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MEDICAL STUDENTS' KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS TUBERCULOSIS

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ABSTRACT

The lack of knowledge among health care workers leads to an increased risk of contracting the disease. Knowledge about TB among medical students is of particular importance as it helps them to protect themselves and their patients in the future. The aim of the study was to assess the level of knowledge, attitudes and practice of medical students toward tuberculosis at Unaizah College of medicine (UCM), Qassim University, Saudi Arabia. A descriptive cross-sectional study was carried out at UCM. 324 medical students were recruited in this study, using validated, pretested questionnaire. The results of this study showed 49.4 % of the participants had moderate knowledge about TB and 44.4 % had poor level. Gender had a significant effect on the students' level of knowledge where females seem to have higher level of knowledge (72.7 %). Older students had been found to have a higher level of knowledge about TB (p. value 0.004). The students of higher academic level (MD 4) had also been found to have higher level of knowledge about TB (P. value = 0.00). In conclusion, the study found that medical students have inadequate level of knowledge and attitude toward TB, particularly among those in the lower academic levels. Therefore, there is a need to enhance the curricula and as well providing workshops and courses to address these gaps. Further research studies are also needed to explore the reasons behind these results.

Key words: Tuberculosis (TB), Knowledge, Practice, Qassim, KSA

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INTRODUCTION

Tuberculosis (TB) is one of the world's most prevalent infectious diseases and remains a major public health issue for low- and middle-income countries [1]. Some countries in Africa and Asia are still struggling with TB and are unable to contribute or manage TB programs; which result in finding and treating relative few cases [2]. TB is common in Saudi Arabia and particularly relevant due to its population dynamics including a large number of resident expatriates coming from TB endemic regions and the influx of millions of pilgrims to the country each year during the Hajj and Umrah seasons. The World Health Organization (WHO) has put in place several strategies to prevent and control the disease, including directly observed treatment short-course (DOTS) and stop tuberculosis strategies [1].

Mycobacterium tuberculosis (TB) usually infects the lungs (causing pulmonary tuberculosis), but can also infect almost any organ in the body [3]. TB is known to be transmitted from person to person via droplets [4]. People at risk of developing TB include the poorly nourished and those who have weak immune defenses as a result of HIV, diabetes, leukemia, or the use of immunosuppressive drugs [4], of whom almost one-third are infected with TB [5].

Some studies have reported that the lack of knowledge towards TB among health care workers might lead to an increased risk of developing the disease [1, 6, 7]. A study of Chinese TB patients found that a TB diagnostic delay was due to insufficient TB awareness among the staff working in the health facility, including inability to administer a smear test for suspected TB

cases, inability to refer suspected TB cases to county TB dispensaries or approved TB treatment and misdiagnosis hospital [1]. Nevertheless, several studies have indicated that there is inadequate knowledge of TB among undergraduate medical students [1,8,9]. Medical colleges play an important role in shaping the attitudes and practice of future medical practitioners towards such a disease [1, 6, 8]. As medical students are the potential future physicians and leaders, they need to understand TB screening and management to promote effective prevention, early diagnosis and efficient treatment [1].

A study conducted in Brazil suggested that further education and training are required due to the risky behavior that students were exhibiting during the examination of patients with pulmonary TB [10]. Another study had also concluded that two-thirds of final year medical students did not know the required distance that should be kept from a contagious patient [11].

The mission of National Tuberculosis Curriculum Consortium (NTCC) in the United States is to enhance the skills and instill correct attitudes in the management and control of TB among medical students, and as well to create a framework through which complex TB issues can be revisited [8]. This mission reflects the importance of shaping medical students' attitude and practice towards this devastating disease. This study aimed to assess the levels of knowledge, attitude and practice toward tuberculosis among medical students at Unaizah College of Medicine, Qassim University in Kingdom of Saudi Arabia.

METHODS

It is a descriptive observation cross-sectional study aimed to assess the knowledge, attitude and practice of the medical students toward TB at Unayzah College of Medicine, Qassim University, KSA. First, we got an ethical approval from institutional review board (IRB) at the Qassim University. A written consent had been taken from participants prior to the administration of the survey. A total of 324 medical students were recruited in this study, using total population sampling (response rate 75%). The data were collected using a pretested, pre-coded, validated questionnaire. The questionnaire included a range of close ended questions with the answer options as agree, disagree, and do not know to assess knowledge and as well situation based practice questions, included multiple options with one correct answer. Statistical analysis was performed using SPSS version 21 software package. Descriptive information was expressed as frequencies, percentages, graphs and cross tables. A chi-square analysis would be used to determine the differences in knowledge, experience, and attitude that can be attributed to socio-demographic information.

RESULTS

Total number of participants included in this study was 324 of whom 64.8 % were female. The mean of the age was 22.4 ± 1.869 years. Table 1 included the rest of background characteristics of the study participants. 49.4 % of the participants had moderate knowledge about TB, while 44.4 % had poor level of knowledge (Figure 1). Also, the study results showed that the students whose age was 23 had higher level

Table 1: Background characteristics of the study participants

Variable	Frequency	Percent
Gender		
Male	114	35.2
Female	210	64.8
Total	324 F	100
Marital Status		
Single	317	97.8
Married	7	2.2
Total	324	100
Academic Level		
Pre-clinical years (Premed)	59	18.2
Pre-clinical years (MD1)	61	18.8
Pre-clinical years (MD2)	59	18.2
Clinical years (MD3)	85	26.2
Clinical years (MD4)	60	18.5
Total	324	100

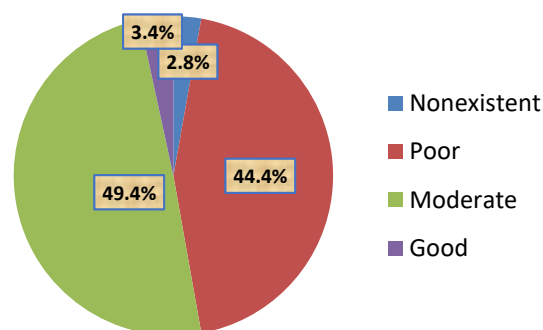


Figure 1: Levels of Knowledge about TB among participants

of knowledge (p. value 0.004). Generally, gender has a significant effect on the students' level of knowledge, and females seem to have higher level of knowledge (p. value 0.009). Furthermore, the study findings showed that

Table 2: Association between Socio-Demographic Characteristics and the Levels of Knowledge

Variable		Levels of Knowledge				P-value
		Nonexistent	Poor	Moderate	Good	
Age (Mean)		22	22	23	23	0.004 *
Gender	Male	66.70%	42.40%	27.50%	27.30%	0.009*
	Female	33.30%	57.60%	72.50%	72.70%	
Marital Status	Single	100%	98.60%	96.90%	100%	0.670
	Married	0.00%	1.40%	3.10%	0.00%	
Academic Level	Pre-clinical (Premed)	33.30%	31.90%	5.60%	9.10%	0.000*
	Pre-clinical (MD1)	33.30%	16.70%	19.40%	27.30%	
	Pre-clinical (MD2)	0.00%	13.20%	23.80%	18.20%	
	Clinical years (MD3)	33.40%	25.00%	28.80%	0.00%	
	Clinical years (MD4)	0.00%	13.20%	22.50%	45.50%	

*Significant at P-value < or = 0.05

academic level has its effect on the level of knowledge (p value = 0.000); and the MD4 students had a higher level of knowledge (Table 2).

DISCUSSION

In this study, almost half of participants had moderate knowledge about TB, and 44.4 % had poor level of knowledge. These results indicate the medical students' inadequate level of knowledge toward TB. Similar findings were observed in studies conducted in Belgrade in which they found that knowledge of students was inadequate especially about its causes and way of transmission [13], and in China where less than half of the students had adequate knowledge about TB symptoms as cough with blood sputum and TB treatment [14]. This might affect their patients' health outcomes in future through inaccurate diagnosis or inappropriate treatment and might negatively affect them too.

Additionally, the results of this study had showed that most of students did not possess positive attitude toward TB preventive measures, hence around one-quarter of the participants are considered at risk of contracting TB. Similar observations were reported in study conducted China, 2018; where 25 % of students were at risk [1] and as well reported in another study conducted by Bhandari and colleagues [19]. Medical students' positive attitude towards TB is important as it might affect their own health and their way in diagnosis and treatment their patients during their early career duties.

The study results had also showed that the older students had higher level of knowledge (p. value 0.004). This can be explained by the fact that older students had observed more cases in significantly higher rate than younger ones. These results were also observed in a study conducted among Chinese medical students, where older medical students had greater level of

knowledge than younger ones (37.2 % vs 31.7, P. value < 0.001) [1]. Similarly, study conducted in Italy among medical students reported that older age is associated with correct answers considering TB and its vaccination [15]. Despite the medical students' level of knowledge becomes better with age however, it is still considered inadequate; necessitate the provision more courses and information about TB to medical students, and as well enhancing the curricula and offering further workshops and courses targeting in particular those in lower academic level. Many studies showed that developing courses in this regards targeting medical students might provide them with the needed knowledge and boost their positive attitude towards TB [7,9 and12]. The poor knowledge level might be attributed to the lack of such courses on TB targeting medical students' different academic levels.

Moreover, the findings of this study had revealed that gender had a great effect on level of knowledge, where female had more level of knowledge than male, as 55.2 % of female had moderate level of knowledge compared to 38.6 % of males (P. value = 0.002). Similar results were reported in the study carried out by Fatemah Behnaz and her colleagues, where the Mean knowledge scores in women (16.45 ± 1.87) was significantly higher (15.67 ± 2.30) than men (P. value = 0.032) [11]. On the contrast, the study of Yangjiang Ou, did not find any significant correlation between gender and level of knowledge (P. value = 0.947) with no superior of one gender over the other [1] and the results of Anita Shrestha who did not find a significant difference between genders and its results showed that male had slightly

higher knowledge [7]. The higher level of knowledge female had may be explained that female had more tendency to get courses about TB than males.

In this study, the students of higher academic level (MD 4) had been found to have higher level of knowledge about TB (P. value = 0.00). On the contrast, the study of Yangjiang Ou found poor knowledge of TB among final-year medical students. Our finding might be explained by the fact that as medical students proceed across their academic levels, they get more clinical knowledge and they have relatively more chances to encounter more TB cases compared to lower level students.

In addition, the findings of this study had showed that most of students did not receive Mantoux test before; nonetheless, most of them had practice the test on other. Besides, the study findings revealed that most of the medical students did not deal with patients with TB nor had seen X-ray of patients of TB. Similar findings were observed in studies conducted in Italy [15], Brazil [16] and national TB Curriculum Consortium (NTCC) schools [17], which suggested that there was a critical need for the development of knowledge of medical students about TB and its diagnosis as it appeared that the lacking of knowledge would have its impact on increasing the prevalence of TB.

Most of students thought that they are not at high risk for TB (78.4 %), particularly older age female (61.4 %). This may affect the medical students' use of precautionary measures; hence jeopardizing their health as they become more vulnerable to TB. This finding is tallying with the result reported in study conducted in Rio De Janerio, Brazil,

where most of students in this study did not take care of using masks when dealing with pulmonary TB patients [12]

In conclusion, the study found that medical students have inadequate level of knowledge and attitude toward TB, particularly among those in the lower academic levels. Therefore, there is a need to enhance the curricula and as well providing workshops and courses to address these gaps. Further research studies are also needed to explore the reasons behind these results.

REFERENCES

1. Ou Y, Luo Z, Mou J, Ming H, Wang X, Yan S, et al. knowledge and determinants regarding tuberculosis among medical students in Hunan, China: A cross-sectional study. *BMC Public Health*. 2018 Jun 13;18(1).
2. Drobniewski F, Pablos-Méndez A, Raviglione M. Epidemiology of Tuberculosis in the World. *Semin Respir Crit Care Med* [Internet]. 1997 Sep 20 [cited 2020 Feb 13];18(05):419–29. Available from: <http://www.thieme-connect.de/DOI/DOI?10.1055/s-2007-1009357>
3. Hickey AJ, Gounder L, Moosa MYS, Drain PK. A systematic review of hepatic tuberculosis with considerations in human immunodeficiency virus co-infection. *BMC Infect Dis*. 2015 May 6;15(1).
4. Shimeles E, Enquselassie F, Aseffa A, Tilahun M, Mekonen A, Wondimagegn G, et al. Risk factors for tuberculosis: A case-control study in Addis Ababa, Ethiopia. Ukwaja KN, editor. *PLoS One* [Internet]. 2019 Apr 2 [cited 2020 Jan 31];14(4):e0214235. Available from: <http://dx.plos.org/10.1371/journal.pone.0214235>
5. Drobniewski F, Pablos-Méndez A, Raviglione M. Epidemiology of Tuberculosis in the World. *Semin Respir Crit Care Med* [Internet]. 1997 Sep 20 [cited 2020 Feb 13];18(05):419–29. Available from: <http://www.thieme-connect.de/DOI/DOI?10.1055/s-2007-1009357>
6. More, B., Doshi, C., Baghel, V., & More, A. (2021). A study on knowledge, awareness and preventive practice about tuberculosis among medical students in Udaipur, India. Retrieved 1 January 2021.
7. Shrestha, A., Bhattarai, D., Thapa, B., Basel, P., & Wagle, R. R. (2017). Health care workers' knowledge, attitudes and practices on tuberculosis infection control, Nepal. *BMC infectious diseases*, 17(1), 724. <https://doi.org/10.1186/s12879-017-2828-4>
8. Laurenti P, Federico B, Raponi M, Furia G, Ricciardi W, Damiani G. Knowledge, experiences, and attitudes of medical students in Rome about tuberculosis. *Med Sci Monit*. 2013 Oct 18;19(1).
9. Dorji, T., Tshering, T., & Wangdi, K. (2020). Assessment of knowledge, attitude and practice on tuberculosis among teacher trainees of Samtse College of Education, Bhutan. *PLOS ONE*, 15(11), e0241923. doi:10.1371/journal.pone.0241923
10. Teixeira EG, Menzies D, Cunha AJLA, Luiz RR, Ruffino-Netto A, Scartozzoni MS, et al. knowledge and practices of medical students to prevent tuberculosis transmission in Rio de Janeiro, Brazil. *Rev Panam Salud Publica/Pan Am J Public Heal*. 2008;24(4):365–70.
11. Behnaz F, Mohammadzade G, Mousavi-e-roknabadi RS, Mohammadzadeh M. Assessment of knowledge, attitudes and practices regarding tuberculosis among final year students in Yazd, central Iran. *J Epidemiol Glob Health* [Internet]. 2014 Jun [cited 2020 Feb 14];4(2):81–5. Available from: <http://www.ncbi.nlm.nih.gov/pubm>
12. Mario C Raviglione, Richard J O'Brien. Tuberculosis. In: Longo, Fauci, Kasper, Hauser, Jameson, Loscalzo, editors. *Harrisons principles of internal medicine*. 18th ed. p. 1356.
13. Smolovic, Milos & Pesut, Dragica & Bulajic, Milica & Simic, Marija. (2011). Knowledge and attitudes towards tuberculosis in non-medical students University of Belgrade. *Pneumologia* (Bucharest, Romania). 61. 88-91.

14. Zhao Y, Ehiri J, Li D, et al. A survey of TB knowledge among medical students in Southwest China: is the information reaching the target? *BMJ Open*. 2013;3(9):e003454. doi: 10.1136/bmjopen-2013-003454
15. Montagna MT, Napoli C, Tafuri S, et al. Knowledge about tuberculosis among undergraduate health care students in 15 Italian universities: a cross-sectional study. *BMC Public Health*. 2014;14:970. doi: 10.1186/1471-2458-14-970.
16. Teixeira EG, Menzies D, Cunha AJ, et al. knowledge and practices of medical students to prevent tuberculosis transmission in Rio de Janeiro, Brazil. *Rev Panam Salud Publica*. 2008;24(4):265–270. doi:10.1590/S1020-49892008001000006.
17. Jackson M, Harrity S, Hoffman H, et al. A survey of health professions students for knowledge, attitudes, and confidence about tuberculosis, 2005. *BMC Public Health*. 2007;7 (1):219. doi: 10.1186/1471-2458-7-219
18. Sunita R, Bhandari RB. Knowledge, attitude and practice against tuberculosis infection control among medical students and nursing staff. *J Cont Med A Dent*. 2016;4(2):29–32



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