Assessment of Knowledge and Attitudes of Medical Students on Tuberculosis

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ABSTRACT:

BACKGROUND:
Tuberculosis is one of the most common communicable diseases world wild and continues to be a major global health problem. It causes disease among millions of people each year, and, after HIV, it ranks as the second leading cause of death from an infectious disease worldwide. TB is a public health priority in Iraq. A report published by the World Health Organization highlighted ' the value of undergraduate tuberculosis training and outlined a systematic educational plan to ensure that students are provided with the necessary knowledge, skills, and attitudes essential to the effective management of tuberculosis.

AIM OF STUDY:
To assess the level of knowledge and attitude of medical students towards tuberculosis in the College of Medicine /University of Kufa and College of Medicine /University of Babylon in Iraq .

METHOD:
A cross-sectional study was done on medical students (4th ,5th,6th stages) at College of Medicine/ University of Kufa and College of Medicine / University of Babylon in Iraq during one year. Data was entered and statistical analysis conducted using statistical package for the social sciences version 20 (SPSS).Chi square test($X2$-test) used for categorical variables. P value of 0.05 or less considered statistically significant.

RESULTS:
The overall knowledge of all students(84.5%) and overall attitude (76%).There was a significant difference between male and female in regarding attitudes questions, male percent of good attitudes was (79.9%) higher than female percent(73.8%). The percent of Babylon medical students of good knowledge was (86.7%) higher than percent of good knowledge of Kufa medical students (81.9%), but there was no significant difference between both colleges.

CONCLUSION:
The overall knowledge and attitudes were high in the present study .The percent of knowledge for Babylon medical students were higher than the percent of knowledge for Kufa medical students. There was a low percent of correct answers in some aspects regarding knowledge about epidemiology, chemoprophylaxis, transmission isolation of active disease patients and treatment of tuberculosis patients with human immunodeficiency virus.

KEYWORDS: medical students, tuberculosis, mycobacterium tuberculosis, knowledge, attitudes.

INTRODUCTION:

Tuberculosis {TB} is one of the most common communicable diseases worldwide and continues to be a major global health problem. It causes disease among millions of people each year, and, after human immunodeficiency virus (HIV), it ranks as the second leading cause of death from an infectious disease worldwide [1].Commonly, TB affects Lungs, as well as other body organs. Typical symptoms of active TB are chronic cough with bloody sputum, fever, sweats at night, and weight loss [2]. TB is conveyed through the air from person to person, when people with active lung TB cough, sneeze, speak or spit, they spread the TB microbes into the air, only a few of these germs can cause infection if inhaled [3] . More than two billion individuals are believed to be sick with M tuberculosis [4,5] .Undoubtedly, a lack of knowledge regarding TB among health care workers may contribute to an increased risk of

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developing the disease [6,7]. In this context, awareness of tuberculosis among medical students is particularly important; therefore, undergraduate training in tuberculosis should be improved, because students may be exposed to substantial exposures and thus have the highest risk of infection or disease [8]. A report published by the World Health Organization highlighted ' the value of undergraduate tuberculosis training and outlined a systematic educational plan to ensure that students are provided with the necessary knowledge, skills, and attitudes essential to the effective management of tuberculosis [9]. Poor knowledge and behaviors cause delays in finding remedies and reporting to school medical staff resulting in high TB prevalence in colleges [10]. So adequate knowledge of TB epidemiology and control is critically important for this population, also knowledge of TB among medical undergraduates in university is also important since they represent potential future physicians or leaders in the fight against TB[11]. Iraq is an upper middle income country in the eastern Mediterranean region, the region account 25% of the global burden in 2014, TB is a public health priority in Iraq and is among the 7 countries in the region with a high burden of TB and account 3% of the total number of cases; so, there are an estimated 20000 TB patients in Iraq ,and estimated death cases due to TB are more than 4000 annually[12]. According to WHO report, the estimated incidence of TB in Iraq is 45/100000, while prevalence is 74/100000, and mortality is 3/100000[13].

In this context, appropriate undergraduate training in TB is required and a comprehensive educational strategy is essential in order to provide adequate knowledge to medical students and attitude necessary to encourage effective prevention, early diagnosis and effective treatment of TB.

AIM OF STUDY:
To assess the level of knowledge and attitudes of medical students towards tuberculosis.

SUBJECTS AND METHODS:
Study setting :- A cross-sectional study was done on medical students (4th ,5th,6th stages) at College of Medicine / Kufa University and College of Medicine / Babylon University in Iraq during about one year period from starting of data collection at March and April 2019 until March of 2020 ,data collected from 1st. March to 30th. April, 2019, on 825 medical students of 4th ,5th and 6th stages.

Ethical issue: The project was approved by Iraqi council in family medicine. Before data collection, an official agreement had been taken from the Colleges of Medicine in Kufa and Babylon Universities in Iraq. Verbal consent was obtained from every students after explaining the aim and the objectives of the study; ensuring privacy of the data, the questionnaire was filled without names.

Sampling technique: all medical students from 4th, 5th, 6th stages participated in this study.

Data collection: - The data were collected on average of three to four days per week during period from first of March to thirty of April 2019, using a self- administered pretested questionnaire form.

Questionnaires included:-A. socio-demographic information. B. knowledge was assessed with 27 questions on general knowledge, transmission, diagnosis and treatment of TB. [14]C. Attitude was assessed with 9 questions [15].

Statistical analysis:-Data were entered and statistical analysis conducted by using statistical package for the social sciences version 20 (SPSS). Data were presented in a form of tables, percentages and numbers. Frequency and mean as descriptive for summarizing the study and outcome variables .Chi square test(X2-test) was used for categorical variables. P value of 0.05 or less was considered statistically significant.

RESULTS:

Table 1: Distribution of medical students on the basis of college and gender according to stages.

Academic stage	College		Gender	
	Kufa	Babylon	Male	Female
4th stage	132	142	78	196
5th stage	129	153	111	171
6th stage	114	155	114	155
Total	375 (45.5%)	450 (54.5%	303 (36.7%	522 (63.3%)

Table 2: Overall knowledge of medical students (n=825).

Answers	Frequency	Percent
Good	697	84.5
Poor	128	15.5%
Total	825	100%

Table 3: Overall attitudes of medical students (n=825).

Response	Frequency	Percent
Good	627	76.0%
Poor	198	24.0%
Total	825	100%

Table 4: Overall knowledge of medical students according to college.

College	Good knowledge	Poor knowledge	Total	P value
Babylon	390 (86.7%)	60 (13.3%)	450 (100.0%)	0.058
Kufa	307 (81.9%)	68 (18.1%)	375 (100.0%)	
Total	697 (84.5%)	128 (15.5%)	825 (100.0%)	

Table 5: Overall attitudes of medical students according to college.

College	Good attitudes	Poor attitudes	Total	P value
Babylon	337 74.9%	113 (25.1%)	450 (100.0%)	0. 413
Kufa	290 77.3%	85 (22.7%)	375 (100.0%)	
Total	627 76.0%	198 (15.5%)	825 (100.0%)	

Table 6: Overall knowledge of medical students according to gender.

Gender	Good knowledge	Poor knowledge	Total	P value
Male	252 (83.2%)	51 (16.8%)	303 (100.0%)	0.426
Female	445 (85.2%)	77 14.8%	522 (100.0%)	
Total	697 84.5%	128 15.5%	825 (100.0%)	

Table 7: Overall attitudes of medical students according to gender.

College	Good attitudes	Poor attitudes	Total	P value
Males	242 (79.9%)	61 (20.1%)	303 (100.0%)	0.0 47
Females	385 (73.8%)	137 (26.2%)	522 (100.0%)	
Total	627 (76.0%)	198 (24.0%)	825 (100.0%)	

Table 8: Overall knowledge of medical students according to stage.

Stage	Good knowledge	Poor knowledge	Total	P value
4th stage	225 (82.1%)	49 (17.9%)	274 (100.0%)	0.300
5th stage	245 (86.9%)	37 (13.1%)	282 (100.0%)	
6th stage	227 (84.4%)	42 (15.6%)	269 (100.0%)	
Total	697 84.5%	128 (15.5%)	825 (100.0%)	

Table 9: Overall attitudes of medical students according to stage.

Stage	Good attitudes	Poor attitudes	Total	P value
4th stage	211 (77.0%)	63 (23.0%)	274 (100.0%)	0.445
5th stage	207 (73.4%)	75 (26.6%)	282 (100.0%)	
6th stag	209 (77.7%)	60 (22.3%)	269 (100.0%)	
Total	627 (76.0%)	198 (24.0%)	825 (100.0%)	

Table 10: Percent of correct and wrong answers for medical students on knowledge questions about TB general knowledge, risk factors and diagnosis N=825.

Knowledge Questions	Correct answers	Percent	wrong answers	Percent
Q1-An AIDS patient could be infected with the agent causing TB even if mantoux test is negative.	615	74.5%	210	25.5%
Q2 Two-weeks treatment with antibiotics ensures cure of TB.	774	93.8%	51	6.2%
Q3-Mycobacterium could be dormant for many years and get reactivated.	764	92.6	61	7.4%
Q4-Protection against TB can be established by Chemoprophylaxis.	303	36.7%	522	63.3%
Q5-There are > 30 million deaths/year because of TB infection worldwide.	194	23.5%	631	76.5%
Q6-All immigrants to Iraq should be screened for Mycobacterium.	533	64.6%	292	35.4%
Q7-Incidence of TB in Iraq is high.	728	88.2%	97	11.8%
Q8 -Iraq is a country which is free of TB	784	95.0%	41	5.0%
Q9 BCG vaccine ensures 100% protection against TB.	692	83.9%	133	16.1%
Q10-Close contact with a patient having TB is Harmless.	682	82.7%	143	17.3%
Q11-Simple precautions like wearing mask, washing hands and good ventilation are helpful while taking care of a TB patient.	748	90.7%	77	9.3%
Q12-I feel uncomfortable while talking to a patient with TB	665	80.6%	160	19.4%
Q13-A patient with TB must not share kitchen tools (plates, spoons, glasses, etc.) with others.	151	18.3%	574	81.7%
Q14-Keeping a patient with TB at home carries the risk of infecting others.	681	82.5%	144	17.5%
Q15- TB cause by a virus	764	92.6%	61	7.4%
Q16-Poor living conditions, crowdedness, and refugee camps are good environments for transmission of TB .	775	93.9%	50	6.1%
Q17-HIV epidemic is the main reason behind the new outbreaks of TB worldwide.	488	54.3%	377	45.7%
Q18-You can get TB by drinking raw milk from an infected animal.	724	87.8%	101	12.2%
Q19 The commonest mode of transmission of TB is through inhalation of M. tuberculosis in aerosols and dust	425	51.5%	400	48.5%
Q20- every patient with TB often coughs out bloody sputum	689	83.5%	136	16.5%
Q21- A person could be infected with TB but show no clinical symptom throughout the life.	706	85.6%	119	14.4%
Q22-Disseminated TB does not involve meninges and bones.	740	89.7%	85	10.3%
Q23TB is only confined to the respiratory tract	785	95.2%	40	4.8%
Q24-TB is diagnosed using blood smears(most sensitive method) .	498	60.4%	327	39.6%
Q25-Night fever and sweating are symptoms of patients with TB	766	92.8%	59	7.2%
Q26-A positive Mantoux test means a definite TB infection.	515	62.4%	310	37.6%
Q27- A tuberculin test is essential to diagnose suspected cases of TB.	545	66.1%	280	33.9%

Table 11: Percent of correct and wrong answers of medical students on attitudes questions N=825.

Attitudes Questions	Correct answer	Percent	Wrong answer	Percent
Q1-Hands should be washed before and after patient care.	800	97%	25	3%
Q2- Wearing face masks are necessary for the examination of all patients.(active and non-active)	489	59.3%	336	40.7%
Q3- Wearing face masks are necessary for the examination of tuberculosis patients.	770	93.3%	55	6.7%
Q4- Tuberculosis patients should be isolated in negative pressure room.	203	24.6%	622	75.4%
Q5. Tuberculosis patients need not always to be hospitalized.	566	68.6%	259	31.4%
Q6- TB patients cannot be treated merely based on radiologic findings.	583	70.7%	242	293%
Q7- Anti-tuberculosis treatment regimen in patients(active TB) with and without HIV infection is the same.	270	32.7%	555	67.3%
Q8. The most important and accessible method for detecting is sputum smear acid fast staining.	724	87.8%	101	12.2%
Q9--BCG vaccination is the best preventive method. (especially for complication such as meningoencephalitis)	173	21.0%	652	79.0%

DISCUSSION:

Medical colleges play an important role in training and shaping the attitudes of the future generations of medical practitioners [15].Regarding overall of knowledge and attitudes percent in present study (**In table 2and table 3**) and overall knowledge and attitudes according to colleges ,stages and gender as in tables **(4 to 9):** there was a high percent of knowledge , this high level of knowledge could be a result of continuous reinforcement by the Ministry of Education through the health education messages and lectures ; which was higher than the percent of the overall knowledge of medical students in Italia [8], and higher than overall knowledge in China [16]. Compared with the results reported by Laurenti[17], the total percentage of correct answers in our study was higher . While regarding overall attitudes: Medical students' attitudes towards TB may play an integral role in how they manage TB patients during their careers .In China, the majority of medical students lacked an accurate TB attitudes [13].There was no significant difference between Kufa and Babylon medical students in regarding

overall knowledge (p value= 0.058),while the higher percent of Babylon university medical students maybe due to the difference in time of delivering infectious disease including TB, in an integrated curriculum of Kufa Medical College, the infectious modules given in early years (phase one) ,while in traditional curriculum of Babylon medical college; TB lectures given in 4th year in Community Medicine ,or maybe the time of interpretation of questionnaire was near to the time of examination of 4th stage for the infectious diseases course; on other hand, there was no significant difference in regarding overall attitudes of both colleges. There was no significant difference between the different stages in overall knowledge or in overall attitudes .There was no significant difference between male and female in regarding overall knowledge, while there was a significant difference regarding overall attitudes between male and female, this may be due to number of hours of real practice of the students. In this study regarding **knowledge of TB as shown in table (10) (**regarding epidemiology of TB, there

was a high percent of medical students who answered correctly and which was higher than the percent of previous similar study in Saudi Arabia [14] , and the percent was higher than the percent of correct answer to same questions in another previous study [18], this variation could be because of curriculum differ between different colleges. On the other hand regarding personal protection against TB transmission: there was also a high percent of medical students answered correctly and which was higher than the percent of previous similar study in China [16] . This high percent may be because of the reference and number of hours of program differ, but only in Q13which was also belong to personal protection against TB(regarding sharing tools with TB patients) low percent of medical students correctly answered this question which was similar to previous same study in China[13]. There were strong recommendations to strengthen TB knowledge of medical students through education that should recommended regarding this .While regarding causative organism correctly answered by a very good percent of medical students which was similar to the percent of correct answer in previous similar study in Italy [8]. So now regarding the mode of transmission (in Q18 about half of medical students and more than three quarter of the medical students answered correctly the Q19)), this high percent of our study it is possible that this knowledge was due to that the TB is endemic in Iraq and more researches and educational efforts are available . In regard to clinical symptoms and signs: a very good percent of correct answers which was higher than previous similar study in China [16],this may due to difference in curriculum . In regard to diagnosis: about more than half of medical students answered correctly which was higher than previous study in Saudia Arabia [14].So now what about treatment ? In this question there was a very high percent of correct answers that was higher than percent of previous similar study in Malaysia [19].While regarding latent TB, it was correctly answered by a high percent of medical students which was similar to percent in previous similar study in Italy (Several TB cases are asymptomatic) [8].

In regarding to the attitudes questions as shown in **table (11):** in general regarding hand washing before and after TB patients care ,wearing face mask, and regarding hospitalization , X-ray

findings, sputum smear acid fast staining and treatment depend on X-ray finding: all of these aspects were answered correctly by a high percent of medical students which was higher than percent in previous similar study in China[16]. Regarding isolation, it was agreed only by one quarter of medical students which was smaller than percent in previous similar study in China [13] , this low percent may due to long time from the last clinical lecture about TB. Regarding BCG vaccination is the best preventive method :correctly answered by a very low percent and in previous study in China also low [16] and in Iran also only 50 % respond correctly [15] ,the low percent of correct answer may due to that the students had not really practiced at heath care center where BCG vaccine given.

CONCLUSION:
1. 1-The overall knowledge and attitudes were high in present study.
2. 2-There was a significant difference between male and female in regarding attitudes question; male percent of good attitudes was higher than female percent.
3. 3- The percent of knowledge for Babylon medical students was higher than percent of knowledge for Kufa medical students.
4. 4-There was a low percent of correct answers in some aspects regarding knowledge about epidemiology, chemoprophylaxis, transmission isolation of active disease patients, and treatment of tuberculosis patients with Human Immunodeficiency Virus (HIV).

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