

Knowledge and Attitudes towards Tuberculosis in Non Medical Students University of Belgrade

Milos Smolovic¹, Dragica Pesut^{1,2}, Milica Bulajic³, Marija Simic¹

1. School of Medicine University of Belgrade, Internal Medicine Department, Belgrade, Serbia; 2. Clinical Centre of Serbia, Teaching Hospital of Pulmonary Diseases, Belgrade, Serbia; 3. University of Belgrade Faculty of Organizational Sciences, Laboratory of Statistics, Belgrade, Serbia

ABSTRACT

Background: Population's knowledge on tuberculosis (TB) is crucial in early seeking of medical care. Delay in diagnosis for any reason contributes to advanced forms and TB transmission in the community. Knowledge about TB in general population of Serbia is poor, including vulnerable groups. **Aim:** to assess knowledge about TB in a group of non medical students in University of Belgrade, their attitudes towards TB patients, sources of medical information they use or desire. **Methods** - observational, questionnaire based study. University students of the Faculty of Organizational Science and Faculty of Geography completed the 27-item questionnaires voluntarily and anonymously. The questions related to TB etiology, way of transmission, risk factors and the source of health information students prefer. Statistical analysis was performed. **Results:** All the participants (69 students aged 20±0.777 years, 69.7% male, 30.3% female) previously heard about TB, mostly describing it as pulmonary disease. Only 22 (31.88%) selected bacillus as the only cause of TB, and 20% selected answer „I do not know“. TB is curable (95%). One third does not know about TB symptoms and 45/69 (65%) think that TB is an infectious disease. Majority (78.3%) would pay visit to TB patient, 1/2 with fear of infection that is in positive correlation with knowledge on infectiousness ($p=0.041$). Television is the most common used source of health information. Students have the greatest confidence in doctors' information. **Conclusion:** Students' knowledge on TB is inadequate, especially on its cause and way of transmission. More effort is needed in university students' health education.

Keywords: tuberculosis, knowledge, university students, questionnaire, attitude

REZUMAT

Cunoștințe și atitudini legate de tuberculoză la studenții de la Universitatea din Belgrad

Introducere: Cunoștințele populației privind tuberculoza (TB) sunt cruciale în apelul precoce la serviciile medicale. Întârzierea în diagnostic de orice cauză contribuie la apariția formelor avansate de boală și la transmiterea TB în comunitate. Cunoștințele despre TB în populația generală din Serbia sunt reduse, inclusiv în grupurile vulnerabile. **Scop:** evaluarea cunoștințelor despre TB într-un grup de studenți de la Universitatea din Belgrad (excluzi studenții la medicină), atitudinea lor față de pacienții cu TB, sursele de informații medicale pe care le utilizează sau pe care doresc să le utilizeze. **Metodă:** studiu observațional, bazat pe aplicarea unui chestionar. Studenții de la Facultatea de Științe Organizaționale și Facultatea de Geografie au completat chestionarele alcătuite din 27 întrebări în mod voluntar și anonim. Întrebările erau legate de etiologia TB, modul de transmitere, factorii de risc și sursa de informare despre sănătate pe care studenții o preferă. A fost efectuată analiza statistică. **Rezultate:** Toți participanții (69 de studenți cu vârste de 20 ± 0.777 de ani, 69,7% de sex masculin, 30,3% de sex feminin), au auzit anterior despre TB, cea mai mare parte descriind-o ca o boală pulmonară. Doar 22 (31.88%) au selectat bacilul ca singura cauză de TB și 20% au ales răspunsul „Nu știu“. TB este vindecabilă (95%). O treime nu știu simptomele TB și 45/69 (65%) cred că TB este o boală infecțioasă. Majoritatea (78,3%) ar vizita un pacient TB, 1/2 cu teama de infecție care este în corelație pozitivă cu cunoștințele despre contagiozitate ($p = 0,041$). Televiziunea este sursa de informații despre sănătate cea mai frecvent utilizată. Studenții au cea mai mare încredere în informațiile medicilor. **Concluzie:** Cunoștințele studenților despre TB sunt inadecvate, în special în ceea ce privește cauza bolii și modul de transmitere. Este nevoie de mai mult efort deșus pentru educația medicală a studenților de la Universitate.

Cuvinte-cheie: tuberculoză; cunoștințe; studenți de la universitate; chestionar; comportament

Introduction

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis complex*. Even in the 21st century, it represents a major health and epidemiologic problem due to increase of immune-deficient persons in the world (predominantly those infected with human immunodeficiency virus – HIV) and increased number of TB patients with drug resistance¹⁻³. According to some estimations, about one third of the world population is infected with *Mycobacterium tuberculosis*, 8 million TB cases occur per year, and up to 2 million people die from this curable disease. Majority of TB patients comes from poor and developing countries¹⁻⁴. Serbia is a country with moderate-to-low TB incidence rate¹.

The World Health Organization declared TB global emergency in 1993, which was the first time with any disease in the history of the organization. The strategy was developed to control and eliminate TB in all the countries - DOT (directly observed treatment). According to the International Union Against Tuberculosis and Lung Disease data, there was more TB in 2003 than ever in the history of mankind. Owing to applied measures, for the first time the number of TB patients and death cases in 2010 was not higher than those in the previous year⁵.

By its clinical presentation, TB can be pulmonary and extrapulmonary, and main complaints depend on the site involved. However, fatigue, sudden mood changes, weight loss, sweating and fever, followed by tachycardia, exist as initial

Table I. Students' opinion about the sites tuberculosis can affect - Frequency of confirmative answers

Site	Frequency	Percent
Valid	4	5.8
Bones and joints	1	1.45
Lung	54	78.3
Lung, skin	2	2.9
Lung, kidney	1	1.45
Lung, kidney, skin	1	1.45
Lung, kidney, urogenital organs, skin	1	1.45
Lung, lymph node	5	7.2
Total	69	100.0

complains in the majority of TB patients⁴. Pulmonary TB is more important from epidemiologic point of view, because a TB patient who coughs, speaks loudly, sings or sneezes, represents source of infection for the subjects in the surrounding. An infectious TB patient with pulmonary TB could, on average, infect 15 individuals per year^{2,4}.

One of the most important principles in TB control is early detection and start of treatment². Delay in diagnosis is a serious problem from both clinical and epidemiologic views. It can be the consequence of insufficient medical knowledge or the other problems in health services, but also may exist due to the patients' delay in seeking for medical care^{6,7}. That is why population education about TB, its symptoms and risk factors is very important. Proper knowledge contributes to earlier detection of the diseases and its successful elimination.

Knowledge on TB in Serbian general population is inadequate⁸. A recent study of the selected Roma population group showed that its members have lack of knowledge on TB wherever they stayed, in slums or had standard life comfort⁹. Many studies showed that health care workers, including students of medicine, do not know enough about basic TB features, and the mode of TB transmission¹⁰.

Starting from the point that educated young people may represent important behavioural model and source of various information in their settings, including health information as well, we aimed to investigate knowledge on TB and attitude towards TB patients in University students who are not students of Medicine. We also aimed to study what their sources of TB and health information were, and what were the sources they believed the best.

Methods

This is a cross-sectional questionnaire based study. Participants are University students of the Faculty of Organizational Sciences and the Faculty of Geography in Belgrade, Serbia. With approvals of the schools' bodies, we have approached them in their lecture halls, described the purpose of the study and asked them to participate by completing the questionnaire, anonymously. They have been told that all the answers would be used for scientific research only, which has been approved by the School of Medicine related body. All of the students accepted to participate in the study.

The adapted questionnaire consisted of 27 questions, with both multiple choice answers and open questions. The first part referred to TB etiology, mode of transmission, risk factors, and the origin of students' informations about TB. The second

Table II. Students' opinion about cause of tuberculosis

Cause	Number*	%	The only cause	%
Bacillus	32	46.37	22	31.88
Smoking	21	30.42	7	10
Malnutrition	18	26	2	2.89
Hard work	10	14.49	0	0
Alcoholism	5	7.24	0	0
I do not know	15	14.42	0	0

* Total number of the answers which included particular cause whatever alone or in combination with other cause(s) (column 2); number of answers with particular cause as the only one cause selected (column 4)

part included questions about the students' attitudes and behaviour towards TB patient whatever the subject was - a close member of the family or imaginative one. The third part consisted of questions about actual and desired source of health information.

The answers were entered into Excel Microsoft Office worksheet and statistically analysed. We applied the methods of descriptive statistics and χ^2 test to test the significance of the dependencies. Value $p < 0.05$ was considered statistically significant.

Results

The questionnaire was completed by 69 students, 69.7% female and 30.3% male, average age 20.12 ± 0.777 years, 19-23 years, range.

All the participants have already heard about tuberculosis (TB). We found a variety of answers to the question „How would you describe what is TB to someone who does not know it?“. The most common answers were: pulmonary disease, disease, serious disease, pulmonary disease with coughing up blood, kiss born disease, pneumonia like disease, almost incurable disease, infectious disease etc.

We have offered a list of sites which probably might be affected by TB (lungs, kidneys, lymph nodes, bones and joints, urogenital organs, central nervous system, skin) and 54/69 (78.2%) participants selected only lungs. In five cases, they selected lungs and skin, as shown in table I.

Almost a half of the participants (32; 49.3%) think that bacillus is a cause of TB as a single cause or in combination with other causes, but only 22 (31,88%) select bacillus as the only cause of TB. About 20% of the participants selected the answer „I do not know“. Two students selected hard work as the only cause (in 18 cases in combination with other causes), and five selected alcoholism as one of the causes. Twenty one students selected tobacco smoking as a cause and out of them 7 (10%) selected smoking as the only cause of TB. Malnutrition was selected in 18 cases and in two cases (2.89%) as the only cause (table II).

One third of students answered that they do not know the symptoms of TB, and the answer was confirmative in almost a half of them. Then, they were asked to select TB symptoms among the listed (table III), and we found a variety of answers. Cough was most commonly selected (54/69; 78.3%) followed by fatigue (46/69; 66.7%), while only one student selected sudden mood changes as TB symptom. Tachycardia was rarely selected.

Table III. Tuberculosis symptoms by non-medical students opinion

Symptom	Number	%
Fatigue	46	66.7
Sudden mood changes	1	1.4
Weight loss	19	27.5
Sweating	14	20.3
Fever	42	60.9
Cough	54	78.3
Tachycardia	2	1.7

In the answer to the question „Is TB an infectious disease?“, 45/69 (65%) participants have given confirmative answer, and almost one third believed that TB is not infectious.

One fifth of the students does not know how is TB transmitted. One third thinks that it is airborne infection, 9 (13%) believe that TB is transmitted through food and water, and that it is transmitted by hand shaking and infected food, one each.

When it comes to clinical presentation and prognosis of TB, 49.3% participants believe that TB is a serious disease, 45% that it is moderate, 2.9% see it as extremely dangerous, and 2.8% do not know how serious disease TB might be. While 85% students think that TB could be successfully treated, in the answer to the question about TB treatment, 74% participants have not known how is TB treated. All but two of the students believe that TB death is possible if the patient is not treated.

Twenty seven/69 (39%) students think that there are many TB cases in Serbia and the majority (94.2%) have not known that anti-tuberculosis drugs are free of charge. All students (100%) think that the drugs should be free.

Eight students stated that someone close to them had TB. It was grandmother in four cases, and grandfather, mother and best friend, in one case each. Six out of eight students have not visited the patient due to living in another city, time difference barrier, etc. Out of 61 students who had not visited TB patient ever, 54 (78.3%) would visit a TB patient. One half of them would have fear of infection. There is positive correlation between the statement that TB is an infectious disease and fear of infection during the possible visit ($p=0.041$). At the same time, the knowledge on TB as infectious disease does not significantly influence the decision to visit ($p>0.05$), nor is it in significant association with participants' belief that they would be really infected during the visit ($p>0.05$).

The next part of the questionnaire referred to sources of TB and health information. The majority of the university students heard about TB in their primary or secondary school and, in general, the most common source of health information in this group is television (table IV). Two thirds of the participants would like to learn more about TB, expressing the greatest confidence to the information given by health professionals, especially to direct contact with physician. Less frequently, the desired source is television (16/69) and internet (4/69).

Discussion

Research on general population's knowledge on TB in Serbia, including the knowledge in selected vulnerable groups,

Table IV. Distribution of non-medical students' sources of health information

Source	Number	%
Friends	32	17.85
School	33	18.3
Colleagues	1	0.55
Newspapers	38	21.1
Radio	14	7.8
TV*	42	23.3
Other	20	11.1

showed that the knowledge was poor, and similar situation was found in some other countries (8-10). Results of our study in a group of non medical university students, showed that they all have heard about TB, majority described it as disease or pulmonary disease, but the knowledge about the illness was variable and insufficient, especially related to the cause of TB, mode of transmission and the sites affected. Thus, the majority of the students think that TB could affect only the lungs, and the knowledge on extrapulmonary TB, which is of increasing trend in Serbia, is missing in many¹¹.

Some students defined TB as pulmonary disease with throwing up blood. Although haemoptysis usually appears in 20% of patients with pulmonary TB⁴, this association to definition might be due to dramatic and memorable experience haemoptysis represents, to be firmly embedded in the memory of patients and their family as most prominent symptom/sign.

Social isolation and stigmatization of TB patients has very deep roots and the consequences are still a matter of research¹². When it comes to students' attitude towards TB patients in our study, 78% participants would visit without fear of being infected, and in majority of the cases, would behave as if it would be any other patient. The risk and probability of TB infection due to the contact with a TB patient depend on duration of exposure, concentration of infectious agents in the air, and individual susceptibility². The majority of participants in our study believe that it is not possible to get infected during a visit to a TB patient, by going to the theatre and enjoying the performance with TB patient in the audience, being in the same bus, and during common living with TB patient in the same household. They misconcepted that the exposure to TB patient at the working place is more important than the exposure at home.

The results of our study show that television is the most effective source of health information for the majority of young university students. Although high proportion of the students, especially students of the Faculty of Organizational Sciences, use personal computers on daily basis and regularly go to the internet, the answer to open questions showed that majority would like to receive health information in direct contact with a physician, and only four of them (5.8%) would use internet for that purpose. While relatives and friends were main sources of TB information in Roma population in Belgrade⁹, the students prefer to find the information on TV and in newspapers. The information should be provided by health professionals. In the times of socio-economic transition and the situations which sometimes affect physicians' authority and dignity, our study appoints to the fact that participants fully believe and appreciate physicians and the information given by health care workers. In the answer to open question,

young non-medical academic citizens expressed greatest confidence in health care professionalism in the local setting, and the desire to get health information in a direct contact with a physicians.

Conclusion

Results of our study showed that knowledge of the participating students on TB was inadequate, especially related to cause of TB and mode of transmission. More efforts in university students' health education is needed. Majority of students would like to improve the knowledge on TB. The most effective communication with this target group could be by means of television and newspapers. The students trust best the information provided by health care professionals.

Conflict of interests

The authors declare no conflict of interests.

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