Knowledge, Attitude and Practice of Tuberculosis Disease Among the Community in Hospital Sultanah Aminah, Johor Bahru: A Cross Sectional Survey

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Abstract

Background: Tuberculosis (TB) is one of the leading causes of preventable mortality worldwide. It is an infectious illness caused by a kind of bacteria that primarily affects the lungs. TB is an infectious disease caused by *Mycobacterium tuberculosis*. The amount of people affected by this illness remains increasing per year. This respiratory disease, in fact, has cost many lives worldwide. **Objectives**: This study is conducted to (1) assess the knowledge of tuberculosis disease among the community in Hospital Sultanah Aminah; (2) identify the attitude towards tuberculosis disease among the community in Hospital Sultanah Aminah; (3) determine the practice towards tuberculosis disease among the community in Hospital Sultanah Aminah. **Methods**: A cross-sectional survey using pre-validated questionnaires was conducted from April to July 2023 across the sample population including staff, patients, visitors, students, technical staff, and all participants that fulfill the inclusion criteria. **Results**: A total of 100 respondents completed the survey. From our findings, we found that 86% of the respondents (n=86) agreed that TB disease can be transmitted. 71% of our respondents answered correctly that TB can be transmitted through the air when an infected person coughs or sneezes. In addition, 87 out of 100 of the respondents admit that TB is a curable disease. Besides, 62% of the responders considered TB a very serious disease and 85% of them agreed that they can be infected by TB. Moreover, (n=65) people are aware and claim that they will spread knowledge about TB infection to their family members and friends. Furthermore, 62 individuals have undergone TB screening tests and 61% of the respondents have had health education about TB. Almost all the people who answer our survey (n=96) cover their mouth during coughs to prevent others from being infected by them. **Conclusion**: To sum up, the community in HSA has good knowledge about TB disease. This led to good attitude and practice towards TB disease. Our research showed that occupation is not associated with knowledge, attitude, or practice towards TB disease. Yet, some participants obtained low TB knowledge, and this makes them not care about this disease if it affects them or the community. So, the authorities need to take action in order to lower this kind of population.

Keyword: Tuberculosis, Mycobacterium, MDRTB, XDRTB

Introduction

   Tuberculosis (TB) is a communicable disease caused by Mycobacterium tuberculosis. Not only lungs, but this bacterium can also attack kidney, brain, spine, or any part of the human body. Whether a person has latent TB disease or active TB disease determines whether they will get sick or not. TB disease can be lethal if it is not adequately treated. Globally, it has become the 13th leading cause of death. In 2021, about 10.6 million people worldwide were affected by the disease, and 1.2 million were children, who are usually overlooked by healthcare providers. Around the world, 1.6 million people died from TB in the same year (WHO, 2022).

Both the prevalence and death rate of TB in Malaysia are rising because of the delayed diagnosis of TB patients by healthcare providers. Suspected individuals must have an early diagnosis to lower TB prevalence and fatality rates. Patients who have undetected TB serve primarily as transmission reservoirs, and delaying diagnosis may make the condition worse, raise the risk of mortality, and increase the likelihood that TB will spread in the community as each contagious case may result in 10-15 secondary infections. Numerous factors, including the relationship between patients' health-seeking conduct and their socioeconomic epidemiological factors, have been linked to delayed diagnosis (Hassan et al., 2017). Numerous studies have revealed that poor understanding or unfamiliarity of the disease and its treatment frequently contributes to non-adherence to the recommended regimen. As alternative options, individuals frequently seek out self-medication and conventional healers, which causes postponement in diagnosis and effective treatment. Additionally, it has been noted that community members frequently in Africa lack accurate information on the origin and spread of TB (Matakanye et al., 2021).

Malaysia experienced a rise of 14.7% from 1696 deaths from 24,220 cases in 2015 to 1945 deaths from 25,739 cases in 2017. (Mohidem et al., 2018) In fact, Sabah and Selangor had the greatest numbers of cases in 2017 respectively. However, this amount has increased rapidly. As stated by Dr. Zaliha Mustafa, Malaysia's health minister, the number of tuberculosis (TB) cases in Malaysia increased by 3,664 cases, or 17% in 2022 compared to 2021. According to the health minister, Malaysia witnessed a total of 25,391 cases of TB in 2022, compared to just 21,727 cases in 2021. Additionally, Malaysia reported 2,572 TB deaths in 2022, up 284 (12%) from 2021's total of 2,288 deaths. One goal for ending the TB epidemic has been set by the World Health Organization (WHO) which is a 35% decrease in TB mortality by 2020 compared to 2015. In contrast, according to the WHO, the annual number of TB deaths is not decreasing quickly enough to fulfill the 2020 benchmark, with a cumulative drop of only 14% between 2015 and 2019 (Avoi and Liaw, 2021).

As the TB infection keeps rising, the problem must be solved to prevent the percentage from growing and making healthcare workers become afraid to serve in the healthcare field. Hence, there are many ways invented to curb this problem. The most common practice is named Directly Observed Therapy (DOT) where a trained physician or healthcare worker must watch the patient taking their medicine in front of them regardless of how many of the medicines that the patient takes. This is to ensure that the patient complies with the treatment of TB which sometimes may take a longer time depending on the severity of the patient and their adherence to the treatment. Not only that, numerous incentives and facilitators, tracking down defaulters,

legal repercussions, patient-centered strategies, staff motivation, supervision, and funding have all been studied in relation to DOT making it the most recommended way as the efficacy shown by this method receives a good impact (Moonan et al., 2011).

Close contact with people who have infectious TB has been linked to the transmission of M. tuberculosis in medical facilities, particularly in facilities where the disease is most likely to spread to staff members, visitors, and other patients. The high prevalence rate and rising incidence of TB remain a serious problem that may be attributed to the hospital or clinic environment. It is still a major problem in healthcare since TB has such a high prevalence rate and an increasing incidence throughout the world. Therefore, a lot of initiative has been done to control the disease from spreading. To slow down the graph, we must know the level of knowledge, attitude, and practice in one's community as they are the main spreading agent of the disease.

In this research, we have provided a survey to study the knowledge, attitude, and practice of tuberculosis disease in the community. The finding of this research can contribute to the improvement of the tuberculosis care in HSA and increase awareness of tuberculosis in the community at all age, gender, or occupation. This study is expected to find better solutions in controlling the disease among community in HSA which have a higher risk of getting infected in TB without a proper TB education from the responsible parties. On the other hand, this study hopefully can increase the life quality of a TB patient.

Methodology

Study design

This study is conducted by collecting data and information needed among the community in Hospital Sultanah Aminah, Johor Bahru including staff, patients, visitors, students, technical staff, and all participants that fulfill the inclusion criteria regarding their knowledge, attitude, and practices towards tuberculosis care. A cross-sectional survey using pre-validated questionnaires was conducted from April to July 2023 across the sample population. The questionnaire was available in English and Malay by the google form and physical survey. There are four sections available in the survey which consists of section 1, section 2, section 3 and section 4. The first section is about the social demographic of the participants, second section is about knowledge of tuberculosis, third section is about the attitude of participants towards tuberculosis infection and the last section is about the practice towards tuberculosis care. Descriptive statistics were applied to compute the demographic characteristics of the respondents. Difference between the categorical variables was examined with Chi-square.

Data collection

Data was collected within the community in Hospital Sultanah Aminah, Johor Bahru. Staff, patients, visitors, and students were involved as a sample population. The questionnaire in the survey involves their demographic background, knowledge, attitude, and practice towards tuberculosis care. The method used in the sample selection is random sampling in which we collected data from random people who are willing to take surveys in the random place in HAS.

Convenience sampling methods were used. Respondents who fulfill the following inclusion and exclusion criteria consented by investigators to join the study:
Inclusion criteria: healthcare providers who are in-charge in handling TB patient, patients

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diagnosed with tuberculosis and their family members, patients that receive treatment in HAS, hospital staff involved in TB management and visitors in HSA willing to take part in survey. Exclusion criteria: patient or healthcare providers who are not willing to participate in the study and healthcare provider family members.

Data analysis
All the data was extracted using Microsoft Excel and data analysis was performed using the IBM Statistical Package for Social Science software (SPSS) version 20.

Results

Section 1: Respondents' Demographic Profile
A total of 100 data has been collected based on the survey given to the community in HSA were analyzed. Based on the table 1, there are total of 45 healthcare workers (45%), 17 non-healthcare workers (17%), 14 unemployed (14%), and 24 students (24%) has responded to the survey about tuberculosis disease. Major respondents of the survey about tuberculosis is female which is 59 people (59%), while 41 male (41%). The collected education level data was divided into 3 categories which is primary school level, SPM level, and diploma level and above. Based on the table 5.1.1.3 and figure 5.1.1.3, mostly of the respondents have their education until diploma and above which is 82 people (82%), from SPM is 15 people (15%) and only 3 people (3%) from primary school.

Table 1: Demographic characteristics of the respondents

Item	Frequency	Percent (%)
Occupation		
Healthcare worker	45	45.0
Non- Healthcare worker	17	17.0
Unemployed	14	14.0
Student	24	24.0
Gender		
Male	41	41.0
Female	59	59.0
Education Level		
Primary school	3	3.0
SPM	15	15.0
Diploma and above	82	82.0

Section 2: Respondent Knowledge of Tuberculosis Disease

Possibility of TB Transmission
According to table 2, majority of the healthcare workers with 39 respondents (39%) agreed that TB disease can be transmitted meanwhile 6 respondents (6%) disagreed. Besides, a total of 15 respondents (15%) from non-healthcare worker has answered that TB can be transmitted while the other 2 (2%) disagreed. For unemployed respondents, 11 people (11%) has answered 'yes' for the TB transmission possibility while only 3 (3%) people answered 'No'. Lastly, 21 students

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(21%) have responded 'Yes" while 3 students (3%) responded 'No'. Overall, a total of 86 respondents out of 100 respondents (86%) has answered the correct answer which is TB can be transmitted.

Table 2: Frequency of Possibility of TB transmission

			TB transmission		
			Yes	No	Total
Occupation	Healthcare worker	Frequency	39	6	45
		Percentage (%)	39.0	6.0	45.0
	Non- Healthcare worker	Frequency	15	2	17
		Percentage (%)	15.0	2.0	17.0
	Unemployed	Frequency	11	3	14
		Percentage (%)	11.0	3.0	14.0
	Student	Frequency	21	3	24
		Percentage (%)	21.0	3.0	24.0
	Total	Frequency	86	14	100
		Percentage (%)	86.0	14.0	100.0

Ways of TB transmission

According to the table 3, it is recorded that 86 out of 100 respondents (86%) answered the correct choice of answers which are TB can be transmitted through touching the items in the public places and through the air when a person with TB sneezes or coughs. These are from healthcare workers (36%), non- healthcare workers (16%), unemployed (11%) and students (13%). On the other hand, a total of 14% (14 out of 100 respondents) have chosen the wrong answers that included TB can be transmitted through sharing cups, through handshakes and 'I do not know'.

Table 3: Frequency and percentage of ways of TB transmission

			Ways of TB transmission					
			Through touching items in public places	Through the air when a person with TB sneezes or coughs	Through sharing cups	Through handshakes	I do not know	Total
Occupation	Healthcare worker	Frequency	3	33	4	5	0	45
		Percentage (%)	3.0	33.0	4.0	5.0	0.0	45.0
	Non- Healthcare worker	Frequency	5	11	1	0	0	17
		Percentage (%)	5.0	11.0	1.0	0.0	0.0	17.0
	Unemployed	Frequency	3	8	1	1	1	14
		Percentage (%)	3.0	8.0	1.0	1.0	1.0	14.0
	Student	Frequency	4	19	0	1	0	24
		Percentage (%)	4.0	19.0	0.0	1.0	0.0	24.0

Total	Frequency	15	71	6	7	1	100
	Percentage (%)	5.0	71.0	6.0	7.0	1.0	100.0

Possibility to cure TB

According to table 4, 87% of the respondents, (87 out of 100 respondents) have agreed that TB is a curable disease which is healthcare workers (39%), non-healthcare workers (14%), followed by unemployed (13%) and students (21%). Besides, only 13% of the respondents say that TB cannot be cured, which comes from healthcare workers (6%), unemployed (1%), and both non-healthcare workers and students are 3%.

Table 4: Frequency and percentage of possibility to cure TB

			Possibility to cure TB		
			Yes	No	Total
Occupation	Healthcare worker	Frequency	39	6	45
		Percentage (%)	39.0	6.0	45.0
	Non- Healthcare worker	Frequency	14	3	17
		Percentage (%)	14.0	3.0	17.0
	Unemployed	Frequency	13	1	14
		Percentage (%)	13.0	1.0	14.0
	Student	Frequency	21	3	24
		Percentage (%)	21.0	3.0	24.0
	Total	Frequency	87	13	100
		Percentage (%)	87.0	13.0	100.0

Statistical Analysis

A Pearson's Chi-Square Test was performed to access whether occupation is related or not to knowledge, and practice of Tuberculosis disease, which is possibility of TB transmission, ways of TB transmission, possibility to prevent TB transmission, possibility to cure TB and ways to cure TB, opinion about TB disease seriousness, seriousness of TB problem in respondents' area, possibility of respondent is getting TB, opinion TB is a punishment by God, and spread knowledge about TB. The p-value with less than 0.05 showed as significant and reject the null hypothesis.

Chi-Square Tests

Table 5: Occupation & possibility of TB transmission

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.774[a]	1	.029		
Continuity Correction[b]	3.565	1	.059		
Likelihood Ratio	4.627	1	.031		
Fisher's Exact Test				.039	.031
N of Valid Cases	100				

Based on table 5, it shows the Chi-Square Test was statistically significant, χ2 (1, N=100) =4.774, p = 0.029. Thus, we reject the null hypothesis as the p-value as the p-value is <0.05 and it shows that occupation is associated with the possibility of TB transmission.

Table 6: Occupation & ways of TB transmission

	Value	df	Asymp. Sig .(2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.030[a]	1	.863		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.030	1	.863		
Fisher's Exact Test		1	.863		
Linear-by-Linear Association	.030			1.000	.539
N of Valid Cases	100				

Based on table 6, it shows the Chi-Square Test was not statistically significant, χ2 (1, N=100) =0.030, p = 0.863. Thus, we do not reject the null hypothesis as the p-value is >0.05 and it shows that occupation is not associated with ways of TB transmission.

Table 7: Occupation & possibility to cure TB

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.593[a]	1	.207		
Continuity Correction[b]	.913	1	.339		
Likelihood Ratio	1.547	1	.214		
Fisher's Exact Test				.232	.169
N of Valid Cases	100				

Based on Table 7 it shows the Chi-Square Test was not statistically significant, χ2 (1, N=100) =1.593, p = 0.207. Thus, we do not reject the null hypothesis as the p-value is >0.05 and it shows that occupation is not associated with possibility to cure TB.

Discussion

In this research, we aimed to study the knowledge, attitude, and practice of tuberculosis disease in the community of Hospital Sultanah Aminah. The community targeted includes the hospital staff, patients, technical staff and visitors. From our survey, three-quarters of our respondents are working as healthcare workers, while the remaining are non-healthcare workers, unemployed, and students. Besides that, the majority of our respondents are female and the highest education level from our respondents is diploma and above. Our findings found out that occupation is not related to knowledge, attitude or practice of TB disease which is expected. It is because nowadays people are getting awareness about TB in every platform.

As predicted, having information raised the degree of awareness among participants in this study, with the majority (86%) of participants knowing that tuberculosis is a contagious disease.

The findings of this study, Tb transmission, are substantially identical to those of a study conducted in Shinile town by (Tolossa et al., 2014), in which 80% of people were aware that TB might be transmitted. According to the Chi Square test findings, we discovered that among the types of occupations, healthcare workers had better perceptions than other occupations since they are directly or indirectly linked with TB care. As a result, we may conclude that occupation is associated with the potential of TB transmission.

In this survey, 86% of respondents correctly identified the different mechanisms of TB transmission. This demonstrates that this study is essentially identical to the preceding question, although it is greater than the study done in Shinile town by (Tolossa et al., 2014), which found that only 59.3% of people knew how TB is spread. Our survey also discovered that the vast majority (86%) of individuals believe tuberculosis is preventable. This is similar with the earlier study by (Kasa et al., 2019), in which most participants (87.8%) agreed that TB transmission could be prevented. Each study finds no association between conclusion and the modes of transmission of tuberculosis or its prevention.

The survey also discovered that the majority of participants (87%) believe TB is a curable disease, which is somehow higher than the study in Ethiopia by (Angelo et al., 2020), which indicated that 79.5% of respondents believed TB can be treated. Meanwhile, our study revealed that 85% of participants felt that TB could be cured with modern drugs, which is higher than the earlier study by (Angelo et al., 2020), which indicated that only 51% believed in modern drugs, while others still relied on traditional healers. However, participants' preference for visiting traditional healers for the treatment in the previous study is considerable since it comprised people from rural areas where healthcare or hospital access is limited, whereas our study focused on the hospital and healthcare environment.

It is a well-known fact that information may impact people's preventative activities toward the disease. In this survey, almost 86% of the participants had a strong general knowledge of tuberculosis. This finding outperforms that of (Agrawal et al., 2022) in Uttar Pradesh, India, where 67.92% of participants had adequate knowledge about tuberculosis. However, even though it is recent research, it cannot be compared because the study's settings are in a rural location, whereas our study is in an urban context. In contrast to our study, where respondents reside between hospital settings and have better access to media and news, we may conclude that most respondents do not receive improved exposure to TB illness. To sum up, this study reveals that communities in HSA have great knowledge about TB disease regardless of their occupation.

Our study also found that about 72.4% of respondents have a good attitude toward TB disease. The results show that 62% of respondents, which is the majority of non-healthcare workers (including students and unemployed respondents), considered TB a very serious disease. This result is related to the study by (Tolossa et al., (2014) where most of the participants saw TB as a serious disease. Yet, 34% of healthcare workers claim that TB is very serious in their area, while non-healthcare workers claim 28%. Pearson's Chi-Square Test showed that occupation is related to the seriousness of the TB problem in certain areas. This study is related to the study that was conducted in Columbia, Canada, which found that occupation is affecting the TB problem in their area. This is because healthcare workers have high-risk infections and might spread the bacterium to their area without their knowledge. However, other studies contrast

with our findings, which show that occupation does not influence TB problems in the respondents' area (Youakim, 2016).

Our research also noted that most of the respondents including non-healthcare and healthcare workers agreed that they can get TB. This study is related to the study in India by (Agrawal et al. (2022) where most of the participants responded that anyone can be infected with TB. Besides that, a total of 12 respondents assume that TB is a punishment from God. This should get them concerned because they might neglect treatment when they are diagnosed with TB, as TB can cause death if they do not seek treatment. Our study is a better attitude than the previous study in Ghana, which stated that the community there believes that God is punishing them if they get TB (Tabong et al., 2021).

Other than that, the results show that occupation is not associated to spread knowledge about TB. This is related to the study conducted among Nigerians where more than half of the respondents voted for spreading the TB information (Hassan et al., 2017). In our study, the Pearson Chi-Square Test showed that occupation is not associated with spreading of TB knowledge.

Apart from that, almost all of the respondents (62%) have had their TB screening compared to the study by (Angelo et al., 2020) which stated that 330 of their respondents (79.5%) never had TB screening. Meanwhile, in a study carried out by (Pengpid et al., 2016), only (18.6%) of their respondents had undergone TB screening. This may be due to the health education received by the community in HSA which shows (61%) of them are already acknowledged about TB. This is a very significant difference because only 74 respondents (18%) from Tepi General Hospital in Southwestern Ethiopia had obtained health education about TB (Angelo et al., 2020). In contrast, (Kasa et al., 2019) have a slightly higher finding where 268 (66.5%) of their respondents answered that they had health education about TB. The variation may be caused by the fact that study participants from various nations may have access to media and health professionals differently, as well as different health literacy levels.

Additionally, (96%) of them cover their mouth during coughing. From our point of view, the respondents are well-aware to take extra care during coughing since the epidemic hit worldwide. In the meantime, the majority of our respondents (97%) have windows at their homes but unfortunately, only (43%) of them open their windows regularly. From our perspective, people tend to not open their windows regularly as they are not always at home since they are working and to prevent thieves from entering their homes.

This study provides useful insights for reducing the number of TB cases in HSA because it evaluates the knowledge, attitude, and practices of TB disease in the community there. It can also be used by hospital staff when handling TB treatments to prevent the spreading of the bacterium that causes the disease. This can be done by overcoming deficiencies in respondents in an appropriate way. However, this study also notes some limitations. First, the number of respondents is limited because some of them did not cooperate to answer this survey. Next, the quality of these results might be slightly lacking because the credibility and trustworthiness of the answers of patients cannot be tested.

Conclusion

In conclusion, the community in HSA has good knowledge of TB disease. This led to a good attitude and practice towards TB disease. Our research showed that occupation is not associated with knowledge, attitude, or practice toward TB disease. Yet, some participants obtained low TB knowledge, and this makes them not care about this disease if it affects them or the community. This is worrying because they might spread the M. bacterium to a large community. So, the authorities need to act in order to lower this kind of population. For example, TB disease needs to be studied since primary or secondary school and sent healthcare providers to rural areas where most communities lack knowledge about certain diseases.

Besides that, when people have misconceptions about TB, there may be more stigma and prejudice in the community, which might drive TB sufferers to isolate themselves from their peers. These results emphasize the need for health education initiatives to be implemented to increase community knowledge and awareness of the TB disease by healthcare providers as it is crucial to reduce false beliefs about TB and its transmission and further promote early TB diagnosis and infection control in the community.

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