

# Assessment of Student's Knowledge in High Institute of Medical Technology / Abuslim About Tuberculosis Diseases

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**Abstract:** Tuberculosis (TB) is the second leading cause of human death after human immune deficiency virus (HIV). Tuberculosis is an airborne disease caused by the bacterium *Mycobacterium tuberculosis* (M. tuberculosis) (2). **Objective:** The study aims to identify the student knowledge about tuberculosis disease. **Method:** The sample of 140 students was selected from the second, third, fourth, fifth and sixth class from the medical departments in high Institute of Medical Technology/abusleem for the period from March 2019 to June 2019. The questionnaire was designed to achieve the aims of study, it was consisting of many parts, the first content the demographic information, the second part include knowledge of students about categories that infected with tuberculosis. The third part include the student knowledge of the signs of disease, the fourth content methods of transmission of disease, and the last part include the student information about the methods of protection of tuberculosis disease. Data were analyzed by using frequency distribution, percentage. **Results:** This study found insufficient TB knowledge in a sample of students, poor knowledge about TB. They must improve knowledge about TB, because these students could be exposed to the *Mycobacterium* strains during their training activities or when they are employed in private and public health care settings.

**Keywords:** Student, TB, Knowledge, Bacteria

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## 1. Introduction

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* [1]. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. The disease has become rare in high income countries, but is still a major public health problem in low and middle-income countries [7].

It is estimated that between the years 2000 and 2010, eight to nine million new cases emerged each year. Approximately 1.5 million people die from the disease each year. In adults, tuberculosis is the second leading cause of death due to an infectious disease (after AIDS), with 95% of deaths occurring in low-income countries. Tuberculosis is a major problem of children in poor countries where it kills over 100,000 children each year [4, 5].

Tuberculosis is an airborne disease caused by the bacterium *Mycobacterium tuberculosis* (M. tuberculosis). M. tuberculosis and seven very closely related mycobacterial species (M. bovis, M. africanum, M. microti, M. caprae, M. pinnipedii, M. canetti and M. mungi) together comprise what is known as the M. tuberculosis complex [7].

The human tubercle bacillus (*Mycobacterium tuberculosis*) is the main cause of tuberculosis all over the world. A slightly different type of TB, *Mycobacterium africanum*, occurs in Africa. The only important difference is that it is often resistant to thioacetazone [7].

The bovine bacillus (*Mycobacterium bovis*) at one time caused much infection in cattle in Europe and the Americas. Infection was often passed on to man through contaminated milk. Bovine TB in milk can be killed by boiling the milk, and bovine tuberculosis rarely occurs where this is the

practice. The extent of the transmission of bovine tuberculosis to humans is difficult to determine because of technical problems in isolating the organisms. One important difference is the resistance to pyrazinamide in *M. bovis* [5].

Once inhaled, the infectious droplets settle throughout the airways. The majority of the bacilli are trapped in the upper parts of the airways where the mucus-secreting goblet cells exist. The mucus produced catches foreign substances, and the cilia on the surface of the cells constantly beat the mucus and its entrapped particles upward for removal [9]. This system provides the body with an initial physical defense that prevents infection in most persons exposed to tuberculosis [8].

Patients who are infected with *M. tuberculosis*, but do not have active disease, cannot transmit TB. Extrapulmonary (EP) forms of TB are only contagious in exceptional circumstances. Children are generally much less contagious than adults. This may be due to weaker cough mechanics, less sputum production and lower bacillary load [11]. Diagnosing and initiating effective treatment in a patient early in the course of their TB disease, before they can infect many people, is considered the most effective preventive measure against TB. Effective treatment substantially reduces or eliminates disease transmission from smear-positive patients in less than one month after initiation of treatment [13].

Before immunity is established, bacilli from the primary infectious focus or from a near-by lymph node can be transported and disseminated throughout the body via the lymph system or the bloodstream [3]. Secondary foci containing bacilli can be born this way, particularly in the lungs, lymph nodes, serous membranes, meninges, bones and kidneys. As soon as an immune response is mounted, most of these foci spontaneously resolve. Yet, a number of bacilli may remain latent in the secondary foci for months or even years [10].

In the majority of cases (90 to 95% of non-HIV infected patients), the pulmonary lesions gradually heal. In 5 to 10% of the cases, the pulmonary lesion will progress to active disease either by gradual progression and/or spread via lymphatics or blood or by reactivation (often many years later) of primary or secondary lesions [3].

BCG is a vaccine consisting of live bacilli have lost their power to cause disease (except in persons with profound immunodeficiency). The bacilli originally came from a strain of bovine TB grown for many years in the laboratory. BCG stimulates immunity, increasing the body's defences without itself causing damage. Following BCG vaccination, in most cases the body's increased defences will control or kill any TB that enter the body [12].

Effectiveness of BCG at an individual level, even though results of controlled surveys are contradictory (efficacy ranging from 0 to 80%), it is acknowledged that BCG, if administered before primary infection (as is done in the practice of giving it at birth), confers a protection of 40 to 70% for a period of approximately 10 to 15 years [2, 6]. Protection from the severe forms of TB in children (miliary

and meningitis) is estimated at 80% [1, 13, 14].

Drug-resistant TB (DR-TB) is a growing worldwide problem, with no country or region spared. Multidrug-resistant TB (MDR-TB) is defined as TB that is resistant to at least isoniazid and rifampicin. Extensively drug-resistant TB (XDR-TB) is defined as TB that is resistant to isoniazid and rifampin, any fluoroquinolone and at least one of three injectable second-line drugs (amikacin, kanamycin or capreomycin) [15].

## 2. Materials and Methods

The research procedure included the following:

### 1) Research sample:

The sample of 140 student was selected from the second, third, fourth, fifth and sixth class from the medical departments in high Institute of Medical Technology/Abuslim for the period from March 2019 to June 2019.

### 2) Research Method:

The questionnaire was designed to achieve the aims of study, it was consisting of many parts, the first content the demographic information, the second part include knowledge of students about categories that infected with tuberculosis. The third part include the student knowledge of the signs of disease, the fourth content methods of transmission of disease, and the last part include the student information about the methods of protection of tuberculosis disease.

### 3) Statistical Analysis:

Data were analyzed by using frequency distribution, percentage to answer the level of (yes, No).

## 3. Results

Table 1 shows the most of the students were aged between (19-20) years and the highest of them were female (56.3%) and most of them were single (85.7%). Table 2 shows knowledge of students about categories that infected with tuberculosis the most of student answered TB infects people whose have respiratory disease (89.3%). Table 3 student knowledge of the signs of disease the most student answered TB patient has headache (73.6%), while student answered the TB patient has Pain chest (10.7%). Table 4 shows the most student answered TB transmission through food, diary and dairy products (73.6%), while (14.2%) answered transmission of TB from mother to fetus. Student answered TB can transmission through sneezing and coughing from infected people to healthy people (41.4%).

Table 5 shows the most student answered for protection from TB avoid smoking (85.7%), while (17.9%) answered take preventive measures when contact with infected person.

*Table 1. Demographic information.*

	No.	Percentage
1). semester		
Second	13	9.29
third	27	19.3

	No.	Percentage
Forth	44	31.4
Fifth	36	25.7
Sixth	20	14.3
total = 140		
2). Department		
Medical laboratory	20	14.3
Anesthesia and intensive care	20	14.3
General nursing	20	14.3
Midwifery	20	14.3
Physiotherapy	20	14.3
community health	20	14.3
Pharmacy	20	14.3
total = 140		
3). Age		
19-20	95	67.9
21-22	38	27.1
23-24	07	05
total = 140		
4). Sex		
Male	61	43.6
Female	79	56.3
total = 140		
4). Does a family member have TB?		
Yes	0	0
No	140	100
total = 140		
5). Are you single or married ?		
single	120	85.7
married	14	10
divorced	6	4.3
total = 140		

**Table 2.** Knowledge of students about categories that infected with tuberculosis.

	No.	Percentage
Infected both sex		
Yes	100	71.4
No	40	28.6
total = 140		
Infected female more than male		
Yes	123	87.9
No	17	12.1
total = 140		
Infected people with respiratory disease		
Yes	125	89.3
No	15	10.7
total = 140		
Infected factory worker more than other		
Yes	90	64.3
No	50	35.7
total = 140		
Infected staff in respiratory diseases hospital		
Yes	50	35.7
No	90	64.2
total = 140		
Infected people with acquired immunodeficiency syndrome		
Yes	27	19.3
No	113	80.7
total = 140		
Infected child whose mother is infected with the disease.		
Yes	120	85.7
No	20	14.3
total = 140		
Infected smoker more than other		
Yes	80	57.1
No	60	42.9

	No.	Percentage
total = 140		
Infected family members with a person with disease		
Yes	13	9.29
No	127	90.7
total = 140		
infected children		
Yes	97	69.3
No	43	30.7
total = 140		
It infects adult only?		
Yes	100	71.4
No	40	28.6
total = 140		

**Table 3.** Student knowledge of the signs of disease.

	No.	Percentage
Is the disease accompanied with fever especially at night?		
Yes	19	13.6
No	121	86.4
total = 140		
the TB patient has headache		
Yes	103	73.6
No	37	26.4
total = 140		
The patient become tired when he make an effort		
Yes	60	42.9
No	80	57.1
total = 140		
The patient losing weight		
Yes	63	45
No	77	55
total = 140		
Night sweats occur		
Yes	25	17.9
No	115	82.1
total = 140		
Pain chest occur		
Yes	15	10.7
No	125	89.3
total = 140		
Patient has cough with blood and pus		
Yes	34	24.3
No	106	75.7
total = 140		
The patient loses appetite		
Yes	44	31.4
No	96	68.6
total = 140		
The patient has pallor		
Yes	27	19.3
No	113	80.7
total = 140		
10. Patient has severe pain in the body ?		
Yes	23	16.4
No	117	83.6
total = 140		
The patient has difficulty breathing		
Yes	77	55
No	63	45
total = 140		
The patient is exposed to pneumonia		
Yes	93	66.4
No	47	33.6
total = 140		

**Table 4.** Methods of transmission of disease.

	No.	Percentage
Transmission through contaminated air and water		
Yes	90	64.3
No	50	35.7
total = 140		
Transmission through food, dairy and dairy products		
Yes	75	53.6
No	65	46.4
total = 140		
Transmission through insects bite		
Yes	100	71.4
No	40	28.6
total = 140		
Transmission from mother to fetus		
Yes	20	14.2
No	120	85.7
total = 140		
Transmission through contact with infected people		
Yes	93	66.4
No	47	33.6
total = 140		
Transmission through contaminated tools		
Yes	88	62.9
No	52	37.1
total = 140		
Transmission through sneezing and coughing from infected people to healthy people		
Yes	58	41.4
No	82	58.6
total = 140		
Transmission in crowded place		
Yes	97	69.3
No	43	30.7
total = 140		
Transmission in closed place		
Yes	48	34.3
No	92	65.7
total = 140		
Increasing in people with weakened immune system		
Yes	40	28.6
No	100	71.4
total = 140		

**Table 5.** Student information about the methods of protection of tuberculosis disease.

	No.	Percentage
Early diagnosis		
Yes	68	48.6
No	72	51.4
total = 140		
Avoided crowded place		
Yes	40	28.6
No	100	71.4
total = 140		
If has symptoms go to doctor		
Yes	80	57.1
No	60	42.9
total = 140		
Ventilation of public people and crowded		
Yes	55	39.3

	No.	Percentage
No	85	60.7
total = 140		
Isolation of patient		
yes	30	21.4
No	110	78.6
total = 140		
Take preventive measures when contact with infected person		
Yes	25	17.9
No	115	82.1
total = 140		
Taking BCG vaccine		
Yes	70	50
No	70	50
total = 140		
Provide good food		
Yes	32	22.9
No	108	77.1
total = 140		
Playing sports		
Yes	55	39.3
No	85	60.7
total = 140		
Avoid smoking		
Yes	120	85.7
No	20	14.3
total = 140		

## 4. Conclusion

This study found insufficient TB knowledge in a sample of students, poor knowledge about TB. They must improve knowledge about TB, because these students could be exposed to the Mycobacterium strains during their training activities or when they are employed in private and public health care settings.

Previous study in Oman demonstrated that the medical student and paramedics knowledge about tuberculosis had better than non medical students. Previous study in Brazil, demonstrated the most worrisome finding was the lack of knowledge about TB, as only one-third of the students correctly answered all the questions about TB.

The training provided through courses of study should provide the scientific basis necessary to achieve an appropriate level of professional autonomy. Students' skills in this field can be developed by promoting an integrated, multidisciplinary study programme focused on problem-oriented learning and active learning strategies (e.g. seminars, computer simulations, etc.).

## 5. Recommendation

Doing health education about tuberculosis disease, signs & symptoms, transportation, and protection of the disease, early detection, and give immediate reports about the infected cases.

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