children and only 15.3% answered health care workers were also at risk. About 45.9% respondents also answered people who smoke can also be at risk of transmission (Table 02)

Table 02: Knowledge on transmission of tuberculosis among health workers (n=170)

Variable	Response	Frequency	Percentage
Cause of tuberculosis	A bacterium	146	85.9
	Don't know	24	14.1
Knows about transmission of tuberculosis	Yes	164	96.5
	No	6	3.5
Way of tuberculosis transmission	Through droplets via air due to coughing and sneezing	152	89.4
	Blood transmission	15	8.8
	By sharing food or drink	47	27.6
	Sexually	14	8.2
	By kissing	34	20.0
	By shaking hands	6	3.5
	By direct contact	12	7.1
	By sharing needles	23	13.5
	By sharing utensils	21	12.4
Knows about higher risk group for tuberculosis	Yes	150	88.2
	No	20	11.8
Higher risk group	Close contacts of a confirmed case	102	60.0
	Young children	67	39.4
	People living with HIV/AIDS	22	12.9
	Health care workers	26	15.3
	Laboratory workers	21	12.4
	People with medical condition that weaken the immune system	49	28.8
	People under immunosuppressive therapy	38	22.4
	Undernourished people	57	33.5
	People drinking alcohol	37	21.8
	People smoking	78	45.9
	Prisoners	15	8.8
	Elderly, pregnant women	17	10.0

KNOWLEDGE ON SYMPTOMS OF TUBERCULOSIS:

Most respondents were able to identify constitutional symptoms of TB whilst majority (86.5%) answered cough more than 2 weeks was a symptom. however, only 79 (46.5%) considered fever to be a symptom of TB. About 60% participants knew about deference between TB infection and TB disease. About 44.1% (n=102), knows the difference between TB infection and TB disease (Table 03).

Table 03: Knowledge on symptoms of tuberculosis among health workers (n=170)

Variable	Response	Frequency	Percentage
Knows **symptoms of tuberculosis**	Yes	167	98.2
	No	3	1.8
Symptoms of tuberculosis	Cough	63	37.1
	Cough for or more than 2 weeks	147	86.5
	Coughing up blood in sputum	106	62.4
	Shortness of breaths	61	35.9
	Chest pain	89	52.4
	Fever/chills	79	46.5
	Night sweats	31	18.2
	Weight loss	107	62.9
	Loss of appetite	104	61.2
	Tiredness/fatigue/weakness	89	52.4
	Dizziness	32	18.8
	Headache	28	16.5

Variable	Response	Frequency	Percentage
Difference between TB infection and TB disease	TB infection is asymptomatic and TB disease is symptomatic	75	44.1
	TB infection is not contagious but TB disease is contagious	43	25.3

KNOWLEDGE ON DIAGNOSIS OF TUBERCULOSIS:
Regarding diagnostic knowledge of tuberculosis, Chest X-ray was the most mentioned (61.8%) diagnostic test for TB followed by sputum AFB smear for microscopy (50.6%). Only 31.8% answered about gene Xpert. About 76.5% correctly answered the number of sputum samples needed to be collected from TB patients. But majority (78.9%) answered Sputum cannot be stored and should be sent to test immediately (Table 04).

Table 04: Knowledge on diagnosis of tuberculosis among health workers (n=170)

Variable	Response	Frequency	Percentage
Knows the most frequently used diagnostic laboratory test for TB	Yes	130	76.5
	No	40	23.5
Diagnostic tool for TB	Mantoux tuberculin skin test	31	18.2
	Sputum culture	57	33.5
	Sputum Acid-fast bacilli (AFB) smear for microscopy	86	50.6
	GeneXpert MTB	54	31.8
	Chest X-ray	105	61.8
	Complete blood count	18	10.6
	Urine examination	3	1.8
	Blood culture	4	2.4
Knows how are sputum sample collected from TB patients	Yes	161	94.7
	No	9	5.3
Number of sputum samples that are necessary for diagnosis	One	10	5.9
	Two	130	76.5
	Three	16	9.4
	Four	3	1.8
Storage of sputum before testing	Sputum cannot be stored and should be sent to lab immediately	127	78.9
	Sputum should be stored in culture media	10	5.9
	Sputum should be stored in refrigerator	5	3.1

KNOWLEDGE ON TREATMENT OF TUBERCULOSIS:
Among all the respondents, 81.8% had knowledge that, DOTS is the standard treatment option for tuberculosis and 64.1% health workers Known about the first line treatment of pulmonary tuberculosis. Only 33.5% of all the respondents answered that four drugs are used in first line treatment and 78.2% knew the time frame of 6 months for TB treatment, while about 82% knew about DOTS. Only 14.7% knew MDR-TB (Multi-drug-resistant TB) (table 05).

Table 05: Knowledge on treatment of tuberculosis among health workers (n=170)

Variable	Response	Frequency	Percentage
Standard treatment for tuberculosis	DOTS	139	81.8
	Traditional medicine/Unani/Kabiraji/ Herbal	9	5.3
	Antibiotics	20	11.8
	Don't know	2	1.2
Know about the first line treatment of pulmonary TB	Yes	109	64.1
	No	61	35.9
Number of drugs used in the first line treatment	One	7	4.1
	Two	34	20.0
	Three	11	6.5
	Four	57	33.5
	Less than 6 months	18	10.6
	6 months	133	78.2

Variable	Response	Frequency	Percentage
Duration of the standard treatment for drug sensitive pulmonary TB	More than 6 months	16	9.4
Consequences of incomplete treatment	Development of drug-resistant tuberculosis	42	24.7
	Failure to fully cure the disease	83	48.8
	Further transmission of the disease	44	25.9
	Relapse	91	53.5
Know about multi-drug-resistant tuberculosis (MDR-TB)	Yes	54	31.8
	No	116	68.2
Risk group for MDR-TB	People with HIV	9	5.3
	People who have been exposed to other tuberculosis patients	28	16.5
	People who have never had tuberculosis before	8	4.7

KNOWLEDGE ON PREVENTION OF TUBERCULOSIS:

Among all, 160 (94%) participants knew at least one preventive measure for TB while Early diagnosis of the suspected patients (61.2%) by the most. Other preventive measures mentioned by the respondents were providing a mask to a coughing patient (60%), Wearing particulate mask (N 95) when with a TB patient (51.2%), Hand hygiene (40.6%). Only 27.1% answered vaccination as preventive measure (Table 06).

Table 06: Knowledge on prevention of tuberculosis among health workers (n=170)

Variable	Response	Frequency	Percentage
Know the measures to prevent tuberculosis	Yes	160	94.1
	No	10	5.9
Preventive measures for tuberculosis	Early diagnosis of the suspected patients	104	61.2
	Separating coughing patient from others	94	55.3
	Wearing particulate mask (N-95) when with a coughing patient	77	45.3
	Wearing particulate mask (N 95) when with a TB patient	87	51.2
	Providing a mask to a coughing patient	102	60.0
	Using protective clothes	34	20.0
	Hand hygiene	69	40.6
	Educating patients and family members about TB	69	40.6
	Educating patients about cough hygiene	76	44.7
	Vaccination	46	27.1
	No	81	47.6
Respondent received training on TB-IPC	Yes	42	24.7
	No	128	75.3

ATTITUDE ON TUBERCULOSIS:

Majority (93.5%) showed positive attitude towards finding new TB cases, community engagement, TB treatment barriers, TB related stigma, training and preventive measures (Fig 02).

About 96.5% agreed that Patients diagnosed with tuberculosis should always be asked if anyone else in the house has a chronic cough and if these contacts are unable to attend the health facility, the health workers should visit the patient's home and identify people who have symptoms suggestive of TB was agreed by 98.2%.

It was agreed by about 90% health workers engaging community for the identification of tuberculosis cases is essential and 97.7% agreed that community should be informed on the extent of problems from TB, TB treatment and prevention.

DOTS providers should act quickly to trace and retrieve patients who miss their doses, preventing patients from becoming lost to follow up 94.7%.

An observer is not required to watch the patient swallow their medications in order to ensure proper and complete treatment and recovery from

tuberculosis mentioned by 35.9% of the respondents.

Where mostly (69%) agreed with that Family members should avoid sharing the same cutlery, plates and glasses with a family member infected with TB. But about 47.7% agreed that TB patients face more denial in community than HIV patients. TB patients should be advised to avoid interacting with relatives, neighbours and family members, especially children were agreed by 83.5%.

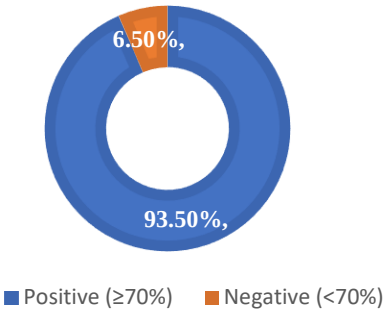

Fig 2: Level of attitude on tuberculosis among health workers (n=170)

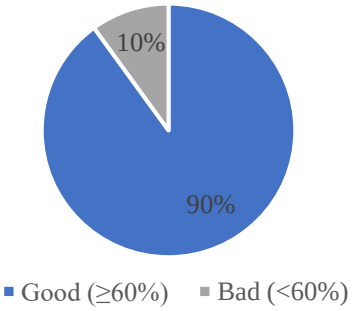

Fig 3: Level of practice on tuberculosis among health workers (n=170)

PRACTICE ON TUBERCULOSIS:

About 90% respondents had a good practice in suspecting TB patients, preventive measures and building awareness on TB (Fig 03).

Prioritizing coughing patients was reported to be practiced regularly by only 41.2% health workers. While the majority (53.5%) would ensure that a coughing patient wore a mask, only 25.9% would separate them from other patients. Enquiring on their practice when dealing with a confirmed active TB patient most of them (63%) answered of always wearing a mask. Only 14.7% would turn on the fan if available and 44% would open windows when dealing with TB patients in order to increase the natural ventilation as a preventive measure. About 69.4% respondents stated that they inform on disease when a patient is diagnosed with tuberculosis and educate about cough hygiene daily basis.

Discussion

The present study found that, more than half (52.9%) of respondents had a good level of knowledge (scored between 60-80% of total score of 13) focusing on transmission, symptoms, treatment and prevention of tuberculosis. Excellent knowledge scored by 30% of the respondents, followed by intermediate knowledge 9.4% and poor knowledge scored by 7.6% of the total participants. Similar type of study which was conducted in Gabon in 2021, revealed that, the most-frequently scored category regarding knowledge on tuberculosis was 'intermediate knowledge', (40.8%) followed by 'good knowledge' with 28.2% and 'poor knowledge' with 21.4% of participating healthcare workers, respectively. 'Excellent knowledge' was achieved by 9.7%.[8]. Another Study was done in Kathmandu Valley, Nepal (2017), found that, the level of knowledge on TB infection control among almost half (45.8%) of the health care workers (HCWs) was poor, and was much poorer among administration and lower-level staff. Another study of Addis Ababa (2014), found that, 36.1% of total participants had poor knowledge[7]. More than half (53%) of the participants had good knowledge regarding TB in another Bangladeshi study[12].

Most respondents of this study (86%) knew TB is caused by bacteria, and 89.4% identified airborne droplet transmission. Close contacts were recognized as high-risk by 60%, while 86.5% identified cough lasting over two weeks as a symptom. About 60% understood the difference between TB infection and disease. Chest X-ray (61.8%) and sputum AFB smear (50.6%) were commonly mentioned diagnostics. Most (76.5%) correctly identified the need for two sputum samples, though 78.9% believed sputum must be tested immediately. Similar study found that, most of the health care workers (89.2%) had appropriate knowledge of transmission, diagnosis and prevention of TB; however, only 22.0% of the respondents knew the appropriate method of sputum collection [10]. In another Bangladeshi study revealed that, most (99%) of the participants had heard about TB, and almost all knew that TB is a contagious yet curable disease [12].

Present study founds only 33.5% knew four drugs are used in first-line treatment, while 78.2% knew the treatment duration of six months and 82% were aware of DOTS. Awareness of MDR-TB was low at 14.7%. Among participants, 160 (94%) knew at least one preventive measure for TB, with early diagnosis (61.2%) being the most recognized. A majority (93.5%) expressed a positive attitude toward new TB case detection, community engagement, treatment barriers, stigma, training, and prevention. Attitudes were

generally positive towards tuberculosis infection control efforts founds in a study[8]. Another Study was done in Kathmandu Valley, Nepal (2017), founds majority (73.2%) of HCWs had positive attitude towards TB infection control[9].

Most participants of this study (69%), believed family members should avoid sharing utensils with TB-infected individuals, but only 47.7% agreed that TB patients face greater denial in the community than those with HIV. Study of Southern Mozambique founds Less than 30% of respondents had heard of Xpert MTB/RIF®. 70% agreed there was stigma associated with TB and 48.2% believed this stigma was greater than that associated with HIV. The average practice score was 3.2 out of 9 points (35.6%, SD = 2.4) [11].

Prioritizing coughing patients was practiced by 41.2%, while 53.5% ensured coughing patients wore masks, and 25.9% separated them. For confirmed TB cases, 63% of health workers consistently wore masks. Overall, 52.9% of participants had good knowledge (60–80% score), 44.1% showed a positive attitude (≥70% score), and 90% demonstrated good practices (≥60% score). Majority of inappropriate practices being the administrative infection controls (> 80.0%). Only 38.8% of the participants reported to be using the appropriate N-95 respirator found in the study done by [10]. Another study of Addis Ababa (2014), found that, 51.7% unsatisfactory practice score towards tuberculosis infection control[7]. Another study founds the average practice score was 3.2 out of 9 points (35.6%, SD = 2.4)[11]. About 65% of health care workers were found to be concerned about being infected with TB and use of respirators among the health care workers was limited and triage of TB suspects was also lacking[9]. Study conducted in Gabon, (2021) on healthcare workers reported that infection control measures were not consistently practiced; 72.8% (75/103) of the participants were scared of becoming infected with tuberculosis, and 98.1% saw a need for improvement of local tuberculosis control. About half of the interviewed HCWs (n = 56; 54.4%) reported to wear a face mask when being with a coughing patient, whereas 73 (70.9%) would wear one when TB infection was confirmed. Ensuring cough hygiene by providing a mask to coughing patients was named by 55 (53.4%)[8].

Conclusion

The current study offers encouragement for targeted education among health workers about tuberculosis, particularly MDR-TB in general, in children, and diagnostic tests, as well as evaluation after education. Observing practices could result in more accurate results than inquiring about practices in a questionnaire. Health workers seemed to be generally motivated for training and open for screening procedures amongst themselves.

Recommendations

1. Community health workers should be engaged in regular skill-based training covering latest information on available investigation and treatment facilities
2. Community engagement should be strengthened through health workers to increase community ownership for program maintenance
3. Further qualitative evaluation is also recommended to determine the basis for TB-related stigma

Ethical Considerations

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the National Institute of Preventive and Social Medicine (NIPSOM) under the reference number NIPSOM/IRB/2017/12. Participation in the study was entirely voluntary, and all participants were provided with consent forms prior to enrollment. Consent forms were given to participants before enrollment. The consent form explained the study's goals and procedures. The form clearly indicates that participants might refuse to answer any or all interview questions even if they consent to the study. The study's participants were assured in writing that their data would not be shared without their consent. Participants' identities would be protected when using the acquired data. No experimental medications or placebos were given in the study.

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