ORIGINAL ARTICLE

Medical Students' Knowledge about Tuberculosis

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ABSTRACT

Background: Tuberculosis (TB) has been declared a global emergency. As Pakistan ranks 6th among the countries with highest TB burden, this disease presents an immense challenge to the health infrastructure. So the aim of this study was to assess the knowledge regarding Tuberculosis among medical students.

Methodology: A cross sectional survey was conducted among 2nd, 3rd, and 4th year students of Fatima Jinnah Medical College. This was an anonymous survey and participation was voluntary. Sample was selected using systematic random sampling technique and self administered structured questionnaires were used for data collection. Data entry and analysis were performed using SPSS.

Results: A total of 221 students participated in the study. Majority of the students (97%) were well informed about the causative organism and the most common site of involvement of TB. Seventy five percent were able to correctly identify the most common mode of transmission of this disease, whereas only a small percentage (29%) had knowledge of the age group most commonly affected by tuberculosis. There was a poor level of understanding regarding diagnostic techniques, and only 20% correctly mentioned the treatment duration for TB. Only 36% of students were aware of MDR-TB, and 65% knew about the availability of TB vaccine. The knowledge regarding free treatment for tuberculosis and the chest clinics set up by the government was not very encouraging, 56% and 50%, respectively. Only 31% of the students showed trust in public sector medical facilities for the treatment of TB.

Conclusion: This study demonstrated a satisfactory elementary knowledge regarding TB among medical students, but there is a need to improve the understanding regarding diagnostic procedures and treatment guidelines. For effective control of TB, immediate action to improve undergraduate medical education is essential, with special emphasis on national guidelines.

INTRODUCTION

Tuberculosis (TB) poses a major challenge to the global health system as it ranges among the leading causes of morbidity and mortality worldwide. According to the WHO Global Tuberculosis Report, there were around 9 million new cases of TB, and 1.4 million deaths from this disease in 2011[1]. Poor public health systems, emergence of MDR and XDR TB, and increasing HIV prevalence have deeply aggravated the problem.

TB is highly prevalent in Pakistan and unfortunately it has been one of the neglected areas in the past. Pakistan was ranked 8th among the countries with highest TB burden in 2009 and the situation has become even worse since then, as Pakistan has moved to 6th spot in the rankings[2]. TB has been associated with a lot of stigmatization in Pakistan primarily because of lack of awareness about the disease. Several studies have reported poor knowledge, attitudes and practices regarding TB not only among general population but medical personnel as well.

Lack of knowledge regarding the national guidelines for treatment of TB is an important problem encountered while managing the disease. According to a survey involving general practitioners from North West Frontier Province (NWFP) and northern areas of Pakistan, two third of the prescriptions written for cases of newly diagnosed cases of TB did not confirm to the national guidelines.[3] A similar survey conducted in Karachi involving private practitioners demonstrated grim results[4]. The aforementioned results were reinforced by several other studies[5,6]. A study revealed that doctors working in public sector were significantly better informed regarding TB than those working in the private sector[7].

Poor awareness and low compliance to WHO guidelines among medical interns and fresh graduates has also been reported by various studies[8-11]. Difference has been found in practice competency and knowledge among students from endemic and non-endemic areas.[12]

Efforts have also been made to evaluate awareness among the general population and to assess urban-rural inequities regarding the

knowledge about TB. Most of these studies found an unsatisfactory level of awareness.[13,14,15]

Though implementation of DOTS strategy significantly improves the treatment success rate and coverage[16-19], it has largely been ignored by the majority of private practitioners[5,20]. These shortcomings in implementation of TB control program are contributing to the emergence of new problems like multi-drug resistant and extensive-drug resistant tuberculosis[21].

Though different studies have been carried out to assess the knowledge, attitudes and behavior regarding tuberculosis, but almost all of these studies are either population based or involve medical interns or general practitioners. This issue especially in relation to the undergraduate medical students has not been previously highlighted. Since most of the medical students in Pakistan are expected to come across active TB cases during the course of their practice due to its high prevalence rates, it is important to assess their knowledge and attitudes towards this disease in order to effectively manage this immense burden on the health system.

Methodology

A cross-sectional study was carried out to assess knowledge regarding TB among 2nd, 3rd, and 4th year medical students of Fatima Jinnah Medical College, Lahore. Study participants were selected using systematic random sampling technique. Self administered structured questionnaires solicited the responses from the students. Information sought included demographic characteristics and questions to assess knowledge regarding cause, mode of transmission, risk factors, signs and symptoms, treatment, and prevention of TB. This was an anonymous survey, and study participation was voluntary. The questionnaire was administered after obtaining consent and approval was obtained from Ethical Review Committee of FJMC/SGRH. SPSS was used for data entry and analysis. Analyses included frequency distribution for categorical variables and descriptive statistics for continuous variables.

RESULTS

The final study sample consisted of 221 students and the average age of the students was about 21 years. The majority of students were living in hostel (54%), their parents had matric or above education (91-98%), and had monthly household income between 20,000 to 100,000 rupees (Table 1).

Table 1: Demographic Characteristics of Study the Study Participants (N=221).

Characteristic	Frequency	Percent
Age (years) Mean ± SD	20.94 ± 1.13	
Class 2nd yr 3rd yr 4th yr	 74 46 100	 34 21 45
Residence Hostel Home (Day scholar)	 128 92	 58 42
Father's education Under matric Matric and above	 4 217	 2 98
Mother's education Under matric Matric and above	 19 202	 9 91
No. of family members <5 5-10 11-20	 20 194 7	 9 88 3
Monthly household income <20,000 20,000 - 99,999 100,000 or more	 26 129 43	 13 65 22

Table 2: Medical students' knowledge about cause, mode of transmission, and symptoms of Tuberculosis.

Characteristic	Frequency	Percent
Causative organism for TB Mycobacterium tuberculosis Others	 214 7	 97 2
Common site for TB Lungs Others	 214 7	 97 2
Mode of transmission Droplet infection	 166 11	 76 5

Vector-borne	7	3
Oro-faecal route	10	5
Sexual contact	23	11
Don't know		
Age group most commonly affected		
1-19 yrs	10	5
20-39 yrs	65	30
40 and above	69	31
Don't know	74	34
Symptoms of TB	213	96
Prolonged coughing	199	90
Weight loss	196	89
Fever	169	77
Haemoptysis	161	72
Night sweats	13	6
Weight gain		

Table 3: Medical students' knowledge about diagnosis of Tuberculosis.

Characterisitc	**Frequency**	**Percent**
Standard diagnostic test for TB is		
Sputum smear and culture	94	45
Chest X-ray	22	10
Tuberculin skin test	62	29
Don't know	33	16
Tuberculin Skin Test (TST) should be recorded as		
Negative or positive	34	15
Millimeters of induration	58	26
Others	129	58
A positive TST for a healthy 35 yrs old is		
15 mm	49	22
Others	172	88
A positive TST for an HIV positive is		
5 mm	42	19
Others	179	81
A positive TST for a close contact of active TB case		
5 mm	26	12
Others	195	88
History of BCG vaccine for interpretation of TST		
Yes	130	62
No/ don't know	80	38
Seen/read chest X-ray of a TB patient?		
Yes	117	53
No	102	47
If YES, what are the findings?		
Infiltrates or cavitations	100	85
Hyper inflated lungs	5	4
No significant findings	2	2
Don't know	16	9

Table 4: Medical students' knowledge about the treatment of Tuberculosis.

Characterisitc	**Frequency**	**Percent**
Duration of treatment		
6 months	43	20
9 months	126	58
12 months	19	9
Don't know	29	13
Period of communicability after start of treatment		
48 hours	23	11
72 hours	18	9
1 week	8	4
2 weeks	26	12
Don't know	134	64
Knowledge regarding treatment of sputum negative cases		
Yes	91	42
No/ don't know	126	58
Awareness regarding free medical treatment		
Yes	123	57
No	93	43
Awareness regarding govt. chest clinics		
Yes	110	51
No	106	49
You or a close contact acquires TB, you would show up	70	34

to a Government facility Private practitioner	134	66
You or any close contacts ever had TB Yes No	59 157	27 73

Table 5: Medical students' knowledge about the prevention of TB, LTBI and MDR-TB

Characteristic	Frequency	Percent
Is there any vaccine for TB Yes No	145 52	64 26
If yes, name of vaccine BCG Don't know	102 14	70 30
Important measure for prevention of TB Covering mouth and nose while sneezing Others	181 40	82 18
Knowledge regarding latent TB infection Yes No/ don't know	132 81	62 38
Knowledge regarding MDR-TB Yes No	81 134	38 62
High risk groups for TB Close contacts with active TB case Immunocompromised persons People living in slums Malnourished Health workers	201 194 192 165 135	91 88 87 75 61

Ninety seven percent students were well informed regarding the causative organism of tuberculosis whereas the same percentage of students was able to correctly identify the most common site infected by M. tuberculosis (Table 2). Seventy five percent of the students were able to point out the most common mode of transmission for TB. Only 29% could correctly identify the age group most commonly affected by TB in Pakistan. A large proportion of students had good knowledge regarding the symptoms of TB; 96% and 77% correctly identified prolonged coughing and haemoptysis as the symptoms of TB, respectively (Table 2).

Table 3 represents students' knowledge about diagnosis of TB. Only 43% respondents correctly mentioned sputum smear and culture as the standard diagnostic test for TB. Only 26% students answered 'millimeters of induration' as the standard to record a Tuberculin Skin Test (TST), whereas, only 19% knew when to consider a TST positive for HIV infected patients. About 53% of the students had seen/read chest X-ray of a TB patient, and most of these students knew infiltrates or cavitations as important findings on a chest X-ray of an active TB case.

Only 20% of the students correctly mentioned the duration of TB treatment and only 12% of the study participants could correctly point out the period of communicability of TB after start of treatment. Knowledge regarding treatment of sputum negative cases with clinical and radiological evidence of the disease is important as sputum test has considerably low sensitivity, but when students were asked about this, 44% responded that they would advise anti tubercular treatment for patients with radiological and clinical evidence even in absence of sputum AFBs (Table 4).

Fifty six percent of the medical students were aware of free medical treatment available for this disease, and majority (51%) was not aware of the chest clinics set up in their hospital. About 26% of the students responded positive when asked whether they or their close contacts ever had TB. Only 31% students showed trust in government medical facilities for the treatment of TB (Table 4).

As shown in Table 5, 65% of the students were aware of any vaccination for TB. Sixty percent students had basic knowledge regarding Latent TB and 31% had knowledge about MDR-TB is an emerging problem especially in the developing countries but the knowledge regarding this was grim. Students have displayed a good understanding regarding the high risk groups for the disease. Most of the students (85-91%) were able to identify the groups at higher risk for acquiring TB (Table 5).

DISCUSSION

TB is a grave burden on the health infrastructure in Pakistan because of its staggeringly high

prevalence. In addition to improving community awareness regarding the disease, enhanced knowledge among the medical personals is essential to ameliorate the situation. In this study, conducted in Fatima Jinnah Medical College, an attempt has been made to assess the knowledge and attitudes regarding tuberculosis among medical students. The study population represented a diverse group both in terms of geographical representation and socioeconomic status.

Similar studies to assess the knowledge regarding TB have been conducted from time to time in various parts of the country, but most of these studies involved general practitioners, not the medical students. These studies predominantly demonstrated poor understanding regarding the diagnosis and treatment of tuberculosis [3,4,5,8]. Our study mirrored these results as deficiency was particularly found in similar areas. It can be assumed that lack of emphasis on these aspects in undergraduate curriculum later contributes to the deficiency found in general practitioners' knowledge regarding management of TB.

An interesting finding was that TB is still perceived to be a disease of the elderly, although that is true for the developed countries where it mostly affects the older age group, in countries like Pakistan TB mainly targets the population in their prime, thus having a negative socio-economic impact[22].

Efforts have to be made to improve the understanding regarding diagnostic standards and procedures for TB. Students need to understand the clinical importance of diagnostic tests like sputum smear and TST in relation to their sensitivity and specificity, since this is axiomatic in making a prompt diagnosis.

This study indicates that the awareness programs conducted at various levels are not adequate and have not been able to accomplish their purpose. Even the medical students reflect a poor knowledge regarding TB control programs, government chest clinics, and free treatment provided to TB patients, let alone general public.

Latent TB infection is a major problem especially for the developed world where LTBI cases have emerged as a reservoir for the acid fast bacilli[23], but in this study, students have not shown a good understanding for this problem. HIV/TB co-infection is a growing cause of concern as this accounts for almost one-third of the deaths due to TB[1,24]. Though HIV infection does not have a very high prevalence in Pakistan, the knowledge regarding this is still important. There seems to be a lot of confusion among students regarding the method to record a tuberculin skin test as students were not informed regarding the conditions to label a TST positive.

In a country like Pakistan where relapse is high and patient compliance is poor, MDR-TB has presented a serious problem for the health care system[21]. This study indicated poor knowledge regarding the issue, and this lack of understanding proves to be damaging when the same students turn into general practitioners.

Another finding was the considerable mistrust regarding government facilities for the treatment of TB. This presents a rather paradoxical situation, as studies involving doctors from both public and private sector, reflected that the government sector is substantially better equipped to deal with this problem as compared to the private practitioners.[4,7]

The study sample consisted of female students from a single medical college, so it is not completely representative of medical students.

RECOMMENDATIONS

- While developing the curriculum for medical students, there is a need for special emphasis on diagnostic criteria and treatment procedures for TB in line with the national guidelines.
- Widespread awareness programs regarding TB should be conducted at both community level and for health workers.
- Further studies should be conducted to assess the knowledge regarding TB among final year medical students and medical interns so the practice competency of fresh graduates can be evaluated.

CONCLUSION

This study demonstrated a satisfactory elementary knowledge regarding TB among the medical students but there is a lack of understanding regarding diagnostic procedures and treatment guidelines. For effective control of TB, immediate action to improve undergraduate medical education is essential, with special emphasis on national guidelines

ACKNOWLEDGEMENTS

We are thankful to all the students who participated in this study. We are also grateful to

the faculty members, department of community medicine, Fatima Jinnah Medical College, for their valuable assistance.

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