PUBLIC HEALTH

Knowledge, Attitude and Practice towards Tuberculosis among Community of Kulim Municipal Council, Kedah, Malaysia

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ABSTRACT

Aims: **This study investigated knowledge, attitude and practice towards tuberculosis (TB) among the community in Kulim Municipal Council, Kedah, Malaysia. Its associated factors and the correlation between the knowledge, attitude and practice were also studied.**

Methodology: **A cross-sectional study using self-administered questionnaire had been carried out among the community in Kulim Municipal Council, Kedah involving 102 respondents using convenient sampling. Descriptive statistics, correlation, Independent *t*-test and Anova were used to analyze the data accordingly.**

Results: **It was found that the respondents had moderate knowledge (mean score = 85.54 ± 16.911) and practice (mean score = 7.37 ± 1.955) but poor attitude (mean score = 51.80 ± 10.833) towards TB and TB patients. Besides, there was no significant relationship found between knowledge, attitude and practice towards TB infection among the community in Kulim Municipal Council, neither significant factors associated with the knowledge, attitude and practice.**

Conclusion: **The findings of this study are expected to build awareness of this community towards TB, thus assisting in planning the effective methods to promote better knowledge and understanding, and removing the misconceptions regarding TB infection among the community and consequently reducing the prevalence of TB and improving the community's health quality.**

KEY WORDS

knowledge, attitude, practice, tuberculosis

INTRODUCTION

Tuberculosis (TB) has become an important health concern in the society worldwide. World Health Organization (WHO) reported that 8.7 millions of people appeared as new cases of TB and 1.4 millions died because of it in 2011[1)]. TB is ranked by WHO as a second killer among infectious diseases after the advent of Human Immunodeficiency Virus infection (HIV). Everyone is highly susceptible and at risk to be infected with TB which possess a highly contagious characteristic[2)]. TB infection is always most likely to begin in the lungs but may affect other organs too[3)]. TB is an airborne disease and spread through sneezing, talking, laughing or spitting as the droplets containing *Mycobacterium tuberculosis* bacteria may be inhaled by other person[1,4)]. A previous study stated that poor living condition, malnutrition and overcrowded places provide a favourable environment to facilitate the spreading of TB infection[5)]. The risk factors that increase people's susceptibility to get TB infection include drinking alcohol, tobacco smoking, HIV infection, diabetes mellitus, chronic kidney problem, cancer and extreme ages. All these conditions will lower the immune system defense to combat TB[4,6,7)].

Knowledge regarding any disease is very crucial in order to cure and ensure the good quality of life of patients[8)]. Knowledge is also considered as a key factor in determining the attitude and practices of an individual[9)]. TB-related knowledge and awareness are observed more among the affluent, educated and senior members of the community[4)]. Interestingly, females have better knowledge level than males regarding TB treatment and vaccination[2,5,9-11)]. On the other hand, several factors that influence the attitude and practice towards TB include financial status, culture, health care amenities and perception regarding health[12)]. One study revealed that females have poor practice regarding the prevention and control of TB[13)]. The objectives of this study were to evaluate the knowledge, attitude and practice (KAP) towards TB among the community in Kulim Municipal Council, Kedah, Malaysia, besides studying the relationship between knowledge, attitude and practice towards TB and the factors associated with the KAP.

MATERIALS AND METHODS

This cross-sectional study was carried out in Kulim Municipal Council, Kedah, Malaysia, with a sample size of 102, calculated using Power and Sample Size Calculation Software (PS Software) version

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Table 1. Attitude/ stigma of respondents towards tuberculosis patients (N = 102).

Statement	Strongly agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly disagree n (%)
TB patients should not mix with others even though they are under treatment because they can spread the infection	8 (7.8)	25 (24.5)	24 (23.5)	30 (29.4)	**15 (14.7)**
Only poor people can be infected with TB	0	0	4 (3.9)	40 (39.2)	**58 (56.9)**
Only dirty people can be infected with TB.	7 (6.9)	17 (16.7)	23 (22.5)	37 (36.3)	**18 (17.6)**
I'm not comfortable to mix with TB patients	5 (4.9)	20 (19.6)	26 (25.5)	37 (36.3)	**14 (13.7)**
I'm afraid of TB patients as they might spread the infection to me	5 (4.9)	30 (29.4)	25 (24.5)	32 (31.4)	**10 (9.8)**
I will not mix or mingle with TB patients because I do not want to be infected	4 (3.9)	24 (23.5)	25 (24.5)	39 (38.2)	**10 (9.8)**
I try not to touch TB patients	3 (2.9)	12 (11.8)	23 (22.5)	47 (46.1)	**17 (16.7)**
I try not to touch any of TB patients' stuffs	2 (2.0)	13 (12.7)	28 (27.5)	41 (40.2)	**18 (17.6)**
If I am a manager in the company, I will ask my employees who have TB to quit from work even after they have completed the treatment	1 (1.0)	3 (2.9)	26 (25.5)	38 (37.3)	**34 (33.3)**
I will not marry people who have TB because he/she will infect me	0 (0)	13 (12.7)	40 (39.2)	28 (27.5)	**21 (20.6)**
I will stay away from my spouse if he/she has been confirmed to have TB because I am afraid of being infected	1 (1.0)	7 (6.9)	26 (25.5)	41 (40.2)	**27 (26.5)**

*Note: The values in bold indicated the expected response

Table 2. Practice of respondents towards prevention of tuberculosis (N = 102).

Statement	Always n (%)	Seldom n (%)	Never n (%)
I will wear mask when I am in a public or in crowded areas (example: in markets or inside the bus)	**22 (21.6)**	34 (33.3)	46 (45.1)
I will have a medical check-up for TB at least once a year	**11 (10.8)**	45 (44.1)	46 (45.1)
I will quickly go to the hospital or health centers if I've prolonged cough	**68 (66.7)**	28 (27.5)	6 (5.9)
I will quickly go to the hospital or health centers if I have other TB-related symptoms	**68 (66.7)**	27 (26.5)	7 (6.9)

*Note: The values in bold indicated the expected response

3.0.43. The respondents have been selected by convenient sampling, a practical method of sampling[14]. People who have had TB or had family history of TB had been excluded as they might already have better knowledge regarding TB[15].

A questionnaire had been used as the study instrument to collect data on the KAP towards TB. It was developed and divided into four sections: A, B, C and D. Section A consists of demographic characteristics of the respondents while Section B is about the knowledge of respondents towards TB infection with the answer choices of "Yes", "No" and "I do not know", or "True", "False" and "Not sure" and one question with multiple answers. Section C is regarding the respondents attitudes (which also include stigma) towards TB with five Likert-scale answer choices of "Strongly agree" to "Strongly disagree". Lastly, Section D is about the practice of the respondents in order to prevent TB infection with three answer options of "Always", "Seldom" and "Never". The questionnaire had been validated through two approaches which were the content and face validity. Content validity had been conducted by the expert in this field while the face validity was done through a pilot study.

The ethical approval was obtained from the International Islamic University Malaysia (IIUM) Research Ethics Committee (Memo No. IIUM/305/14/11/2/IREC 182). The information was collected from 21-01-2014 to 01-02-2014. The respondents signed informed consent prior to data collection. Data was analyzed using Statistical Packages for Social Science (SPSS) software. The descriptive statistics and correlation test were carried out accordingly in order to answer the research objectives, besides Independent *t*-test and Anova in finding the associated factors for the KAP.

RESULTS

Socio-Demographic Characteristics of the Respondents

A total of 102 respondents had been recruited in this study. The participation from females (67.6%, 69) had outnumbered males (32.4%, 33). Mean age of the respondents was 38.91 ± 13.24 years old, where 49.0% (50) aged between 18 to 35 years old and the other 51.0% (52) aged 36 years old and above. More than half (63.7%, 65) of the respondents had lower education level of primary and secondary levels of education with only 36.3% (37) of them had up to tertiary level of education. Regarding the income level, 35.3% (36), 29.4% (30) and 35.3% (36) had no, lower or higher income level, respectively.

Level of KAP towards TB

The mean total scores of knowledge, attitude and practice towards TB among the respondents were 85.54 ± 16.911, 51.80 ± 10.83 and 7.37 ± 1.956 from the minimum to maximum scores of 60 to 132, 20 to 76 and 4 to 12, respectively. Most of the respondents have heard (97.1%, 99) or had an idea (91.2%, 93) about TB infection. Besides, 89.2% (91) of them had answered correctly that TB is an infectious disease. However, only 42.2% (43) of the respondents knew about the cause of infection and 14.7% (15) knew that TB patients might also have HIV infection. This study also found that the respondents gained information about TB from media such as television and radio (31.5%, 58), health talk (19.0%, 35), health workers (n = 31, 16.0%), friends (16.3%, 30), family members (12.5%, 23) and other sources such as internet and TB patients (4.9%, 9).

The results from knowledge section show that 88.2% (90), 38.2% (39), 18.6% (19) and 20.6% (21) of the respondents answered correctly bacteria as the cause of TB, while genetic inheritance, contaminated food and contaminated drink are not the cause, respectively. Another 91.2% (93), 73.5% (75), 50.0%, (51), 27.5% (28) and19.6% (20) of the respondents answered correctly that coughing, sneezing, spitting, talking and laughing can spread the TB infection, respectively. On the other hand, only 37.3% (38), 44.1% (45), 37.3% (38), 38.2% (39), 39.2% (40) and 22.5% (23) of the respondents knew that genetic, sexual intercourse, sharing clothes, using the same toilet, using the same toothbrush and shaking hands do not spread TB infection, respectively.

Regarding the symptoms of TB, 93.1% (95), 85.3% (87), 79.4% (81), 77.5% (79), 69.6% (71), 67.6% (69), 67.6% (69), 63.7% (65) and

Table 3. Comparison of knowledge, attitude and practice scores towards tuberculosis between different socio-demographic factors using Independent *t*-test (N = 102).

		Knowledge		Attitude		Practice	
Characteristics	**n**	**Mean (SD)**	***p*-value**	**Mean (SD)**	***p*-value**	**Mean (SD)**	***p*-value**
Gender							
Male	33	84.45 (15.720)	0.656	48.79 (11.513)	0.051	7.27 (1.859)	0.723
Female	69	86.06 (17.540)		53.25 (10.266)	7.42 (2.010)		
Age (year)							
18 - 35	50	85.26 (15.711)	0.871	51.44 (10.776)	0.741	7.10 (1.982)	0.168
36 and above	52	85.81 (18.140)		52.15 (10.980)	7.63 (1.910)		
Education level							
Lower	65	86.68 (17.856)	0.370	51.80 (11.217)	0.996	7.51 (1.847)	0.357
Higher	37	83.54 (15.136)		51.81 (10.274)	7.14 (2.136)		
Income level							
No income	36	87.50 (17.885)	0.436†	52.53 (10.995)	0.721†	7.28 (2.051)	0.862†
Lower income	30	86.31 (19.173)		52.19 (11.396)		7.33 (1.971)	
Higher income	36	82.27 (12.239)		50.47 (10.167)		7.53 (1.871)	

* F statistics, SD = standard deviation, †ANOVA test, df = degree of freedom

23.5% (24) of the study respondents answered correctly that persistent cough, hemoptysis, tiredness, chest pain, weight loss, shortness of breath, loss of appetite, fever and drenching night sweat are the TB symptoms, respectively, while only 36.3% (37) knew that increased frequency of urination at night is not. Besides, 13.7% (14), 17.6% (18), 18.6% (19), 19.6% (20), 41.2% (42), 46.1% (47), 67.6% (69) and 70.6% (72) of the study respondents answer correctly that diabetes mellitus, chronic kidney disease, cancers, alcohol consumption, HIV infection, extreme ages, tobacco smoking (active or passive smokers) and compromised immune system, respectively, increases the risk for TB infection.

On the other hand, most of the respondents knew that sputum test (81.4%, 83,) chest x-ray (75.5%, 77), blood investigation (64.7%, 66) and skin test (11.8%, 12) can be used in the diagnosis of TB. Nevertheless, only a few of respondents correctly knew that urine (17.6%, 18) and stool examination (18.6%, 19) are not TB diagnostic methods. More than half (52.0%, 53) of the respondents knew that BCG vaccination prevent TB infection but paracetamol (47.1%, 48) could not stop it.

Regarding the attitude and stigma towards TB infection, small numbers of respondents (31%, 31) showed positive attitude by strongly disagree when they were asked if they will feel embarrassed if they have TB but a few respondents (10%, 10) who strongly disagree that they would not mingle with TB patients. Only 1% (1) respondent strongly agreed that they were at high risk of getting TB and about 17% (17) of respondents agreed that people other than their family members were at high risk of TB infection. Besides, about 15% (15) of respondents believe that TB infection can infect certain people only, while 38% (38) and 34% (35) respondents showed positive attitude about covering their mouth when they coughed and sneezed, respectively, to avoid from spreading TB. 54% (55) of the respondents agreed that they will go to the health centers if they have TB.

On the other hand, regarding the attitude or stigma towards TB patients, only 15% (15) of respondents strongly disagreed with TB patients should not be mixed with other people even under treatment. Although, 57% (58) of respondents strongly disagreed that TB can only infect poor people. Again, only 18% (18) of respondents strongly agreed that TB cannot only affect dirty people. Merely 10% (10) and 17% (17) respondents said that they were not afraid to mingle with TB patients and did not mind to touch TB patients or their stuff, respectively. 34% (34) of the respondents strongly disagreed with firing their employees who have TB or treated patients, while 21% (21) and 27% (27) of respondents strongly disagree that they will not marry TB patients and will stay away from their spouses who have TB, respectively (Table 1).

As for the practice towards the prevention of TB, 22% (22) and 11% (11) of the respondents had good practice by always wearing mask in crowded places and had medical check-up for TB once a year, respectively. Nonetheless, 67% (68) of them answered that they will always quickly go to the hospital if they have TB-related symptoms (Table 2).

The relationship and factors associated with KAP towards TB

The relationships between knowledge, attitude and practice have also been examined, and even though positive correlation was found, but it was not significant statistically. The results for correlation between the total scores of knowledge and attitude was $r = + 0.024$ ($p = 0.406$), between knowledge and practice was $r = + 0.071$ ($p = 0.239$) and between attitude and practice was $r = + 0.161$ ($p = 0.053$). Similarly, in comparing the total scores of KAP of the respondents towards TB between different genders, age groups, education and income levels, no significant factors were found to be associated with the KAP as all the *p*-values were found to be more than 0.05. The detail results are shown in Table 3.

DISCUSSION

The current study shows that almost everyone admitted that they had heard about TB before, which is similar to a previous finding[8]. Besides, the majority of the respondents in this study recognized persistent cough and hemoptysis as symptoms of TB, also similar to the finding of another study[4]. However, this finding is not supported by a different study[5]. This study also revealed that more than half of the respondents were aware that smoking can increase the susceptibility to get TB, which is consistent with the findings of a recent survey[4]. Compromised immune system is the second TB risk factor that our respondents identified which is similar to another research which claimed that patients with HIV infection have an increased risk for TB as compared to healthy individuals[1]. Moreover, non-communicable diseases increase their susceptibility to TB and diabetes mellitus increases the risk to about 2-3 folds for developing TB as compared to non-diabetic people[16,17]. The risk of TB among smokers could be explained because smoking could negatively affect the airway. Cancer treatment which suppresses the immune system could activate latent TB in those patients[17].

A good number of respondents identify that sputum test is one of the diagnostic methods and this is expected since sputum test is the most common TB diagnostic test. Sputum test is also the TB diagnostic method worldwide[1]. There were only a small number of the respondents who were aware that skin test is also a diagnostic test for TB. This could be because most of the hospitals in this area usually perform sputum tests to diagnose TB. Skin test, also known as Mantoux test has been

used as a valuable tool for diagnosing TB until now[18]. This study found that media such as television is the most mentioned source to obtain TB-related information. This finding is in line with the one study of Pakistan[19].

The overall attitude of the respondents towards TB can be concluded as poor. About half of the respondents believed that they and their family members are not at a high risk of getting TB. This negative attitude might lead to the delay in getting immediate treatment if they have symptoms of TB. This finding was in agreement with the another study in Malaysia[20]. Earlier research reported that majority of the urban respondents will feel embarrass if they have TB; however, this present study shows otherwise[7]. About 75% of the respondents in this study have the positive attitude to go to the hospital if they have TB. This result does not seem to be consistent with another research report[21].

Most of the respondents would like to cover their mouths while sneezing or coughing to avoid spreading. It could be due to better understanding of spreading of TB or following the good etiquette. The good etiquette of closing the mouth when someone is coughing or sneezing is critical to be practiced to prevent droplet transmission[22]. In addition, about half of the respondents believed that they should not socialize to avoid spreading of the infection, showing personal stigma. The fear of spreading a disease to other people results from individual stigma[23]. The fear of transmitting the disease especially to the family members drives TB patients to stay away from social interaction[24].

More than half of the respondents thought that TB patients under medication could socialize while remaining either disagreed or was unsure of the answer. This result shows the misconception of most of the respondents in the society about TB patients. Two weeks after a TB patient has started their medication, they will become non-infectious[25]. Besides, more than 90% of TB patients recovered if they are diagnosed on time, prescribed with the correct medication schedule with the patient maintain their compliance towards the medication[26]. Almost all of the respondents positively believed that TB do not only affect poor people, means that they understood TB has the potential to infect any individual.

The overall practice in the prevention of TB in this study is considered to be moderate. There were minimal respondents who would always wear masks when they are in a public area. This could be due to their poor understanding of the importance of wearing face masks[27]. The majority of the survey respondents seldom or never had a medical check-up for TB. This could be because the respondent had the perception that they are not at high risk of getting TB or they might be too busy, and cannot arrange for the transport to go to the hospital[28]. However, it is good to find out from this this study that almost all of the respondents agreed that they would go to the hospitals immediately if they have TB-related symptoms.

This study found no significant correlation between knowledge, attitude and practice of the respondents towards TB. However, another study reported that inadequate TB-related knowledge has caused people to have an unfavourable attitude towards TB[29]. Another study also found that attitude and practice are both related as the negative attitude towards the disease could prevent individuals from getting the needed treatment, which is not a good preventive practice regarding TB[5].

A study claimed that females have better TB-related knowledge, unlike the findings in this study, but different finding was found in another study[2,8]. Besides, a study done in Vietnam revealed unfavorable attitude towards TB among women and that study also found that both younger and older respondents have no difference in their KAP towards TB, similar to this study[30]. On the other hand, even though this study found no difference in knowledge between different age group, but it was mentioned that people with increasing age could have better knowledge about TB due to their experiences[4]. As in this study, another study found the absence of an association between knowledge and attitude with education level but another research reported that low education level has been associated with unfavorable attitude or stigma towards TB patients, such as ostracizing patients with TB[5,11]. Another study also found that the respondents with higher education level and age had better knowledge related to TB causes, sign, and symptoms[8]. Income level is another factor which has a significant association with KAP of TB[4].

Limitation of the Study

Since this study was cross-sectional and using convenient sampling, with its' inherent limitation, therefore, the generalization of the finding of this study to the population cannot be made.

CONCLUSION

This study has revealed that the level of knowledge and practice of the respondents in this study to be moderate while the amount of their attitude has been showed to be poor. There was no association of socio-demographic factors with the KAP score, neither between knowledge, attitude and practice.

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