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The prevalence and treatment of tuberculosis (TB) in primary health care setting of Karachi, Pakistan

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ABSTRACT

Tuberculosis (TB) is the most important community health dilemma in Pakistan. TB has been prevalent in Pakistan since last 10 years and unfortunately it has been one of the neglected and mistreated health diseases in the past. Globally, Pakistan ranks 7th amongst the countries with highest load of TB in the world. Pakistan contributes about 44% of tuberculosis problems in the Eastern Mediterranean Region. the World Health Organization (WHO), reported that incidence of sputum positive TB cases in Pakistan is 80/100000 per year and for all types it is 177/100000.The objective of this study was to determine the level of knowledge about tuberculosis among patients in Karachi. The campaign regarding the DOTS strategy by WHO and implementation of the strategy in TB control programs has led an up to 95% cure rate in some countries. A considerable decline in the prevalence of drug resistance amongst TB patients has observed. The most controlling weapon for controlling and preventing TB are case finding and a treatment with a view to prevent the spread of Mycobacterium from the smear positive case.

Keywords: Prevalence; Tuberculosis; Primary Health Care; Karachi; Pakistan.

INTRODUCTION

Tuberculosis (TB) is an infectious disease of worldwide significance that kills more people on a global scale than any other infectious disease.[1] It is caused by the bacteria, Mycobacterium tuberculosis (MTB). Studies show that TB affects about 32% of the world's population. An estimated 8 million new TB cases occur every year, of which 80% are among people in the most economically productive age groups [2], hence causing economical loss both at individual and national level. According to the disease surveillance by national institute of health in 2010, approximately 47948 cases were recorded [3]. It is also the leading secondary cause of mortality in people suffering from HIV, diabetes, cancer or immune compromised patients. With the emergence of multi drug resistant tuberculosis, more threat has been added to the control of tuberculosis in both developed and under developed countries. Since the treatment of such cases is complex, more expensive and frequently less successful than treatment of non resistant strains [4]. In case of active TB disease the symptoms could be mild for few months which

increase the risk of transmission of bacteria to others [5].

The prevalence of any disease can be described as the number of cases at a given time period and the most accurate procedure to record the prevalence of tuberculosis in group screenings, are microfilms, tuberculin tests and tuberculosis symptoms (cough, hemoptysis, weight loss, etc). [6] Pakistan is a developing country with a rapidly growing population, and over the last few years the menace of TB has become a major problem for the health system of this region of high prevalence[7]. Pakistan ranks at number five in the world's highest TB incidence countries and number one in the Eastern Mediterranean region. [8]

Prevalence however may be over estimated due to reactions to infection with atypical mycobacteria. At the moment, surveillance data of countries with a high burden of TB are insufficient to assess performance of the TB control program as a result of incompleteness or low quality. Although grants and demands of health components under 2011-12 federal budget for national TB control program is fixed around Rs.123,466,000[9]. Nevertheless, the Pakistan National Tuberculosis Program (NTP) has achieved a remarkable and steady improvement in numbers of TB cases detected, from 11 050 in 2000 to 248 115 in 2008, and treatment success rates reached 91% in 2007. [10]

In 2012 new TB cases occurred in Asia accounts for 60% of new cases worldwide. Estimated of all form of TB burden for 2012 was 410/100000. Pakistan is a developing country with a population of 179 million [11] and the National TB program is responsible for developing national guidelines and implementation of control measures in order to control TB. Directly observed treatment, short course (DOTS) strategy was adopted in 2000 and expended to all public health facilities as primary health care.[12] This program was helpful in achieving 70% case detection and 85% treatment outcomes. In Pakistan this disease is directly linked to socioeconomic status and old age groups .There are more than 210,000 cases recorded every year which is an alarming rate[13]. The implementation of DOTS in Pakistan was a challenging process due suboptimal public health services and various problems at the tangential levels. The implementation and execution of DOTS at all levels of district health system was achieved through a systematic and methodical approach.

WHO has introduced a new six point strategy to stop TB. The main goal of the TB strategy is to decrease the global burden of tuberculosis by 2015 by ensuring all TB patients, including for example, those co-infected with HIV and those with drug-resistant TB, benefit from universal access to high-quality diagnosis and patient-centered treatment. The strategy also supports the development of new and effective strategies to prevent, detect and treat TB.

It recommends to discontinue the regimen based on just 2 months of rifampicin (2HRZE/6HE) and change to the regimen based on a full 6 months of rifampicin (2HRZE/4HR) will reduce the number of relapses and failures. The patient suffering is greatly alleviated resulting in case of relapse of tuberculosis (TB). Whereas as the Pakistan Chest Society guidelines suggest that patients should be 6 months short course chemotherapy (SCC). Isoniazid, rifampicin, pyrazinamide and ethambutol administered under direct observation daily for 2 months as initial phase. Continuation Phase is the use of isoniazid and rifampicin daily for 4 months. The aim of this study was to evaluate the knowledge regarding the disease as well as the difference based on gender towards tuberculosis (TB) in urban and rural communities in Pakistan which was evaluated to be generally poor, especially in rural females. This study highlighted the need to increase population awareness about TB.

METHODS

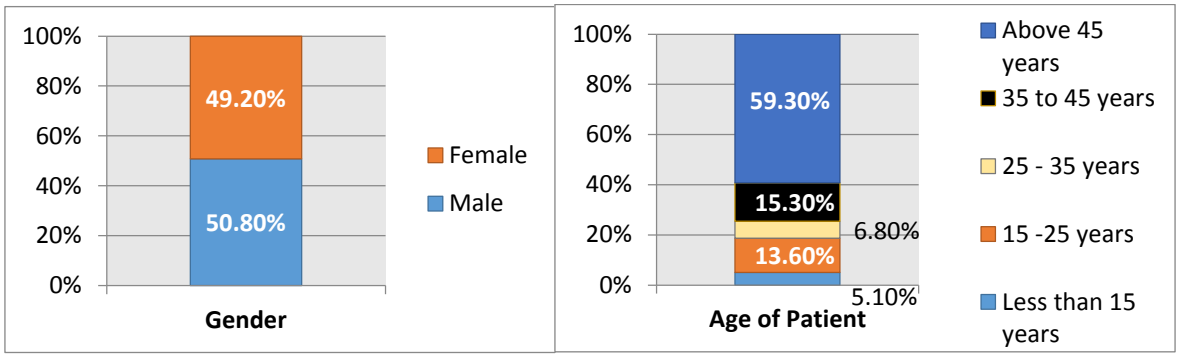
A quantitative cross-sectional study design was selected to find out the prevalence, and treatment regimen of TB in primary health care setting of Karachi, Pakistan. The study was conducted for 10months i.e. March 2012 to Dec 2012. The target population included the patients who were likely to be diagnosed with TB or who presented with symptoms raising the probability of contacting TB. The inclusion exclusion criterion was set as all in-patients were included in the study whereas all out-patients were excluded from the study. A total of 18320 cases were observed in 10 months and 110 patients diagnosed with TB in primary healthcare settings were documented.

The study instrument was an interview questionnaire which was validated by experts. Prior to data collection a verbal consent was obtained from the patient and an approval from the health care facility was sought before the initiation of data collection. The data thus gathered was analyzed using SPSS v 20 (Statistical Package for Social Sciences version 20). The prevalence was calculated by MedCalc and the demographic data expressed as percentage and standard deviation, the prevalence expressed as 95% confidence interval and association in terms of p-value.

RESULT

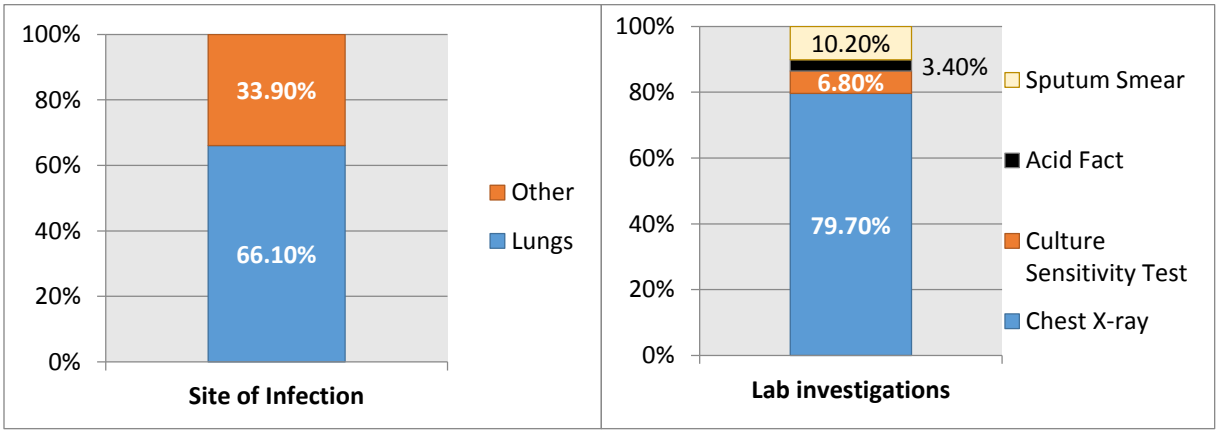
A total of 18320 cases were observed in 10 months and 110 patients diagnosed with TB in primary healthcare settings were documented. The prevalence was 0.6% for 95% CI 0.49% to 0.71%.

It was observed that both males (50.8%) and females (49.2%) were prone to the TB exposure regardless of the gender and the majority of patients (59.3%) were geriatric.



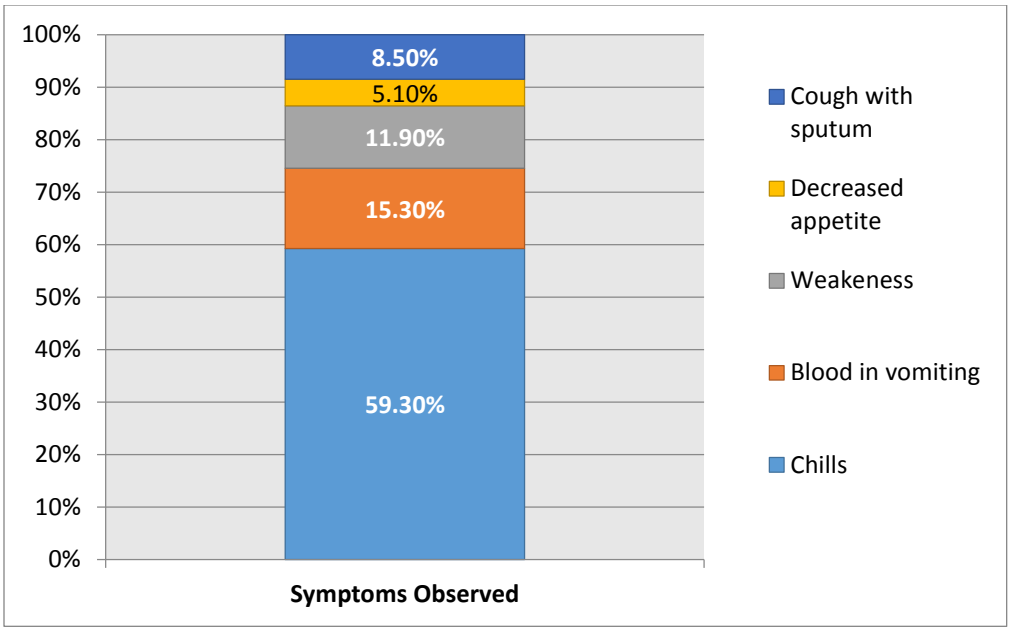
Graph 1.1 Gender and age of patients

The primary site of infection was lung and pulmonary TB was dominant (66.1%) while a third (33.9%) were been infected at other sites. It was observed that the most common lab investigation carried out to diagnose TB was chest X-ray (79.2%) followed second by sputum smear (10.2%).



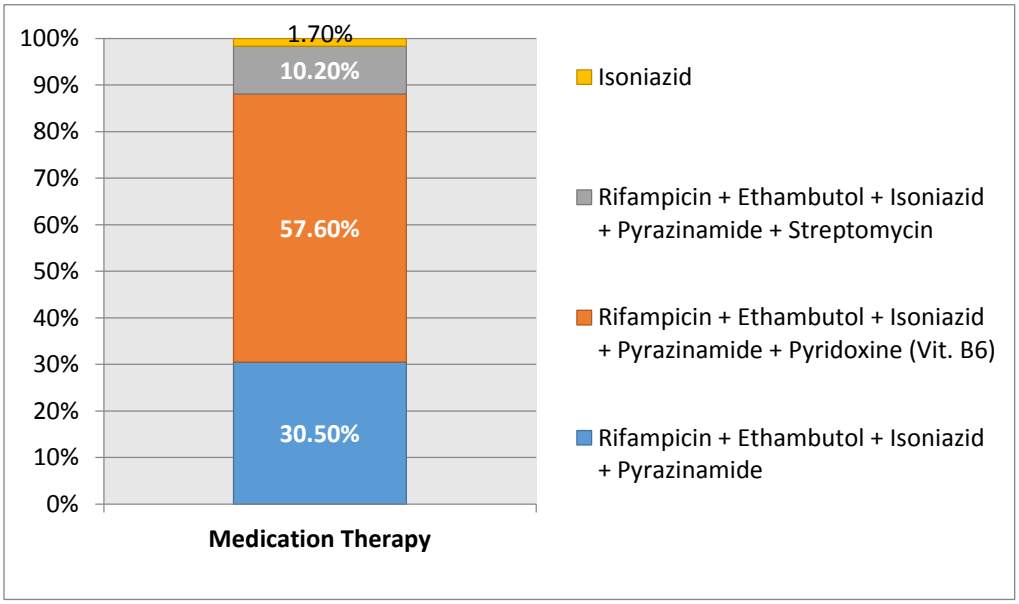
Graph 1.2. Site of infection and Lab Investigations for TB

The patients presented with a combination of symptoms but the most prevalent symptoms observed was TB associated chills (53.9%) followed by blood in vomiting (15.3%) and weakeness (11.9%).



Graph 1.4. Symptoms observed in TB patients

The most prevalent form of medication therapy for TB was the quadruple regimen of anti tuberculosis therapy i.e. Isoniazid + Rifampicin + Pyrazinamide + Ethambutol plus a vitamin B_6 pyridoxine supplement (57.6%).



Graph 1.3. Medication therapy for TB

The age of patient and the symptom observed were tested for associations with Chi square X^2 test and a significant association existed. *P-value <0.05* A summary of results given in table 1.1 below:

Table 1.1 Summary of Results

S.No	Attributes	%	95% CI, SD and P-value
1	Prevalence of TB	0.6%	0.49% to 0.71% for 95% CI
2	Gender	1. Male 50.8% 2. Female 49.2%	0.5 SD
3	Age	1. <15 years 5.1% 2. 15-25 years 13.6% 3. 25-35 years 6.8% 4. 35-45 years 15.3% 5. Above 45 years 59.3%	1.2 SD
4	Site of Infection	1. Lung 66.1% 2. Other 33.9%	0.47 SD
5	Lab Investigation	1. Chest X-ray 79.7% 2. Culture sensitivity 6.8% 3. Acid Fast 3.4% 4. Sputum smear 10.2%	0.9 SD
6	Symptoms observed	1. Chills 59.3% 2. Blood in vomiting 15.3% 3. Weakness 11.9% 4. Decreased appetite 5.1% 5. Cough with sputum 8.5%	1.5 SD
7	Medication Therapy	1. Isoniazid + Rifampicin + Pyrazinamide + Ethambutol 30.5% 2. Isoniazid + Rifampicin + Pyrazinamide + Ethambutol + vitamin B_6 pyridoxine 57.6% 3. Isoniazid + Rifampicin + Pyrazinamide + Ethambutol + Streptomycin 10.2% 4. Isoniazid 1.7%	0.6 SD
8	Association of Age with Symptoms	Significant	*P-Value <0.05

DISCUSSION

Pakistan is a country which is included under the WHO list of countries with high prevalence rate of tuberculosis. It is of prime importance to screen patients with TB and the symptoms they suffer from need to be carefully noted. Moreover, the lab investigations play an important role in the diagnosis of the ailment.[14]. The study investigated the prevalence, symptoms and treatments of tuberculosis in primary health care settings of Karachi, Pakistan. The prevalence of tuberculosis was found to be 0.6 % during the 10 month time period which reiterates the concern of the World Health Organization WHO. The prevalence was independent of the gender as both males (50.8%) and females (49.2%) to be affected by the disease. The disease affected geriatrics for most part (59.3%) as their body physiology deteriorates with age. However, adolescents (13.6%) and middle aged (15.3%) were also observed to suffer from the illness. We found out that the site of infection were the lungs (66.1%) which is common in tuberculosis as the disease mainly affects the aforementioned site [15]. The lab investigations carried out was the chest X-ray CXR (79.7%). The choice of lab investigation technique is common in Pakistan since the patient has to pay direct medical cost and health expenditure is a cause of concern, the selection of CXR has mainly to do with its minimal cost for diagnosing the said condition. The symptom observed in bulk of patients was chills (59.3%) which was either seen alone or in combination with other symptoms. The treatment options considered by the physicians was the anti tuberculosis therapy ATT consisting of Rifampicin + Ethambutol + Isoniazid + Pyrazinamide in combination with a vitamin B_6 supplement majorly (57.6%). As per the clinical guidelines such therapy is usually considered the first line for treating such kind of ailment. [16]. The age of the patients were associated with the symptoms as the geriatric patients are generally weak and the physiology of body starts to wilt as age progresses, chills was the most prevalent symptom observed which resulted in a significance of p value of <0.05.

CONCLUSION

The prevalence of tuberculosis in primary health care settings is a cause of concern in geriatric populations. Health awareness campaign is the need of the hour and health care workers, educational interventions by pharmacists and their collaboration with physicians is needed to overcome the adversary.

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Author's contribution

All author contributed equally to the study in all aspects.

Statement of Consent

An informed, written consent was obtained from patient prior to data collection.

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Conflict of interest

The authors declare no conflict of interests exists.

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