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Original Research Article

COMMUNITY VIEWS ON PULMONARY TUBERCULOSIS: A STUDY OF KNOWLEDGE AND BEHAVIOR

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Abstract: *Inadequate understanding of tuberculosis (TB) may impact patients' inclination to seek medical care and perpetuate the spread of the disease among the community. This study aimed to evaluate the understanding and perspective of individuals who appear to be in good health regarding pulmonary tuberculosis (PTB)).* ***Objectives:*** *To explore the knowledge and behavior of the population about pulmonary TB.* ***Methods:*** *The study was conducted using a cross-sectional design. A survey using a questionnaire was done on 165 randomly selected healthy individuals after obtaining verbal agreement from all participants. SPSS 23 was used to analyze the data. The chi-square test was applied to obtain the required results.* ***Results:*** *The findings indicated that the average age of the participants was 45.33 ± 1.49 years, ranging from 19 to 67 years. Out of the total, 42 individuals (25.46%) were females, while 123 individuals (74.54%) were males. Out of the respondents, 70 (42.42%) acknowledged that they were aware of the bacterial cause of TB. Eighty percent of individuals are aware that tuberculosis can be treated. The most prevalent symptom of tuberculosis (TB) was the presence of blood in the sputum, accounting for 101 cases (61.21%). In health institutions, contemporary pharmaceuticals were the favored treatment option, chosen in 70 cases (42.42%).* ***Conclusion:*** *The results suggest that communities possessed basic knowledge about the disease. However, it is essential to provide health education to change their traditional beliefs and views of the condition into factual knowledge.*

Keywords: PTB, Pulmonary Tuberculosis, Tuberculosis

Introduction

Tuberculosis (TB) is a preventable and treatable illness. Yet, it continues to pose a significant threat to global health and is the second leading cause of fatalities caused by infectious agents worldwide. The ongoing COVID-19 pandemic has worsened the already small decreases in the occurrence and death rates of tuberculosis (TB), which have been the overall outcome of the collective efforts to eradicate the illness (1). Despite the majority of targets outlined in the End TB Strategy remaining unfulfilled and the ongoing impact of the COVID-19 pandemic yet to be entirely resolved, the occurrence of tuberculosis faces an additional threat from present conflicts such as the ongoing crisis in Ukraine (2). Urgent and global multi-sectoral actions that surpass national and international TB programs are necessary to regain momentum and make significant progress toward ending TB. These actions should be supported by substantial investments in research and the efficient implementation of innovative solutions worldwide (3). In 2022, the number of tuberculosis-related deaths reached 1.3 million, with 167,000 of those individuals being HIV-positive. Tuberculosis (TB) is the second most prevalent infectious cause of death worldwide, surpassing HIV and AIDS, following the COVID-19 pandemic. In 2022, it is estimated that there will be a total of 10.6 million cases of tuberculosis (TB) worldwide. This disease will mostly afflict 5.8 million men, 3.5 million women, and 1.3 million children. Tuberculosis (TB) affects individuals of all age groups and nationalities. Tuberculosis can be both prevented and cured. MDR-TB, also known as multidrug-resistant tuberculosis, remains a pressing public health crisis and a significant concern for health security. Approximately 40% of patients with drug-resistant TB were treated in 2022. Global endeavors to eradicate tuberculosis have resulted in the approximate saving of 75 million lives since 2000. To achieve the global target established at the 2018 UN high-level conference on TB, annual funding of US$ 13 billion is necessary for the prevention, diagnosis, treatment, and care of tuberculosis. The United Nations has set a goal to eradicate the tuberculosis epidemic by 2030 as part of its Sustainable Development Goals (SDGs) (4). Significant factors contributing to the development of the disease and its impact on public health include HIV infection, malnutrition, smoking, greater vulnerability of newborns and the elderly, and higher virulence and dosage of the bacteria (5). Poverty and a lack of understanding of tuberculosis are widely recognized as the main risk factors for exposure to the disease. Factors such as limited access to healthcare facilities, insufficient resources, lack of knowledge about the symptoms, transmission methods, and proper treatment of tuberculosis (TB) among communities, as well as poor compliance with TB treatment or prolonged delays in diagnosis, can greatly influence patients' health-seeking behaviors and impede disease control efforts (6). Utilising conventional treatment allows the infection ample opportunity to spread among the uninfected population, while also postponing the act of seeking medical care. Furthermore, a markedly adverse perception of tuberculosis

within society can hurt social relationships, the moral identity of those afflicted with the disease, and efforts to control tuberculosis overall (7). Increasing community awareness of tuberculosis and promoting community engagement in disease control are essential components of the World Health Organization's "Stop TB Strategy (8).

Methodology

The study design was a community-based cross-sectional and the data was collected using a questionnaire survey involving 165 randomly selected healthy individuals was conducted,.after obtaining verbal consent from all participants. Every individual aged 18 years and above residing in the randomly selected. the study town was eligible for the study. Study participants were all 18 years of age and older individuals who were randomly selected from eligible individuals in the selected households and consented to participate in the study. Individuals were not included if they were guests if they were less than 18 years of age if they did not consent, and if they were mentally ill. The data was analyzed by SPSS 23. Statistical tests like the independent t-test and chi-square test were applied to obtain the required results. The data collection tool was a standardized questionnaire that consisted of questions on the socio-demographic characteristics of the study participants and their knowledge, attitudes, and practices toward TB. The questionnaire was first designed in English based on WHO guidelines and information from different literature developed for similar purposes (9).

Results

Demographic and baseline information about the participants includes their age, weight, BMI, Gender, marital status, and residence. The results showed that the mean age of participants was 45.33 ± 1.49 years with a range from 19-67 years. The average weight (kg) of participants was 74.60 ± 11.91 and 123 (74.54%) were male as compared with females were 42(25.46%). Most participants were married 149(90.30%). Mostly living in rural areas 142(86.07%). Regarding occupational status were Employed or self-employed 95 (57.58%) but the majority of participants were not educated 102(61.82%) and their no defined income 105(63.63%). (Table-1) The main reason for TB was due to germs 70(42.42%), and symptoms of PTB were septum with blood as 101(61.21%). When the question asked is PTB treatable 132(80.00%) and treated with traditional medicine (home remedy) 70(42.42%). When the question was asked is PTB a public health issue in your village/ city**?** They said yes as 59(35.76%). only 62(37.58%) suffered from PTB (Table-2). The results of Table -3 showed that knowledge and attitude about PTB disease indicate that participants agree that knowledge about Pulmonary Tuberculosis (PTB) is necessary for everyone **as** 54(32.73%), strongly agree that anyone can identify the common symptoms of Pulmonary 44(26.67%), participants also agree that distance should be maintained, avoid hand shaking and should take preventive measure for pulmonary TB as 63(38.18%), 64(38.79%) and 65(39.39%) respectively (Table 3). Attitude observed of participants never perceive individuals who have been diagnosed with Pulmonary TB as 61(36.97%) rarely any social stigmas or misconceptions associated with TB in their community 67(40.61%), believe that PTB is a serious public health concern as 61(36.97%), strongly agree ever interacted with someone diagnosed with PTB as 69(41.82%) and disagree feel about individuals who have been diagnosed with Pulmonary TB (Options: Sympathetic, Neutral, Stigmatized) as 55(33.33%) (Table 3).

Table 1: Characteristics of the participants (n=165)

Variables		**Frequency**	**Percentage**
Age Group (years)		45.33 ± 1.49 (Age Rang 19-67years	
Weight (kg)		74.60 ± 11.91	
Gender	Male	123	74.54%
	Female	42	25.46%
Marital Status	Single	16	9.70%
	Married	149	90.30%
Place of residence	Rural area	142	86.07%
	Urban	23	13.93%
Occupational status	Employed or self-employed	95	57.58%
	unemployed	30	18.18%
	Students	40	24.24%
Educational status	Illiterate	102	61.82%
	Less than grade 12	56	33.94%
	Higher education	7	04.24%
Family income	No defined income	105	63.63%
	Irregular income	55	33.33%
	Regular income	5	3.04%

Table 2 Descriptive statistics of Research Participants concerning Awareness

Variables		Frequency	Percentage
Main reasons for Tuberculosis	Germs	70	42.42 %
	Shortness of fresh air	65	39.39%v
	Shortness of food	30	18.19%
Symptoms of PTB	Sputum with blood	101	61.21%
	Cough for 3 weeks	40	24.24%
	Sweat and Fever	2	1.21%
	Chest pain	22	13.34%
Is PTB treatable	Yes	132	80.00%
	No	33	20.00%
If Yes, Treatment with	Traditional Medicine (home remedy)	55	33.33%
	Allopathy	70	42.42%
	Homeopathy	40	24.25%
Is PTB a public health issue in your village/ city?	Yes	59	35.76%
	No	101	61.21%
	Rare	5	3.03%
Did you sick from PTB	Yes	62	37.58%
	No	103	62.42%

Table 3: Participants' Knowledge, Attitude, and Practice of Prevention from PTB (N = 165).

S. No	Questions	Frequency (%)				
Knowledge Questions		**Strong Disagree**	**Disagree**	**Neutral**	**Agree**	**Strong Agree**
1.	Is knowledge about Pulmonary Tuberculosis (PTB) necessary for everyone?	16(9.70%)	30(18.18%)	27(16.36%)	54(32.73%)	38(23.03%)
2.	Can anyone identify the common symptoms of Pulmonary TB?	35(21.21%)	20(12.12%)	30(18.18%)	36 (21.82%)	44(26.67%)
3.	Should we maintain a distance of at least 1 meter from other people?	15(9.09%)	23(13.94%)	18(10.91%)	63(38.18%)	46(27.88%)
4.	Should we apply social distancing measures and avoid hand-shaking?	26(15.76%)	45(27.27%)	3(1.82%)	64(38.79%)	27(16.36%)
5.	Should we take preventive measures for Pulmonary TB?	10(6.06%)	17(10.30%)	23(13.94%)	65(39.39%)	50(30.30%)
Attitude Questions		**Never**	**Rarely**	**No comments**	**Frequently**	**Always**
6	How do you perceive individuals who have been diagnosed with Pulmonary TB?	61(36.97%)	25(15.15%)	45(27.27%)	21(12.73%)	13(7.88%)
7	Are there any social stigmas or misconceptions associated with Pulmonary TB in your community?	13(7.88%)	67(40.61%)	8(4.85%)	56(33.93%)	21(12.73%)
8	Do you believe that Pulmonary TB is a serious public health concern?	40(24.24%)	21(12.73%)	8(6.06%)	35(21.21%)	61(36.97%)
9	Have you ever interacted with someone diagnosed with Pulmonary TB?	25(15.15%)	38(23.03%)	10(6.06%)	23(7.88%)	69(41.82%)
10	How do you feel about individuals who have been diagnosed with Pulmonary TB? (Options: Sympathetic, Neutral, Stigmatized)	38(23.03%)	55(33.33%)	11(6.67%)	21(12.73%)	40(24.24%)

Discussion

The mean age of the participants was 45.33 ± 1.49 years, ranging from 19 to 67 years. The mean weight (in kg) of the participants was 74.60 ± 11.91. Out of the total, 123 individuals (74.54%) were male, while 42 participants (25.46%) were female. The majority of participants, specifically 149 (90.30%), were married. Similarly, the majority, 142 (86.07%), resided in rural areas. Regarding employment status, 95 participants (57.58%) were employed or self-employed. However, the majority of participants, 102 (61.82%), did not have an education, and 105 (63.63%) did not have a specified income.

The bulk of the studies showed that the age of the study participants was over 52, as reported by Alsaleh et al. This finding is consistent with the results of the current investigation. The study's patient population had a median age of 52 years, ranging from 18 to 87 years old. The majority of the study sample consisted of men (n = 166, 66.1%), Kuwaiti nationals (n = 135, 53.8%), individuals who were married (n = 176, 70.1%), and individuals who had at least a diploma level of education (diploma (n = 58, 23.1%); bachelor's degree (n = 84, 33.5%); postgraduate degree (n = 13, 5.2%)). The majority of patients (n = 142, 56.6%) were working in either the governmental or private sectors. Additionally, a significant portion (n = 93, 37.1%) had a monthly income ranging from 500 to 1000 Kuwaiti dinars (KWD) (10).

A significant proportion of the study participants in the current study 123, specifically 74.54%, were males. This finding is consistent with the results of earlier studies, such as Alsaleh FM 2023 (10). However, the findings of Abu-Humaidan 2022 contradicted the conclusion of the aforementioned researchers, as 60.8% (402/602) of the participants were females (11).

A total of six hundred and two (602) students participated in the survey. The students were selected from six Jordanian universities located in different governorates across Jordan (Supplementary Figure 1). The sample consisted of 39.2% males and 60.8% females. The participants had a median age of 20 years, with 402 participants (66.8%) falling between the ages of 18 and 21, and 200 people (33.2%) falling between the ages of 22 and 26. The majority of participants (36.5%) were in their second year of study. 78.2% of the individuals were residents of cities or core metropolitan districts, while 21.8% lived in rural and countryside areas. The participants were categorized based on their academic discipline, with 57% being healthcare students, including those studying medical, nursing, and pharmacy, and 43% being non-healthcare students, including those studying law, engineering, and arts. Furthermore, the majority of individuals (79.1%) identified themselves as non-smokers, while a mere 10% reported being acquainted with an individual who had tuberculosis (11).

The findings of the present investigation indicate that the primary cause of tuberculosis is microbial pathogens. Out of a total of 70 cases (42.42%), 101 cases (61.21%) exhibited symptoms of PTB, characterized by the presence of blood in the sputum. When asked if PTB is treatable, 132 cases (80.00%) were found to be treatable with traditional medicine (home remedy), whereas 70 cases (42.42%) were treated. Is PTB considered a public health concern in your village/city? Their response was affirmative, with a percentage of 59 (35.76%). Out of the total, only 62 individuals, or 37.58% of the population, experienced PTB. The research conducted by Konda SG in 2016 revealed that a significant majority (89.3%) of the survey participants were aware of the existence of TB disease. This implies that TB is well-recognized among the population in the study area. A comparable discovery was noted in the past. (12) The findings of this study indicate that participants recognize the importance of knowledge and attitude toward Pulmonary Tuberculosis (PTB). Specifically, 32.73% agree that knowledge about PTB is necessary for everyone, 26.67% strongly agree that anyone can identify the common symptoms of PTB, and 38.18%, 38.79%, and 39.39% agree that maintaining distance, avoiding hand shaking, and taking preventive measures for PTB, respectively, are important. The participants' attitudes toward individuals diagnosed with Pulmonary TB are characterized by a lack of perception since 61 (36.97%) of them rarely hold any social stigmas or misconceptions connected with Pulmonary TB in their society. 67 individuals, accounting for 40.61% of the respondents, consider Pulmonary TB to be a significant public health issue. Out of the total, 61 individuals (36.97%) strongly agree that they have had interactions with someone diagnosed with Pulmonary TB. Additionally, 69 individuals (41.82%) disagree with feeling sympathetic towards individuals diagnosed with Pulmonary TB, while 55 individuals (33.33%) feel neutral or stigmatized towards them.

In a study conducted by Adane K in 2017, it was discovered that the level of awareness regarding tuberculosis (TB) among Ethiopian convicts remains uncertain, despite its significance in TB control. This study evaluated the knowledge, attitudes, and behaviors (KAP) regarding tuberculosis (TB) among prisoners in eight prisons located in northern Ethiopia. A total of 615 convicts were recruited in the study. Among them, only 37.7% identified bacteria as a potential cause of tuberculosis, while 21.7% associated tuberculosis with exposure to cold wind. 88% accurately identified the airborne transmission route of TB, while 27.3% reported experiencing stigma associated with TB. Most individuals (63.7%) were unaware of the potential for acquiring multi-drug-resistant strains if they failed to comply with therapy. In general, a mere 24% of individuals possessed knowledge of the fundamental aspects of TB, while 41% exhibited positive attitudes towards it, and 55% engaged in commendable practices related to it. Urban prisoners had a higher level of knowledge compared to their rural counterparts, with an adjusted odds ratio of 2.16 and a 95% confidence interval ranging from 1.15 to 4.06. Individuals with low literacy levels were observed to possess lower levels of information, have less favorable attitudes, and engage in fewer positive practices. Notable disparities were also noted across the several research prisons (13). The study uncovered deficiencies in the knowledge, attitudes, and behaviors of convicts in northern Ethiopia about tuberculosis. Approximately 40% of convicts demonstrated recognition of germ/bacteria as a causal factor for tuberculosis. The vast majority associated tuberculosis with exposure to cold drafts, contaminated soil, inadequate sanitation, and smoking. Most individuals (63.7%) were unaware of the potential for acquiring multi-drug-resistant strains as a result of not adhering to therapy. In general, a mere 24% possessed knowledge of the fundamental aspects of TB, 41% held positive attitudes, and

slightly over half (55%) demonstrated commendable behavior about TB. The amount of education and study sites were both strongly associated with TB knowledge, attitude, and practice (13).

Conclusion

The study participants were well-informed about tuberculosis (TB), yet there were a few misunderstandings about the disease that needed to be cleared up. Knowledge about tuberculosis was correlated with age, income, and educational attainment. Income, education, and family structure all had an impact on attitudes and behaviors about tuberculosis. A TB health education program should be customized to the sociodemographic makeup of the community, with a focus on the youth, the uneducated, and the underprivileged. To raise awareness of the disease and encourage good changes in people's behaviors related to it overall, healthcare providers, the media, friends, and family members who have experienced tuberculosis in the community are all excellent sources of information.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-TCA-076/22)
Consent for publication
Approved
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

JAWAD HUSSAIN (Post Graduate Resident Cardiology)
Coordination of collaborative efforts.
Study Design, Review of Literature.
AISHA HAMEED (Assistant Professor)
Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.
Conception of Study, Final approval of manuscript.
ANEES SHAKOOR (Resident Medicine)
Manuscript revisions, critical input.
Coordination of collaborative efforts.
MOONA ASHRAF (Medical Officer)
Data acquisition, and analysis.
Manuscript drafting.
Afrasiab Ayub (General Practitioner)
Data entry and Data analysis, drafting article.

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