Original Research Article

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Prevalence and knowledge of tuberculosis among the residents of urban slums of Shillong, Meghalaya, India

Amrita Sarkar*, Himashree Bhattacharyya, Kaushik Talukdar, Gajendra Kumar Medhi, Star Pala

Department of Community Medicine, NEIGRIHMS, Shillong, Meghalaya, India

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*Correspondence: Dr. Amrita Sarkar.

E-mail: 2amritasarkar@gmail.com

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ABSTRACT

Background: The present survey on tuberculosis (TB) was carried out to fill up the lagging information on TB in Meghalaya and also to serve as a base for further research on various aspects of Tb in this state. The aims and objectives were to study prevalence of TB and TB suspects in urban slums of Shillong and to assess the knowledge about tuberculosis among the participants of the study.

Methods: The present community-based, cross-sectional study was conducted during January 2016 to March 2016 in urban slums of Shillong, India.

Results: Out of 330 persons interviewed, 8 had TB during the past 5 years making the period prevalence to be 24/1000 population. Prevalence of TB suspects was 18/1000 population and that of pulmonary TB cases was found to be 15/1000 population. The female/ male case ratio was 3:1. The highest TB load (62.5%) was found in the most productive age group of 20-29 years and 83% of the cases in the women were in their reproductive age group. Treatment initiation rate was 87.5% and treatment success rate was 87.5%. Defaulter rate was 12.5% and reason for default was side-effects from medication. The study revealed that 75% of the participants had heard about TB, 65.99% knew about the mode of transmission of the disease, 76.11% knew about the symptoms, 85.44% claimed the disease was curable with proper treatment, 42.51% had heard about DOTS, 52.63% claimed that the disease is preventable and 32.39% knew about BCG vaccine. The most common source of knowledge about Tb was television (34.82%).

Conclusions: A high prevalence of TB was observed in the present study.

Keywords: Infection, Meghalaya, Pulmonary TB, Prevalence, Shillong, Tuberculosis

INTRODUCTION

Tuberculosis (TB), an infectious disease, is not only medical problem, but social and economic problem as well.¹ It remains a serious public health problem in India, accounting for nearly one-fourth of the global TB burden.² For the year 2015, India had an estimated

incidence of 2.2 million cases of TB out of a global incidence of 9.6 million and the prevalence of 195 per lac population.² For the same year 2,365 sputum positive cases were diagnosed in Meghalaya and total TB cases registered under RNTCP was 4,674.³ The present study area, Shillong is the capital city of the landlocked state of Meghalaya, and a hill-station. The present survey was

carried out to fill up the lagging information on TB in Meghalaya and also to serve as a base for further research on various aspects of Tb in this state.

Aims and objectives

The primary objective was to study the prevalence of tuberculosis in urban slums of Shillong. The secondary objectives were to identify Tb Suspects and to assess the knowledge of the general population about TB.⁴

METHODS

The present community-based, cross-sectional study was conducted during January 2016 to March 2016, for a period of 3 months in the field practice slum area of department of Community Medicine of a tertiary care hospital in Shillong as a part of academic activity for MBBS students. As data about TB prevalence in that area was unavailable, a prevalence of 50% was taken. Sample size was calculated using the formula 4pq/L² and was found to be 400. In the present study, case means a diagnosed case of TB and suspect means a person suffering from chronic cough (cough >2 weeks). Study tool was a pre-designed, pretested, semi- structured proforma. Informed verbal consent was taken in a language they well understood. A detailed history and physical examination was carried out (general examination including recording of weight and systemic examination of respiratory system) for all the family members present at the time of visit. Data was collected from 330 subjects by personal face-to-face interview. Data entry and analysis was done using Microsoft Office Excel version 2007 and Medcalc version 16.2 respectively.

RESULTS

Out of 330 subjects interviewed, it was found that prevalence of currently diagnosed TB cases was 15/1000 population. Period prevalence of TB within the last 5 years was 24/1000 population. Prevalence of TB suspects (i.e. with cough more than 2 weeks) was 18/1000 population. It was observed that the load of TB was the highest in the most productive age group of 20-29 years followed by 30-39 years and 40-49 years and this was found to be highly significant (Table 1). The patients encountered in the present study were aged from 17 years to 48 years and the mean age was 28.88±9.6 years (Table 2). It was noted that prevalence of infectious sputum positive was as high as 15/1000 population and that of extra-pulmonary Tb was 9/1000 population. TB prevalence was higher in females (28.57/1000 females as compared to 16.67/1000 males) and the female male ratio of cases was 3:1 (Table 2). Treatment initiation rate was 100% and, all the present tuberculosis patients were satisfied with the treatment. However, one patient turned defaulter making the treatment success rate 87.5% and defaulter rate 12.5%. The reasons of default were sideeffects of medication like nausea and vomiting.

Incidentally, this patient was an alcoholic too. The study also evaluated the knowledge of the participants about tuberculosis which revealed that 75% (247) of the participants were had heard of TB. Out of this 75%, 65.99% knew about the mode of transmission of the disease, 76.11% knew about the symptoms, 85.44% claimed the disease was curable with proper treatment, 42.51% had heard about DOTS, 52.63% claimed that the disease is preventable and 32.39% knew about BCG vaccine. Out of the 76.11% who knew about the symptoms of Tb, 48% knew about cough, 36% knew about fever, 8% knew about loss of weight, and only 8% knew about hemoptysis or chest pain and other symptoms. The most common source of knowledge was television (34.82%), followed by friends and family (33.60%), health personnel (14.17%), teachers (11.34%) and newspaper (6.07%).

Table 1: Distribution of TB cases (last 5 years) according to age.

| Age (in completed years) | Males screened (%) | Females screened (%) | Total persons screened (%) | Confirmed cases (%) |
|--------------------------------|--------------------------|----------------------------|----------------------------|---------------------|
| < 10 | 5 (4.16) | 9 (4.28) | 14 (4.24) | 0 (0) |
| 10-19 | 22 | 40 | 62 | 1 |
| | (18.33) | (19.04) | (18.79) | (12.5) |
| 20-29 | 27 | 61 | 88 | 5 |
| | (22.5) | (29.04) | (26.67) | (62.5) |
| 30-39 | 24 | 42 | 66 | 1 |
| | (20) | (20) | (20) | (12.5) |
| 40-49 | 17 | 30 | 47 | 1 |
| | (14.16) | (14.29) | (14.24) | (12.5) |
| ≥ 50 | 25 (20.83) | 28 (13.33) | 53 (16.06) | 0 (0) |
| Total | 120 | 210 | 330 | 8 |
| | (100) | (100) | (100) | (100) |

 χ^2 value = 22.56; d.f.= 5; p< 0.0001.

Table 2: Distribution of TB cases (last 5 years) according to age and sex.

| Age (in completed years) | Male (%) | Female (%) |
|--------------------------|----------|------------|
| 16-25 | 1 (50) | 3 (50) |
| 26-35 | 1 (50) | 1 (16.67) |
| 36-45 | 0 (0) | 1 (16.67) |
| 46-55 | 0 (0) | 1 (16.67) |
| Total | 2 (100) | 6 (100) |

Range: 17 to 48 years; mean±sd=28.88±9.6 years.

DISCUSSION

The prevalence of currently diagnosed TB cases was 15/1000 population. The overall prevalence of sputum smear or culture positive pulmonary tuberculosis in a study done by S.K. Sharma et al. in Haryana was found to be 101.4 per 100,000 populations which was much lesser than in the present study. In a study conducted by A.M. Kadri et al the prevalence of tuberculosis among adults in

the urban slum area of Ahmadabad City, the overall prevalence of tuberculosis was 8.03/1000 which again lesser than the present study.⁵ Period prevalence of TB within the last 5 years was 24/1000 population. The high prevalence can be due to the study area being slums with improper housing conditions. Marimuthu P found that the prevalence of TB was significantly higher in the slums than non-slums of Mumbai, Chennai and Kolkata cities.⁶ Also, in a study by Sreeramareddy CT et al, it was observed that the North-Eastern and Eastern regions had higher prevalence than the rest of India and this was statistically significant. Prevalence of TB suspects (i.e. with cough more than 2 weeks) was 18/1000. The patients encountered in the present study were aged from 17 years to 48 years and, it was observed that the load of TB was the highest (62.5%) in the most productive age group of 20-29 years followed by 30-39 years and 40-49 years and this was found to be highly significant. This is similar with the general behaviour of the disease.8 TB prevalence was higher in females (28.57/1000 females as compared to 16.67/1000 males) and the female male ratio of cases was 3:1. World-wide, in the year 2014, the female/male ratio of cases was 0.59:1. The female/male ratio of cases was 0.33:1 in a study done by Hamid Salim MA et al in Bangladesh.9 However, in a study done in Afghanistan 31.5% of TB cases occurred in males and 68.5% occurred in females. ¹⁰ It was noted that prevalence of infectious sputum positive was as high as 15/1000 population. This was an important finding as one TB patient can infect 10 to 15 new people in a population of 1000. In 2015, 2,365 cases of smear positive TB cases were diagnosed in Meghalaya.3 Treatment initiation rate was 100% in the present study, but treatment success rate was 87.5% which was similar to India in the year 2013 (88%). 11 All the present tuberculosis patients were satisfied with the treatment. However, one patient turned defaulter making the defaulter rate 12.5%. The reason of default was stated as side-effects of medication like nausea and vomiting. Incidentally, this patient was an alcoholic too.Lamsal DK et al in their study done in Nepal in 2002-03 found the defaulter rate to be 2.5%. ¹² A study in South-India found 28% of defaulters were alcoholic.¹³ It was observed in a Vietnamese study that, patients often discontinue TB medication because of such side effects as weakness, GI upset, allergy, jaundice and passing of red urine.¹⁴

The present study also evaluated the knowledge of the participants about tuberculosis which revealed that 75% (247) of the participants had heard of TB. This was lesser than the findings of a study (94.9%) done in Eastern Ethiopia by Daniel Tolossa et al. 15 Out of the 75% who had heard about TB, 65.99% knew about the mode of transmission of the disease, 76.11% knew about the symptoms, 85.44% claimed the disease was curable with proper treatment. Majority (87.8%) of the respondents in the study done by Daniel Tolossa et al in 2013 knew that TB is treatable disease. 15 This was similar to the findings of the present study. In a study done in Rajasthan in

sandstone quarry workers, only 56.4% thought TB is a curabledisease. ¹⁶

In the present study, 42.51% had heard about DOTS, 52.63% claimed that the disease is preventable and 32.39% knew about BCG vaccine. In a study stone by Margaret S. Westaway, only 21% knew of BCG vaccine.¹⁷ Out of the 76.11% who knew about the symptoms of Tb in the present study, 48% knew about cough, 36% knew about fever, 8% knew about loss of weight, and only 8% knew about hemoptysis or chest pain and other symptoms. In the study done by Tolossa D et al found that the most commonly mentioned symptom of TB was cough (72.4%). Other symptoms mentioned by the respondents include coughing up sputum with blood (52.2%), and chest pain (29.0%). The commonest symptoms mentioned by the respondents in the study by Yadav SP et al were cough with expectoration for more than 21 days (45.2%); coughing out blood (44.1%) and low grade fever (28.9%). About two-third of respondents were not aware of chest pain, loss of appetite, breathlessness and enlargement of neck glands (lymph nodes) in their study.16

The most common source of knowledge in the present study was television (34.82%), followed by friends and family (33.60%), health personnel (14.17%), teachers (11.34%) and newspaper (6.07%). The most common sources of knowledge in the study done by Tolossa D et al was mass media followed by health professionals too. In the study by Yadav SP et al neighbours (50.5), friends (42.6%) or family members (37.2%) followed by television (28.7%), doctor (19.7%), nurse (1.6%), radio(16.5%), poster (9.0%) and books/magazines (3.2%) constituted the various sources of information. In the present study was television (28.7%), doctor (19.7%), nurse (1.6%), radio(16.5%), poster (9.0%) and books/magazines (3.2%) constituted the various sources of information.

CONCLUSION

There was a high prevalence of TB in the present study though case finding was based only on already diagnosed cases. However, the results may not be generalized due to expected higher burden in slums and also due to less sample size. The burden of Tb in the most productive years of life was high in both the sexes increasing the economic burden on the family. Also, in the present study default rate was higher than others and the defaulter was an alcoholic. Proper counselling should be done at the initiation of the treatment/DOTS so that default rate is very low and patients abstain from substance abuse especially alcoholism. Generally, the respondents in this study had some knowledge about TB but they had limited awareness about transmission, prevention, treatment and curability of the disease, so, health education was given to increase the awareness among them. Those who were suspected of Tb were referred to health care facility for sputum examination. TB patients who were encountered during the study were counselled for treatment compliance and necessary lifestyle changes. Since, mass media, especially television was found to be the commonest source of information, it can be extensively

exploited to generate awareness about various aspects of TB and health education.

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