



## Knowledge, awareness, and perception towards tuberculosis disease among International Islamic University Malaysia Kuantan students<sup>☆</sup>



Thandar Soe Sumaiyah Jamaludin<sup>\*</sup>, Nurhanis Ismail, Sanisah Saidi

*Kulliyyah of Nursing, International Islamic University Malaysia, Kuantan Campus, Pahang, Malaysia*

Received 13 November 2018; accepted 17 April 2019  
Available online 8 July 2019

### KEYWORDS

Knowledge;  
Awareness;  
Perception;  
Tuberculosis;  
University students

### Abstract

**Objective:** This study aimed to survey the knowledge, awareness, and perception of International Islamic University Malaysia (IIUM), Kuantan campus students towards tuberculosis (TB) disease.

**Methods:** A cross-sectional study was carried in six faculties (Kulliyyah) in IIUM Kuantan campus using an adopted self-administered questionnaire. Data were collected after obtaining ethical approval and analyzed the data by using SPSS version 20.0.

**Result:** Relatively low level of knowledge and awareness (73.8%) and high stigma (67.9%) about TB disease was found among IIUM Kuantan students. There was a significant association between type of Kulliyyah and level of knowledge and awareness. The level of TB perception does not have any significant association with the level of knowledge and awareness of TB disease.

**Conclusion:** These findings would suggest that more efforts should be made to improve the knowledge, awareness, and perception of students regarding TB disease.

© 2019 Elsevier España, S.L.U. All rights reserved.

### Introduction

Tuberculosis (TB) disease is one of communicable disease caused by a bacteria called *Mycobacterium tuberculosis*. In 2015, TB disease rank top 10 causes of death worldwide and

its ranks above HIV/AIDS that causes death for an infectious disease.<sup>1</sup> Even though Malaysia does not list under 30 countries with high burden TB, but communicable disease (20%) is in a second rank that contributes to major cause of disability-adjusted life years (DALYs), and the communicable disease that remains a concern in Malaysia are dengue, TB, and malaria.<sup>2</sup> To end TB disease globally, WHO's Global TB Programme create the End TB Strategy with a goal by 2035 there is 95% reduction in TB mortality rate and 90% reduction in TB incidence rate compared to 2015 statistics.<sup>1</sup>

According to WHO, one of the reasons for late diagnosing of TB disease among the community is lack of knowledge in a sign and symptom of TB.<sup>1</sup> Besides the low level of knowledge

<sup>☆</sup> Peer-review under responsibility of the scientific committee of the Second International Nursing Scholar Congress (INSC 2018) of Faculty of Nursing, Universitas Indonesia. Full-text and the content of it is under responsibility of authors of the article.

<sup>\*</sup> Corresponding author.

E-mail address: [sumaiyah@iium.edu.my](mailto:sumaiyah@iium.edu.my) (T.S.S. Jamaludin).

on TB disease, stigma is also one of the factors that cause a delay in diagnosing TB disease.<sup>3</sup>

Various studies have been made in assessing the level of TB knowledge and awareness among students. A study was done in Italy, the level of TB knowledge among undergraduate health care students is sufficient.<sup>4</sup> Meanwhile, a study conducted in China, they found that the level of TB knowledge among medical students is poor.<sup>5</sup> In Malaysia, there are only two studies found related to this research, and the result shows a poor level of TB knowledge and awareness among undergraduate students and not among health care students. Most of the studies done in assessing perception towards TB disease were among the community, but studies related to university students is still scarce and little known about the relationship between the level of TB knowledge, awareness, and perception towards TB disease.

In Malaysia, 19,251 cases were reported in 2011 with and increase to 24,220 cases in 2015.<sup>6</sup> The increasing of TB cases, raising a question whether the community is equipping themselves with TB knowledge, whether they are aware about TB disease, or having good perception towards TB disease. Therefore, there is still inadequate significant finding that shows an association between level of knowledge and perception of healthcare students on TB disease. Furthermore, this study will explore the relationship between the level of knowledge on TB disease and the perception towards TB disease.

## Method

A cross-sectional study was conducted among undergraduate health care students in six Faculties (Kulliyyah), namely Kulliyyah of Medicine, Kulliyyah of Nursing, Kulliyyah of Pharmacy, Kulliyyah of Allied Health Science, Kulliyyah of Dentistry, and Kulliyyah of Science in International Islamic University Malaysia (IIUM), Kuantan campus, Pahang. The sample size was calculated as 350 students, and only 324 students participate in this research. Stratified random sampling was used in recruited the sample and from each stratum, the sample was selected by simple random sampling. The inclusion criteria for this research were undergraduate students, willingly to participate, and a Malaysian citizen. Meanwhile, post graduate students, university staffs, and international students were excluded from this study.

An adopted self-administered questionnaire was used in this study.<sup>7-9</sup> The questionnaire was divided into three parts, sociodemographic information, TB-related knowledge and awareness questions, and TB-related perception questions. A pilot test was done on 30 undergraduate students, and the Cronbach's alpha value of 0.7 was obtained. The data from the pilot study were not included in the analysis. Permission on conducting the research was obtained from Kulliyyah of Nursing Post Graduate Research Committee (KNPGRC) and International Islamic University Malaysia Research Ethics Committee (IREC). The questionnaire was distributed to a participant who met the inclusion criteria, and the purpose of the study was explained before the participant sign the consent. The questionnaire was collected once it was completed and each answer was recorded and analyze using SPSS version 20.0.

**Table 1** Sociodemographic characteristics (*n* = 324).

Variables		Frequency (%)
Gender	Male	92 (28.4)
	Female	232 (71.6)
Kulliyyah	Medicine	65 (20.1)
	Nursing	29 (9.0)
	Pharmacy	43 (13.3)
	Allied Health Science	60 (18.5)
	Dentistry	27 (8.3)
	Science	100 (30.9)
Year of study	First year	77 (23.8)
	Second year	143 (44.1)
	Third year	51 (15.7)
	Fourth year	53 (16.4)
	Fifth year	0 (0)
Clinical placement experience	Yes	105 (32.4)
	No	219 (67.6)

**Table 2** Respondent's level of TB knowledge and awareness.

Level of TB knowledge and awareness	Frequency (%)
0-6 (low)	239 (73.8)
7-11 (high)	85 (26.2)

**Table 3** Respondent's level of TB perception.

Level of TB perception	Frequency (%)
0-6 (low)	104 (32.1)
7-12 (high)	220 (67.9)

## Results

Ninety-three percent (*n* = 324) of health care students participated in the study. Females dominate the sample with 232 out of 324 responses. Most of the respondents were second-year students (44.1%) followed by first-year students (23.8%). Majority of students were from Kulliyyah of Science (30.9%) followed by Kulliyyah of medicine with 20.1% of responses, and most of the students do not have any clinical placement experience (67.6%) (Table 1).

Table 2 shows that the majority of respondents have a low level of TB knowledge and awareness which were 239 (73.8%) students. Meanwhile, most of the respondents have a high stigma towards TB disease with a percentage of 67.9% (Table 3).

## Knowledge and awareness about tuberculosis (TB)

Majority of respondents obtained their understanding about TB disease from their teachers or lecturers (62.3), followed by family, friends, neighbours, and colleagues (48.1), TV (42.9), brochures, posters, and other printed materials (37.7), and lastly newspaper and magazines (36.4).

About 17% of respondent selected cough that lasts more than 3 weeks, and less than 10% of respondents choose

weight loss, fever without a clear cause that lasts more than 7 days and ongoing fatigue as the main symptoms for early TB infection. However, around 13% of participants wrongly selected coughing up blood as an early symptom of TB infection and 0.7% of them do not the symptoms of TB disease. Around 90.1% of students choose correctly the causes of TB disease which was through the air when a person with TB coughs or sneezes. However, 24 respondents did not know the exact cause of getting TB disease.

Majority of students selected covering mouth and nose when coughing or sneezing (92.0%) as a preventive method from getting TB disease. Somehow, 44.8% of respondents wrongly choose washing hands after touching items in public places as a way of preventing TB disease. Most of the respondent correctly selected anybody (96.9%) can have a risk in getting TB disease. However, some of the respondents still selected only homeless people, poor people, alcoholic person, drug user, living with HIV/AIDS and living in prison as the only person who has a higher risk in getting TB disease.

Regarding TB treatment, around 88.6% stating that TB disease is a curable disease and through specific drugs given by health care (78.7%) can cure TB disease. However, 11.1% of respondents still choose herbal remedies as a way to cure TB.

### Perception towards tuberculosis (TB)

Around 81.2% of respondents stating that TB disease is not a humiliating disease, and they do not feel ashamed (57.4%) if they been infected with TB disease. They also would not feel down if they been infected with TB (55.9%). Nonetheless, of the results, the majority of respondent would not expose

their status to others if they been infected with TB with a percentage of 58.6%.

### Association of sociodemographic characteristic with level of TB knowledge, awareness, and perception

There was an association between type of Kulliyah with the level of TB knowledge and awareness whereby the *p*-value was less than 0.05 (Table 4). Meanwhile, there is no association between sociodemographic characteristic with the level of TB perception as the *p*-value was more than 0.05 (Table 5).

### Association with level of TB perception and level of TB knowledge and awareness

There was no association between level of TB knowledge and awareness with the level of TB perception, as the *p*-value was 0.122, which was more than 0.05 (Table 6).

### Discussion

The level of knowledge and awareness about TB disease among health care students in IIUM Kuantan is low, this result is congruent with both studies done in Malaysia.<sup>10-11</sup> In comparison with other countries that use the same methodology in assessing the level of knowledge and awareness of TB among health care students, it found out the results obtained in this study is incongruent with studies done in Italy and Iran, whereby they found out that the level of knowledge and awareness among health care students are

**Table 4** Association between sociodemographic characteristic with level of TB knowledge and awareness.

Variable	Frequency (n)	Level of TB knowledge and awareness		$\chi^2$ statistics (df)	<i>p</i> -Value
		High	Low		
<b>Gender</b>				0.101 (1)	0.750
Male	92	23 (27.1)	69 (28.9)		
Female	232	62 (72.9)	170 (71.1)		
<b>Kulliyah</b>				12.139 (5)	0.033
Medicine	65	25 (29.4)	40 (16.7)		
Nursing	29	7 (8.2)	22 (9.2)		
Pharmacy	43	16 (18.8)	27 (11.3)		
Allied Health Science	60	13 (15.3)	47 (19.7)		
Dentistry	27	6 (7.1)	21 (8.8)		
Science	100	18 (21.2)	82 (34.3)		
<b>Year of study</b>				1.234 (3)	0.745
First year	77	19 (22.4)	58 (24.3)		
Second year	143	37 (43.5)	106 (44.4)		
Third year	51	12 (14.1)	39 (16.3)		
Fourth year	53	17 (20.0)	36 (15.1)		
<b>Clinical placement experience</b>				0.438 (1)	0.508
Yes	105	30 (35.3)	75 (31.4)		
No	219	55 (64.7)	164 (68.6)		

**Table 5** Association between sociodemographic characteristic with level of TB perception.

Variable	Frequency (n)	Level of TB perception		$\chi^2$ statistics (df)	p-Value
		Have stigma	No stigma		
<i>Gender</i>				0.150 (1)	0.698
Male	92	61 (27.7)	31 (29.8)		
Female	232	159 (72.3)	73 (70.2)		
<i>Kulliyah</i>				9.244 (5)	0.100
Medicine	65	38 (17.3)	27 (26.0)		
Nursing	29	19 (8.6)	10 (9.6)		
Pharmacy	43	27 (12.3)	16 (13.8)		
Allied Health Science	60	40 (18.2)	20 (19.2)		
Dentistry	27	17 (7.7)	10 (8.7)		
Science	100	79 (35.9)	21 (20.2)		
<i>Year of study</i>				1.483 (3)	0.686
First year	77	53 (24.1)	24 (23.1)		
Second year	143	101 (45.9)	42 (40.4)		
Third year	51	32 (14.5)	19 (18.3)		
Fourth year	53	34 (15.5)	19 (18.3)		
<i>Clinical placement experience</i>				2.563 (1)	0.109
Yes	105	65 (29.5)	40 (38.5)		
No	219	155 (70.5)	64 (61.5)		

**Table 6** Association between level of TB perception with level of TB knowledge and awareness.

Variable	Frequency (n)	Level of TB perception		$\chi^2$ statistics (df)	p-Value
		Have stigma	No stigma		
<i>Level of TB knowledge and awareness</i>				2.391 (1)	0.122
High	92	52 (23.6)	33 (31.7)		
Low	232	168 (76.4)	71 (68.3)		

high. However, the result obtains in this study is similar to a study done in China with the same target populations.<sup>4,5,12</sup>

Level of TB perception among health care students in IIUM Kuantan is high, this result is differing from a study done in Malaysia, whereby the researchers stated that the students not sure whether they have a stigma towards TB disease.<sup>10</sup> However, fewer studies were done in assessing the level of perceptions among students, but there was a study done in Southwest Ethiopia with different target of population stating that majority of the community (51.2%) have a stigma towards TB disease and it has a similar result.<sup>13</sup>

The level of TB knowledge and awareness is not significantly associated with the level of TB perception as the p-value is more than 0.05. This means that the level of TB knowledge and awareness does not effect on how students perceive TB disease. This finding is incongruent with another study stating that when a person is having a low level of TB knowledge and awareness, it might lead to stigma towards TB disease even though through descriptive statistics the findings stating that health care students have the high stigma of TB disease and low level of knowledge and awareness on TB disease.<sup>14</sup> However, through inferential statistics it stating otherwise.

### Implication of study into practice

The implications of this research findings will be addressed according to three aspects, which are to nursing students, university students, and university.

*Nursing students:* It gives an outlook to the importance of having knowledge and awareness about TB disease, this is because nursing students are the future nurses. Therefore, they need to have good knowledge and awareness about TB in order to provide good health care towards patients. Besides, the importance of having a positive perception of TB is that nurses are the one who provides care and moral support. If nursing students have a negative perception on TB disease, then, how can they give moral support and provide holistic care towards the patient.

*University students:* The results of this findings help the students especially health care students in IIUM Kuantan campus that they need to take serious in understanding about TB disease and have a good perception as most the students in IIUM Kuantan will be working in the hospital and provide care. The most important is that they need to be equipped with strong basic knowledge of TB disease.

**University:** It helps the educators to instill a good perception towards TB disease among health care students, and also in clinical setting, the educators can show a good behaviour when approaching or provide care to TB patients, as they can be a role model for the students.

Overall, the findings for this research were a low level of knowledge and awareness about TB among IIUM Kuantan students, high stigma level about TB among IIUM Kuantan students. There were many shortcomings in this research. Therefore there are few recommendations for future studies. Firstly, this study was restricted in one university targeting health care students that were met in inclusion criteria. This finding might bring benefit to other health care students in Malaysia. Therefore, future studies need to widen the target groups which includes other universities in Malaysia. Besides that, the majority of students who participate in this study was from the second year and first-year students it affects the result. Therefore, the researcher recommends another future study to avoid using simple random sampling when choosing students from each strata, but use stratified sampling when choosing students from each level of study.

## Conflict of interests

The authors declare no conflict of interest.

## Acknowledgements

The authors would like to express our appreciation to International Islamic University Malaysia (IIUM) for funding this study (RIGS16-140-0304). The authors also would like to express gratitude to those who directly or indirectly participate in the completion of this study. Special thanks to Mrs. Masmunaa Hassan for presenting this study in "The 2nd International Nursing Scholars Congress (INSC) 2018".

## References

1. WHO. *Global Tuberculosis Report 2016*. Cdc 2016 (*Global TB Report 2016*) [document on the internet]. No date. Available from: <http://apps.who.int/medicinedocs/documents/s23098en/s23098en.pdf>.
2. Jaafar S, Mohd Noh K, Muttalib KA, Othman NH, Healy J, Maskon K, et al. Malaysia health system review [document on the internet], vol. 3. Geneva: Health Systems in Transition; 2013. p. 1–103. [http://www.wpro.who.int/asia\\_pacific\\_observatory/hits/series/Malaysia\\_Health\\_Systems\\_Review2013.pdf](http://www.wpro.who.int/asia_pacific_observatory/hits/series/Malaysia_Health_Systems_Review2013.pdf)
3. Osei E, Akweongo P, Binka F. Factors associated with DELAY in diagnosis among tuberculosis patients in Hohoe Municipality, Ghana. *BMC Publ Health*. 2015;15:721, <http://dx.doi.org/10.1186/s12889-015-1922-z>.
4. Montagna MT, Napoli C, Tafuri S, Agodi A, Auxilia F, Casini B, et al. Knowledge about tuberculosis among undergraduate health care students in 15 Italian universities: a cross-sectional study. *BMC Publ Health*. 2014;14:970, <http://dx.doi.org/10.1186/1471-2458-14-970>.
5. Zhao Y, Ehiri J, Li D, Luo X, Li Y. A survey of TB knowledge among medical students in Southwest China: is the information reaching the target? *BMJ Open*. 2013;3:9, <http://dx.doi.org/10.1136/bmjopen-2013-003454>.
6. Ministry of Health Malaysia. Health facts 2016 [document on the internet]. Ministry of Health Malaysia, Planning Division Health Informatics Centre; 2016. p. 1–19. [http://www.moh.gov.my/images/gallery/publications/KKM\\_HEALTH\\_FACTS\\_2016.pdf](http://www.moh.gov.my/images/gallery/publications/KKM_HEALTH_FACTS_2016.pdf)
7. Ahmad F, Pakasi TA, Mansyur M. The social determinants of knowledge and perception on pulmonary tuberculosis among females in Jakarta, Indonesia. *Med J Indonesia*. 2014;23:93–105, <http://dx.doi.org/10.13181/mji.v23i2.651>.
8. Elmi O, Hasan H, Abdullah S, Jeab M, Nadiyah WBAZ, Naing N. Development and validation of a questionnaire on the knowledge of tuberculosis and the perception of tuberculosis treatment among tuberculosis patients in Malaysia. *Int J Med Sci Publ Health*. 2014;3:352–7, <http://dx.doi.org/10.5455/ijmsph.2014.110120141>.
9. World Health Organization, Stop TB Partnership. *Advocacy, communication and social mobilization for TB control: a guide to developing knowledge, attitude and practice surveys* [document on the internet]. Geneva: World Health Organization; 2008.
10. Mokhtar KS, Rahman N, Shariff N, Asna W, Mohd W. Tuberculosis in Malaysia. A study on the level of societal awareness and stigma. *J Human Soc Sci*. 2012;1:59–64, <http://dx.doi.org/10.3201/eid0402.980217>.
11. Sanusi SB, Talip BA, Mohamed M. The descriptive study of knowledge and awareness of tuberculosis among students in Universiti Tun Hussein Onn Malaysia. *J Sci Technol*. 2017;9:15–9. Available from: <http://penerbit.uthm.edu.my/ojs/index.php/JST/article/view/1336>
12. Behnaz F, Mohammadzade G, Mousavi-e-rokhabadi RS, Mohammadzadeh M. Assessment of knowledge, attitudes and practices regarding tuberculosis among final year students in Yazd, central Iran. *J Epidemiol Global Health*. 2014;4:81–5, <http://dx.doi.org/10.1016/j.jegh.2013.09.003>.
13. Abebe G, Deribew A, Apers L, Woldemichael K, Shiffa J, Tesfaye M, et al. Knowledge, health seeking behavior and perceived stigma towards tuberculosis among tuberculosis suspects in a rural community in Southwest Ethiopia. *PLoS ONE*. 2010;5:1–8, <http://dx.doi.org/10.1371/journal.pone.0013339>.
14. Cremers AL, De Laat MM, Kapata N, Gerrets R, Klipstein-Grobusch K, Grobusch MP. Assessing the consequences of stigma for tuberculosis patients in urban Zambia. *PLoS ONE*. 2015;10:1–17, <http://dx.doi.org/10.1371/journal.pone.0119861>.