

SURVEY OF PULMONARY TUBERCULOSIS BASED ON SYMPTOMS AND SPUTUM EXAMINATION IN CHIKKAMAGALURU

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ABSTRACT

Objectives: Tuberculosis (TB) is the most common problem in the world. This study was aimed to assess the gender, age, and occupation prevalence rate of TB infection in Chikkamagaluru, Karnataka, India.

Methods: The survey was carried out in Chikkamagaluru from January to May 2012. The data were collected by direct interview of the patients with the help of medical officers. Then, the data were assessed and categorized based on gender, age, and occupation.

Results: A total of 97 pulmonary TB patients were identified, among them, males are more (74.22%) prone to TB than that of females (25.72%). This may be because males are more exposed to smoking, drinking, etc. The data were also scrutinized for age-wise distribution of pulmonary TB, and it was found that patients in the age group of 41–50 years are more affected than the other age group, and pulmonary TB was more prominent than extrapulmonary TB. The *Mycobacterium tuberculosis* patients grading are more in 3+ than in 2+ and 1+ grading type of TB affected individuals.

Conclusion: This study concludes that males are more to TB due to abuse of alcohol, smoking, and occupation-wise laborers which are more infected.

Keywords: Pulmonary Tuberculosis, *Mycobacterium tuberculosis*, Chikkamagaluru, Acid-fast Bacilli, Grading

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. It is contagious which means that the bacteria are easily spread from an infected person to someone else. TB is spread by breathing in air from a cough or sneeze of an infected person. It occurs when *M. tuberculosis* primarily attacks the lungs, but can also spread to other organs. It reaches alveoli, which results in the destruction of inhaled tubercle bacilli by alveolar macrophages. However, some bacilli escape from macrophage and spread through the bloodstream or lymphatic channels to any part of the body tissue or organs in addition to highly susceptible areas of TB and cause pulmonary TB [1].

TB is diagnosed by identifying the causative organism in a clinical sample (sputum or pus) when this is not possible, diagnosis may be made using imaging (X-rays or scans) a tuberculin skin test (Mantoux test) or Interferon-Gamma Release Assay. The success of implementing new technologies and development of additional diagnostic approaches helps in better treatment [2]. This study was undertaken to check the status of TB in Chikkamagaluru.

METHODS

This study was carried out at Arala Guppe Mallegowda Government Hospital in Chikkamagaluru from January to May 2012. TB patients were identified during the study period, and the data mainly focused on the history and present condition of the patients. The data were collected by direct interview of the patients with the help of medical officers. Then, the collected data were analyzed and categorized on gender, age group, and occupation.

The sputum sample was collected from patients after a deep breath for 2–3 times with collection vial to spit the sputum without saliva by deep cough out. The sputum was further tested using Ziehl–Neelsen stain or ZN staining method [3]. The slide was let to stand for 2–4 min with 25% sulfuric acid until the discoloration of red color. Slides were

gently rinsed with tap water to remove excess stain and sulfuric acid. The processed sample slide was counterstained with methylene blue for 30 s and rinsed with water to remove excess stain. The fixed sputum smear was analyzed for *Mycobacterium tuberculosis*.

The presence of *M. tuberculosis* bacilli was observed, and the number of acid-fast bacilli (AFB) was counted and recorded as 3+, 2+, 1+, scanty, or negative, as given in Table 1.

RESULTS AND DISCUSSION

In the present study, a total of 97 individuals were identified and analyzed, out of them, 72 were male and 25 were female. The males are more (74.22%) prone to TB than that of females (25.72%) (Fig. 1); this may be due to males that are more exposable to smoking, drinking, etc. Earlier studies also revealed that males are more susceptible than females [4–6].

Age-wise categorization was made among 97 TB patients. It revealed that most (36) of the affected individual was observed in the age group of 41–50 years. Among 36 individual, 30 were male and six were female. It was also observed that there was no individual in the age group of 1–10 years (Fig. 2), and this result is correlated with the earlier studies conducted by Narain *et al.*, 1963.

Table 1: Grading of acid-fast bacilli smears

Examination/oil immersion field	Result	Grading	Number of fields to be examined
More than 10 AFB	Positive	3+	20
1–10 AFB	Positive	2+	50
10–99 AFB	Positive	1+	100
1–9 AFB	Scanty	Record exact number is seen	200
No AFB	Negative	-	100

*Source: Revised National Tuberculosis Control Program, 2009

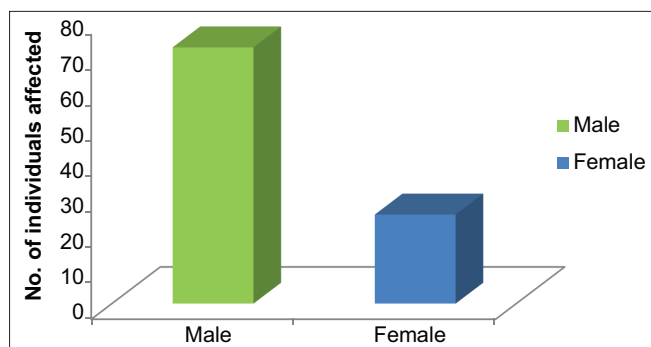


Fig. 1: Gender-wise distribution of pulmonary tuberculosis individuals

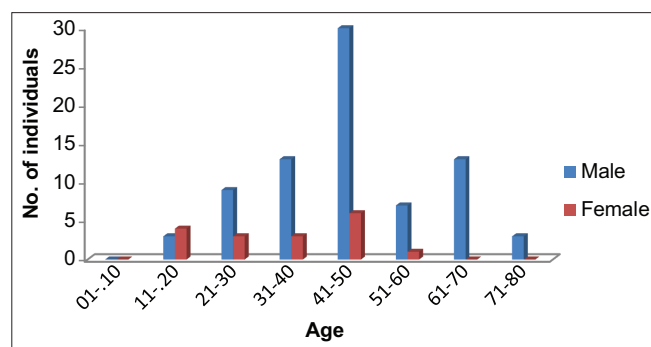


Fig. 2: Age-wise distribution of pulmonary tuberculosis affected individuals

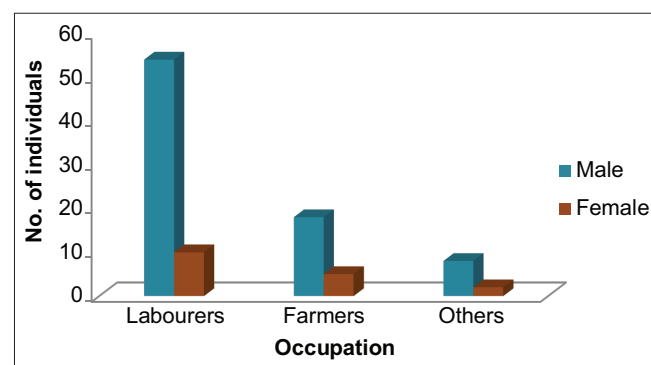


Fig. 3: Occupation-wise distribution of pulmonary tuberculosis

In the present data, it is revealed that laborers are more commonly affected than that of farmers and other occupational. Out of 97 individuals, 64 were laborers (54 males and 10 females), followed by 23 farmers (18 males and five females) and 10 in other occupations (8 males and 2 females) (Fig. 3). Similarly, a meta-analysis of earlier studies stated that slum/rural peoples are more susceptible to TB than urban areas due to less hygienic conditions [7,8].

In the grading of AFB, 44 individuals showed 3+ type, 32 in 2+ type, and 21 in 1+ type, respectively (Table 2). The males were significantly infected than females in all the grading type because men are more abused to alcohol, smoking, tobacco, etc.

Table 2: Distribution of tuberculosis patients based on different grading methods of pulmonary tuberculosis

TB grading type	Male	Female
3+	42	2
2+	27	5
1+	11	10

During the study, the distribution of pulmonary TB patients was compared with extrapulmonary TB. A total of 103 TB individuals were examined, among them, 97 individuals were infected from pulmonary TB and six were extrapulmonary TB. Therefore, pulmonary TB was more than extrapulmonary TB [9,10].

CONCLUSION

This study concludes that TB is more common in males than that of females, as males are more commonly addicted to alcohol, smoking, tobacco chewing, etc. It also most commonly occurs at the age of 41-50 years and commonly more infected in less hygienic conditions, as of labors are much more prone to TB than that of farmers and people who live in urban areas. However, not only the treatment is important, but it is also very essential to take care of alcohol abuse, smoking, etc., and to maintain hygiene. It is better to prevent rather than cure.

AUTHORS' CONTRIBUTIONS

Dayananda, G.Y., designed the study, supervised each step of the work, criticized the drafts, and interpretations of the results. Chandrakala E. analyzed and interpreted the data and prepared the draft. Supriya H.C. took a survey of TB patients in the study area, all the authors read and approved the final manuscript.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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