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RESEARCH ARTICLE

KNOWLEDGE & AWARENESS OF TUBERCULOSIS INFECTION: A CROSS-SECTIONAL STUDY AMONG DIFFERENT COMMUNITY PEOPLE OF CHATTOGRAM CITY, BANGLADESH

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ABSTRACT

Introduction: Early detection of health issues can prevent the development of diseases in human which plays an important role in betterment of life. Improvements of public's health make the community health. Tuberculosis is caused by bacteria Mycobacterium Tuberculosis which spread the TB disease among the community through air. If tuberculosis is untreated, it can be fatal. **Objectives:** The aims and objectives of this study are assesses the knowledge of the TB disease among the respondents, to find out the socio demographic characteristics of the respondents, to find out the attitude related factors, to explore preventive measure and treatment realated variables on TB of the respondents and explore the association between socio-demoghraphic and awareness related factors among the respondents. **Method:** Data was collected from different community people of Chattogram City. All of the respondents participated in this study willingly. By interview method the data was collected. The data was analyzed by using Microsoft excel 2016. The association was analyzed by using chi-square test. **Results:** Total 161 respondents were assessed of tuberculosis from Chattogram city with the age of 20 years to 60 years. Among them, 69% is male and 31% is female. The patients were from different area. About 17% of them were from slum area, 45% were from rural area and 29% were urban area. In our study, about 90% of the patients had knowledge of TB and its related factors and 10% had no idea before about TB. About 30.40% respondents had no knowledge about the risk factor on TB and rest 69.60% had proper knowledge about it. In this study 74% respondents had knowledge on DOTS program and 65% of respondents visited DOTS. The sources of information of TB are TV, radio, newspaper, community health workers etc. Family income is associated with visiting health care center. **Conclusion:** Tuberculosis is an infectious disease, and it is airborne disease. Proper knowledge and awareness on TB can protect the community from this life threatening disease.

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INTRODUCTION

Mycobacterium tuberculosis is a pathogenic bacterium which is the causative agent of Tuberculosis (TB) disease and most affected area is lung. It is an airborne disease which spread from person to person through the air. Tuberculosis patients propel the TB germ into the air by sneezing, coughing and spitting. Very small amount of these germs can infect a person. The common symptoms observed in TB patients are cough, night sweats, fever and weight loss. The symptoms may be mild for many months, these can lead to results in transmission of the bacteria to the unaffected individuals [1].

Tuberculosis can affect all ranks of society but it is closely associated with the poverty due to the closer contact with the sufferers because of overcrowding at home, at work place, travelling etc. The immune system is also weakened due to their poor nutritional status, so they are at greater risk [2]. Tuberculosis may cause severe illness and also transmitted to the society. A systematic review indicated that the median duration of delay from the onset of symptoms to the beginning of treatment ranged from 60 to 90 days [3]. Delayed analysis of energetic tuberculosis (TB) is an important trouble in many widespread hospitals in industrialized countries as it outcomes in greater affected person morbidity and mortality and intra

institutional spread of TB. This trouble has been attributed to the relative rarity of energetic TB in these hospitals, ensuing in a scarcity of experience and expertise inside the analysis and control of TB [4-9].The severe epidemic scenario of tuberculosis (TB) in different countries of Asia is properly documented, and the prevention and manage is a pinnacle priority for public health. TB can motive full-size social and economic disruption, motive a sequence of serious consequences [10], and impede a nation's development [11]. A report by WHO was indicated that almost 75% of the calculated 2.9 million were either not diagnosed or diagnosed but not included to national tuberculosis programs in 12 countries including Bangladesh, India, China, South Africa, Indonesia, Nigeria, Myanmar, Pakistan, Philippines, Ethiopia, Democratic Republic of the Congo and Mozambique [12].

For an effective tuberculosis control program, early diagnosis plays an important role because delay in the diagnosis may worsen the disease with risk of death and increase the tuberculosis transmission [13]. Multidrug resistant (MDR) TB and extensively drug resistant TB (XDR-TB) exert a substantial threat to TB control programs worldwide. However, drug resistance strains transmission from individual to individual caused by the social behavioral risk factors of the patients by themselves [14-17]. TB is one of the top 10 leading cause of death from a single infectious agent, total 1.5 million of people died from TB in 2018 including 251000 people with HIV infection. Almost all HIV-positive patient and 45% of HIV-negative patient with TB will die without proper treatment [1].

Tuberculosis has considered as a significant threat to public health due to the influence of the HIV virus. One of the highest reported rates of TB was estimated in South Africa (366/100000 people), this increasing rate of TB in South Africa has been imposed at least in part to the impact of HIV infections [18-20]. Many endocrine glands including hypothalamus, pituitary, thyroid and adrenal gland are also may affected by tuberculosis. Adrenal glands are the most commonly affected endocrine organ by tuberculosis [21]. It is thought that about 80% protections against tuberculous meningitis and military disease were treated with BCG vaccines but protection against lung tuberculosis is highly variable [22-23]. Recently, the most widely used route for the vaccine is intra-dermal route, this method is recommended by WHO [24]. The intra-dermal route delivered the dose of vaccine more precisely, is also cheaper and induce higher rates of tuberculin skin test conversion compared with the percutaneous route [25, 26]. Living in the same household, people who are close contacts to a TB case are at greater risk of the tuberculosis infection rather than the casual contacts. The young children who are below 5 years old and the people with immunodeficiency (HIV infected) are at higher risk of TB disease within two years following infection usually [27]. All the children who are in close contacts of sputum smear-positive TB case are recommended for screening by the World Health Organization (WHO), the International Union against Tuberculosis and Lung Diseases (IUATLD)and the National TB Control Programs (NTPs) [28]. To reduce the morbidity and mortality related to TB in children, screening and management are the potential keys [29, 30]. Early initiation of prevention therapy of TB may reduce the progression and prevent the development of infection to disease. The identification of contacts of any age with suspected TB disease at the earlier stage may reduce the transmission and increase the findings rather than the patients who are in health care services [31]. The transmission may be small through the young children's contribution but they may form a pool of future adult case infection [32, 33].

MATERIALS AND METHODS

Study design: A descriptive type of cross-sectional study was carried out.

Study population: Different community people of different places at Chattogram City.

Study period: It was conducted from January 2021-June 2021.

Sample Size: Due to financial constrain and time limitation we took 161 samples according to guide's decision.

Inclusion and Exclusion Criteria

Inclusion Criteria

- The participants who live in the area of study.
- The respondents who are willing to participate.

Exclusion Criteria

- Those who were unwilling to participate in the study.
- Those who did not permanently live in the area.
- Mentally retarded or handicapped.

Sampling Techniques: Purposive sampling technique was followed.

Data Collection Tools: A pre-tested, modified, interviewer administrated, semi-structured questionnaire was used.

Data Collection Techniques: By face to face interview.

Data Management and Analysis Plan: All interview questionnaires were checked for its completeness, accuracy, and consistency to exclude missing or inconsistent data. Data was checked, cleaned, and edited properly before analysis.

The study was based on primary data with descriptive cross-sectional design filled directly with the help of respondents. The data analyzed by using Microsoft excel 2016.Descriptive statistics was used for interpretation of the findings. The association was analyzed using chi-square test.

Ethical Approval: The ethical approval had been issued and the recommendations had been followed accordingly. Letter. Reference No: PUC/off-order/Eth-com/VII (I1I)/2021/005

RESULTS

Among the total 161 respondents of this study, 66 respondents were in 21 to 30 years of age groups, 44 of them were in 31 to 40 years of age groups, 37 of them were in 40 to 50 years of age groups and 11 of them were in 51 to 60 years of age groups respectively.

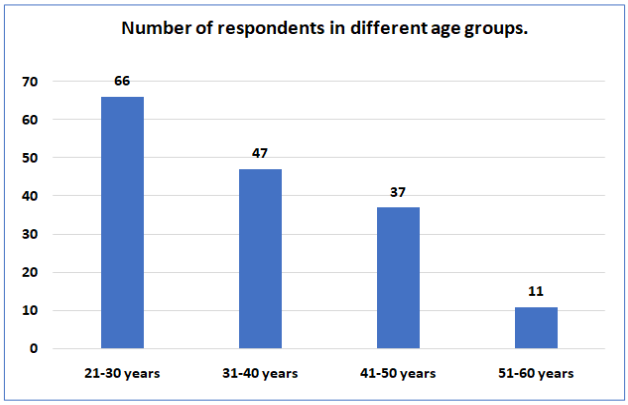

Fig. 1. Distribution of respondents on the basis of their age group

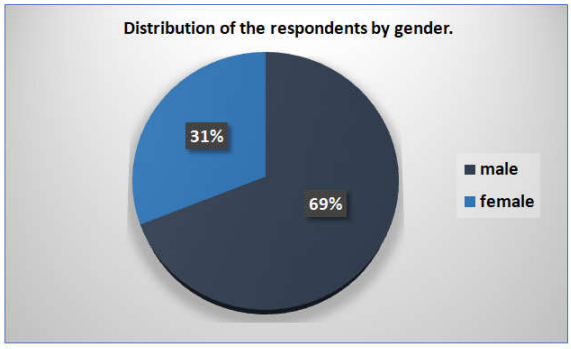

Fig. 2. Distribution of respondents on the basis of gender

The Figure: 2 represents male-female ratio among the total respondents. According to the Figure: 2 Pie-Chart among the total (161) respondents, 69% was male and 31% was female.

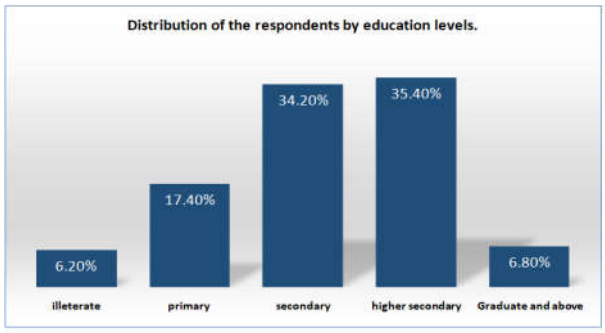

Fig. 3. Distribution of respondents by education levels

In this study, 11 respondents completed graduation level, 57 respondents completed higher secondary level, 55 respondents completed secondary level of education, 28 respondents completed primary education and 10 respondents were illiterate.

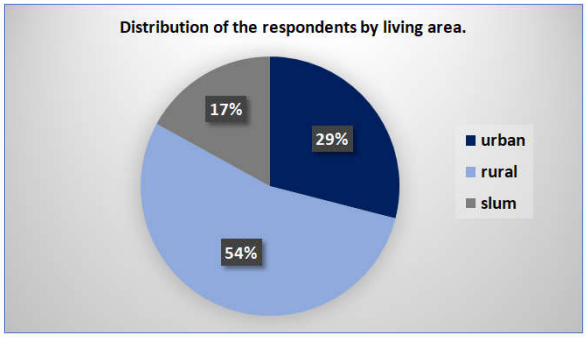

Fig. 4. Living - Area based distribution of the respondents

The Figure: 4 represents living - area based distribution of the respondents. Among the total respondents 17% of them were from slum area, 54% were from rural area and 29% were from urban area.

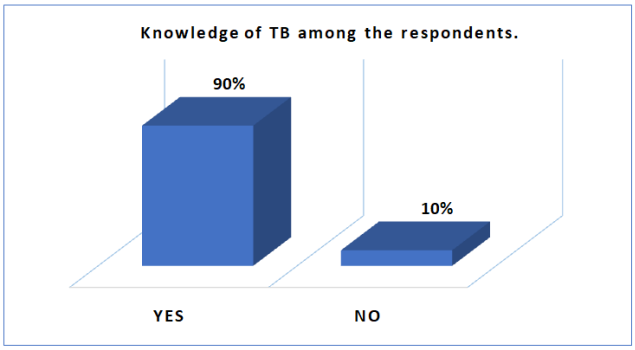

Fig. 5. Knowledge of Tuberculosis among the respondents

The Figure: 4 represents having knowledge of Tuberculosis among the respondents or not. In this study90% of the respondents had knowledge of TB and its related factors and 10% had no idea about TB.

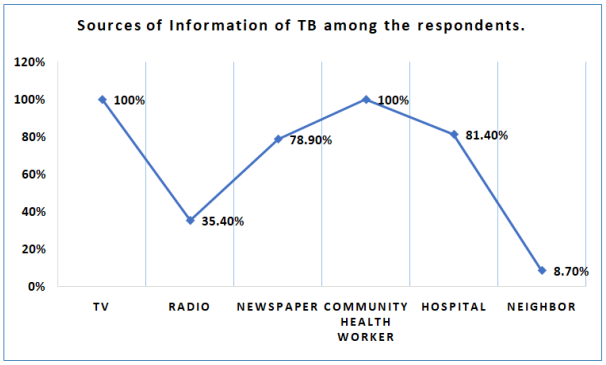

Fig. 6. Source of Information of TB among the respondents

100% of the respondents mentioned about Television and Community Health Workers, 35.4% respondents mentioned Radio, 78.9% mentioned newspaper, 81.4% mentioned hospitals and 8.70% mentioned neighbor as the sources of information about TB. Note that respondents answered multiple options.

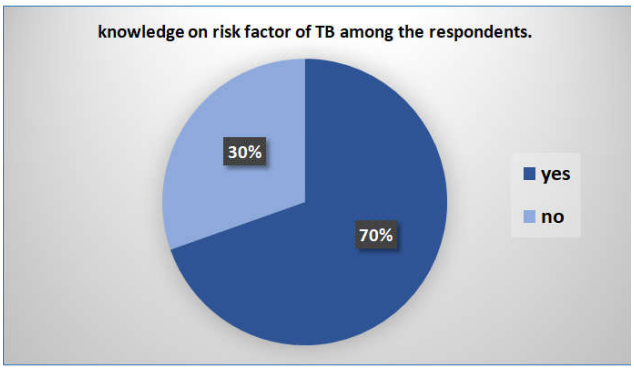

Fig. 7. Knowledge on risk factor of TB among the respondents

The above Pie-Chart shows percentage of having knowledge on risk factor of TB among the respondents. Here about 30% respondents had no knowledge about the risk factors of TB and 70% had knowledge of the risk factors of TB.

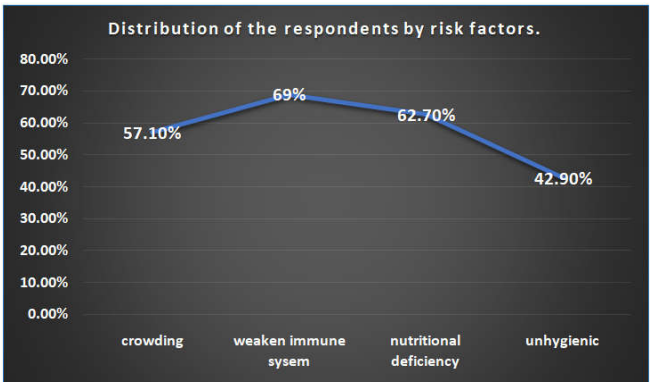

Fig. 8. Distribution of the respondents by risk factors

About 69% respondents said that weaken immune system is the risk factors of TB, followed by 62.7% nutritional deficiency, 57.1% crowding and 42.9% unhygienic environments. Note that respondents answered multiple options.

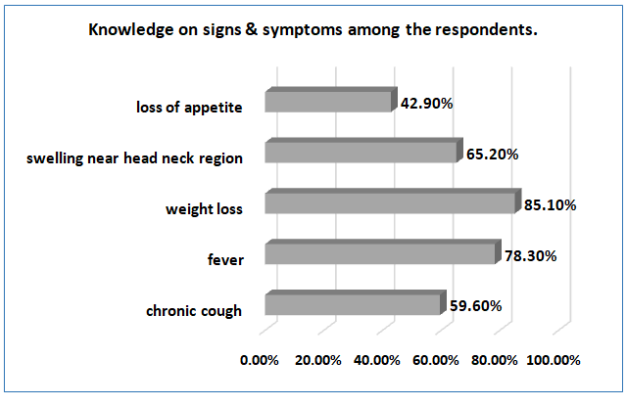

Fig. 9. Knowledge about signs and symptoms among the respondents

The knowledge on signs and symptoms of TB diseases among the respondents were chronic cough 59.60%, fever 78.30%, weight loss 85.1%, swelling near head & neck region 65.2%, loss of appetite 42.9%. Note that respondents answered multiple options.

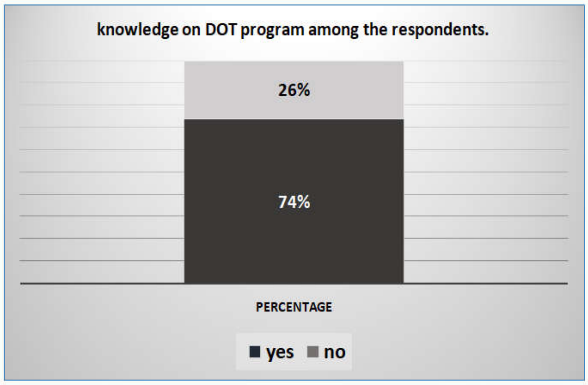

Fig-10: Knowledge on DOT program

The above Bar-Chart shows having knowledge on DOT program among the respondents. About 74% respondents had knowledge on DOT program and rest of them didn't have the knowledge about DOTS.

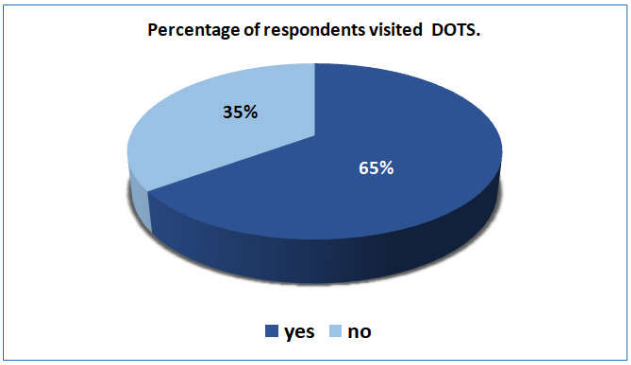

Fig. 11. Percentage of respondents visited DOTS

The above Pie-Chart represents percentage of respondents visited DOTS. Here about 65% of the respondents visited DOT regularly and 35% did not visit DOTS found.

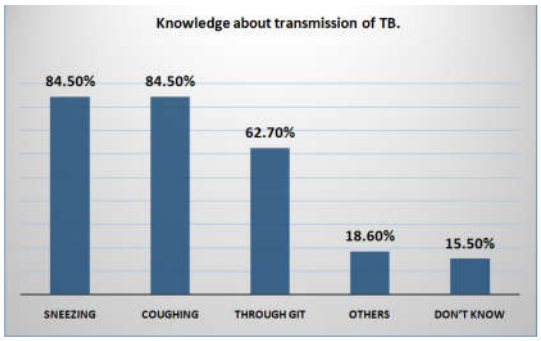

Fig-12. Knowledge about transmission of TB

In this study, 84.5% respondents told that TB is spread by sneezing and coughing, 62.7% stated that it was spread by GIT and 18.6% respondents said others reason and 15.5 % respondent had no idea about the way of transmission. Note that respondents answered multiple options.

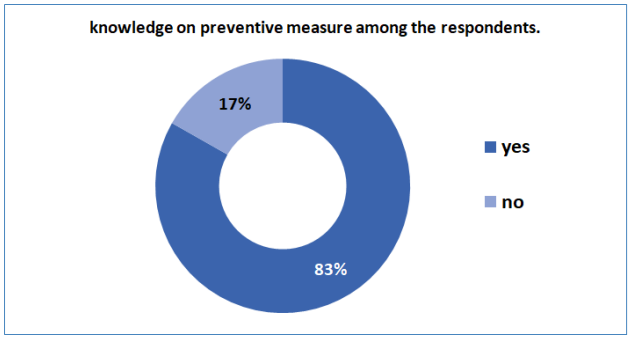

Fig. 13. Knowledge on preventive measure among the respondents

The above Pie-Chart shows having knowledge on preventive measure among the respondents. About 83% respondents had the knowledge on preventive measure about TB and the rest of the respondents hadn't any idea about it.

About 20.50% respondent's household were less than 1km from health care center, 35.40% respondent's household were 1-2km away from the center, 32.30% respondent's household were 2-5 km away from the center and rest of them were more than 5km from the center.

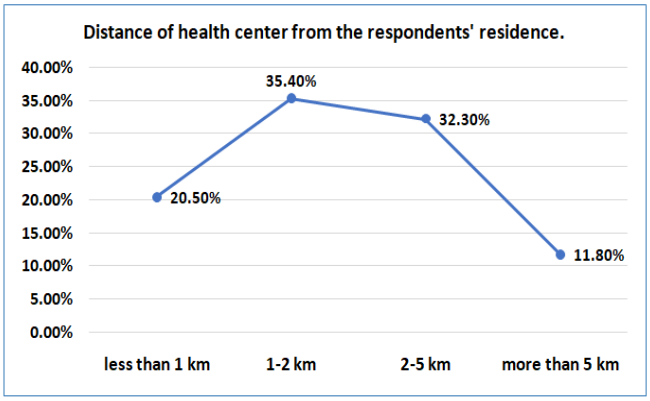

Fig. 14. Distance of health center from the respondent's residents

About 6.2% respondents visited health care center once a month (their monthly income was less than 15,000 tk) and the respondents having more than 20,000 tk income per month visiting health care center rate 39.8%. By calculating p-value, we found that there has significant relationship between family income and frequency of visiting health care center for TB.

Table 1. Association between frequency of visiting health care center for TB and monthly family income

Monthly family income	Frequency of visiting health care center for TB			Total	Chi-squre	p- value
	Once in a month	Quarterly	Once in a year			
10-15K BDT	10 (6.2%)	5 (3.1%)	6 (3.7%)	21 (13.0%)		
15-20K BDT	8 (5%)	12(7.4%)	7 (4.3%)	27 (16.7%)	15.077	0.005
>20K BDT	64 (39.8%)	40 (24.8%)	9 (5.6%)	113 (70.2%)		
Total	82 (51%)	57 (35.4%)	22 (13.6%)	161 (100.0%)		

DISCUSSION

A descriptive type of cross-sectional study was carried out among different community people of Chattogram city to assess their knowledge and awareness of tuberculosis with the age 20 years to 60 years. Among them, 69% was male and 31% was female. The patients were from different area. About 17% of them were from slum area, 54% were from rural area and 29% were urban area. Urban people were more conscious than the people from rural area. They like to contact with specialized doctor but rural people can't. That is possible factor behind the spread of tuberculosis. A study was conducted in Vietnam, where found that remote area people always delay to meet with doctor. The delay was more found in women and that was increasing with the age [37]. From the total patients, 11 respondents completed graduation level of study, 57 respondents completed higher secondary, 55 respondents completed secondary, 28 respondents completed primary education and 10 respondents were illiterate. Our study also explored that 90% of the respondents had knowledge of TB and its related factors and 10% had no idea before about TB. All of them knew about TB diseases from Television and community health workers, 35.4% patients knew from Radio, 78.9% knew from newspaper, 81.4% from hospitals and 8.70% from neighbors. Television is one of the major sources for advertisements. Different television channels telecast about health awareness related programs, talk shows, interviews and dramas etc. As we know that most of the people like to watch television, they get primary information by this media. Community health workers play vital role to make the people aware about health-related aspect.

They go home to home and discuss with people, especially women, about their physical fitness, food/nutrition and different types of diseases also. TB disease awareness among the people of society is increased by them significantly. Another source like radio, newspaper, neighbor also play important role. This research revealed that about 30.40% respondents had no knowledge about the risk factor on TB and rest 69.60% had proper knowledge about it. Risk factors of TB mean route of transmission, relation with other diseases, durability of the diseases etc. A study in Tanzania said that generally, 67 (32.5%) (95%CI 26.1-38.9) and 185 (89.8%) (95%CI 85.67-93.93) of patients had good knowledge on TB symptoms and possible ways of TB transmission, respectively. About 173 patients (84.0%) (95%CI 78.99-89.01) were aware that prolonged cough is a TB symptom [40]. Our study also explored about the knowledge on causes of the diseases among respondents. About 69% patients replied that weaken immune system is responsible for TB disease, 62.7% of them told about nutritional deficiency, 57.1% patients told about crowding, and rest 42.90% told about unhygienic condition. A study in Myanmar described that 43.6% respondents knew about TB related signs and symptoms, 67% respondents knew about infectious agent of TB [38].

In our study, we observed that the knowledge on signs and symptoms of TB disease among the respondents were chronic cough 59.60%, fever 78.30%, weight loss 85.1%, swelling near 65.2%, loss of appetite 42.9%. Note that multiple options were asked about sign and symptoms of TB and they marked multiple options also. A cross sectional study in Uganda found that, 40.7% of patients mentioned that TB symptoms as persistent cough, 25.1% wasting and 9.5% fever. About 50% patients were not aware about the causes of TB and 7.4% patients noted that germs cause Tuberculosis. In that study population, most of the populations were not aware about the symptoms and the causes of Tuberculosis. According to that study, most of the respondents (about 56%) acknowledged that TB patients are stigmatized in their community [36]. Common descriptive findings of first noticed symptoms were 50.5% persistent cough, 14.20% evening fever, 10% chest/back pain, a study in Myanmar was found [38]. A study was performed in Nigeria with 291 respondents, among them 23.3% presented for first necessary treatment consultation within 1-30 days of onset of symptoms. The reason given by the respondents in this study was 36.1% of ignorance of necessity treatment, 24.2% said due to lack of money, 13.2% due to no health facility close to their house and 26.5% of the respondents said other reasons [35]. Our descriptive study said that 74% respondents had knowledge on DOT program and rest of them didn't have. About 65% of respondents visited DOT regularly. Respondents were asked the reason why they didn't follow DOT program. The answer was that some socio-demographic factors, timing, travel, cost of therapy, long time waiting period, cost of investigation etc. A study was conducted in India, they found that 93% of the respondents follow DOT program regularly [39]. In our study, 84.5% respondents told that TB is spread by sneezing and coughing, 62.7% stated that

it was spread by GIT and 18.6% respondents said others reason and 15.5 % respondent had no idea about the way of transmission. A study was conducted which provided that about 83.1% of respondents stated the knowledge about the way of transmission was coughing, 11.8% was sneezing, 0.9% was speaking and 4.2% was for sharing spoons or cups [35]. A study in China found that, long term illness (illness more than 1 year) were significantly associated with both increased risk of any drug resistant TB and poverty was associated with multidrug resistant-TB among the age range between 40-60 years [34]. Distance between household and health care center is also important. Visiting to health care center is related to the distance between household and health care center. Some people eagerly go to there to receive health service. If the center is far away, they don't get interest. In our cross-sectional study, 20.50% respondent's household were less than 1km from health care center, 35.40% respondent's household were 1-2 km away from the center, 32.30% respondent's household were 2-5 km away from the center and rest of them were more than 5km. In our study, we found that 6.2% respondents visited health care center once a month (their monthly income was less than 15,000 tk and the respondents having more than 20,000 tk income per month visiting health care rate 39.8%. By calculating p-value, we found that there has significant relationship between family income and frequency of visiting health care center for TB. In our study, 84.5% respondents told that TB is spread by sneezing and coughing, 62.7% stated that it was spread by GIT and 18.6% respondents said others reason and 15.5 % respondent had no idea about the way of transmission. A study was conducted which provided that about 83.1% of respondents stated the knowledge about the way of transmission was coughing, 11.8% was sneezing, 0.9% was speaking and 4.2% was for sharing spoons or cups[35]. A study in China found that, long term illness (illness more than 1 year) were significantly associated with both increased risk of any drug resistant TB and poverty was associated with multidrug resistant-TB among the age range between 40-60 years[34]. Distance between household and health care center is also important. Visiting to health care center is related to the distance between household and health care center. Some people eagerly go to there to receive health service. If the center is far away, they don't get interest. In our cross-sectional study, 20.50% respondent's household were less than 1km from health care center, 35.40% respondent's household were 1-2km away from the center, 32.30% respondent's household were 2-5 km away from the center and rest of them were more than 5km. In our study, we found that 6.2% respondents visited health care center once a month (their monthly income was less than 15,000 tk and the respondents having more than 20,000 tk income per month visiting health care rate 39.8%. By calculating p-value, we found that there has significant relationship between family income and frequency of visiting health care center for TB.

CONCLUSION

Tuberculosis is a life threatening disease which is preventable with safe and clean living conditions and treatable with proper medical care facilities. Tuberculosis is caused by bacteria which can spread through the air and usually attacks the lungs. Other parts of the body also can be infected by this infectious agent. However, TB is still one of the leading causes of death worldwide. The bulk of TB infections are latent and that are able to transmit from one to others. About one-quarter of the world population carry the TB that are latent and cannot transmit the disease to others. So, knowledge among the community of this dangerous disease is most important for the better health. This study revealed that majority portion of the respondents was middle aged populations. Media for example radio, television, newspaper plays an important role for providing the source of information regarding TB and DOTS program among the people. Raising awareness among the people helps to give them the knowledge about the severity of the TB diseases. Tuberculosis usually affects the adults in their most productive years. Not only the adults, but also the all age groups of populations are at risk. So, proper knowledge about this disease for example way of transmission, signs and symptoms, treatment, preventive measure etc. are the most important thing.

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Conflict of Interest: There is no conflict of interest among the authors.

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