

# 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

## 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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