Clinical Profile and outcome of Tuberculosis Patients from 2013-2017 at Medical Teaching Institute in Peshawar

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SK MAK conceived idea, SK MAK MN drafted the study, MAK FA did statistical analysis & MAK ZB NA interpretation of data, MAK MYK MN critical reviewed manuscript, All approved final version to be published.

Declaration of conflicting interests

The Authors declares that there is no conflict of interest.

Abstract

Background: Tuberculosis (TB) is a disease of interest from a long time and killed more of its infected peoples than any other infectious diseases. It is also known as disease of poverty as it mainly affects persons of poor countries. Due to this disease an average of 20-30% of annual household income loses of diseased person.

Objective: To determine the profile and treatment outcome of TB patients enrolled for treatment at DOTS center, department of Pulmonology, Lady Reading hospital Peshawar (LRH), Pakistan.

Methodology: This study was conducted at Department of Pulmonology, LRH Peshawar, Pakistan. Secondary data was collected from 2013 to 2017. Data were edited manually before entry to a computer and then entered to Microsoft excel programme. Demographic and clinical data such as age, sex, type of TB and treatment outcome were retrieved from TB 03 register using data extraction sheets. A descriptive analysis was conducted to get summary values of treatment outcome of TB and other explanatory variables. Finally, the results were presented in the form of tables and charts.

Results: Total 1235 TB patients were registered during this study period, of which 8 patients were NE so excluded from the study. Thus for our study we included 1227 TB patients for analysis. Of the total included, 630 (51.3%) were males. Mean age of participants were 36.8 years with SD of ±16.3. Moreover, high proportions of TB patients; 363 (29.4%) and 323 (26.3%) were in the age groups of 11-20 and 21-30 years, respectively. Among PTB cases, 89.6% of patients achieved successful outcomes and in EP cases 92.5% were achieved successful outcomes, whereas 5.8% patients were died among EP cases.

Conclusion: This study showed that TB mainly affected individuals in the reproductive age group. The proportion of patients who were successfully treated was above the MDG target of 85% treatment success rate and comparable with the milestone target of > 90% treatment success rate. This study concluded that TB is still a major public health problem at the studied area.

Keyword: TB; DOTS; Peshawar; Pakistan

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Introduction

Tuberculosis (TB) is a disease of interest from a long time and killed more of its infected peoples than any other infectious diseases. It is also known as disease of poverty as it mainly affects persons of poor countries. Due to this disease an average of 20-30% of annual household income loses of diseased person.

The causative agent for this disease is a bacteria known as Mycobacterium tuberculosis (MTB) and this bacteria transferred through air droplet from one person to another. Its early diagnosis is very important

for its complete and positive treatment outcome and also helps in the cut off the chain of the disease transfer from person to person. Acid fast bacilli (AFB) microscopy strategy was the recommended technique for the diagnosis and follow-up of pulmonary TB (PTB) patients in the Directly Observed Treatment short course (DOTS) program.

As this disease kills many people so struggles for its effective treatment started from its early era. First time in 1946 its effective treatment started with the introduction of Streptomycin (SM). Now this disease becomes treatable disease with six months course of antibiotics. It is very important to treat it properly and if not properly treated or treated with poor compliance it can be changed to drug-resistant TB including MDR/XDR TB which is now a day challenging all efforts of TB control programe throughout the world.

Globally, the rate of good treatment outcomes among smear positive PTB was 86%. Pakistan ranks fifth globally among the 22 high TB burden countries and contributes an estimated 43% of the disease towards the Eastern Mediterranean region. Annually around 430,000 people including 15,000 children contract TB in Pakistan and every year no less than 70,000 deaths can be attributed to the disease in the country. Pakistan is also estimated to have the fourth highest prevalence of MDR-TB globally.

For the continuation of a programme it is very important to present the previous patient data so that future plan prepared. Thus, studies like this might show the appropriate proportion of mean treatment outcome and types of TB in the specific area. Thus, this study was done to determine the profile and treatment outcome of TB patients enrolled for treatment at DOTS center, department of Pulmonology, Lady Reading hospital Peshawar (LRH), Pakistan.

Methodology

Study setting and design

This study was conducted at Department of Pulmonology, LRH Peshawar, Pakistan. Secondary data was collected from 2013 to 2017 from TB registration register which included the entire patient, enrolled for treatment from January 2013 till December 2017.

Participants

All eligible TB patients who took anti-TB treatment from January 2013 to December 2017 in Department of Pulmonology, LRH Peshawar, Pakistan were included in the study. Eligibility was based on completeness of record on treatment outcomes of a patient in the TB registration book and period of enrollment to DOTs treatment.

Data processing and analysis: Data were edited manually before entry to a computer and then entered to Microsoft excel programme. Demographic and clinical data such as age, sex, type of TB and treatment outcome were retrieved from TB 03 register using data extraction sheets. A descriptive analysis was conducted to get summary values of treatment outcome of TB and other explanatory variables. Finally, the results were presented in the form of tables and charts.

Operational definitions

Tuberculosis treatment outcome was dichotomized as treatment success (cure or treatment completed or poor treatment outcome (treatment failure or death or loss to follow up).

Cured: Cured was defined as patients whose sputum smear or culture was positive at the beginning of the treatment but smear or culture negative in the last month of treatment and on at least one previous occasion.

Treatment completed (TC): TC was interpreted as patients who completed treatment without evidence of failure but did not have a negative sputum smear or culture result in the last month of treatment and on at least one previous occasion.

Loss to follow up (LFU): Loss to follow up was defined as that a patient who had been on treatment for at least four weeks and whose treatment was interrupted for eight or more consecutive weeks.

Treatment Failure (TF): TF was defined as patients whose sputum smear or culture was positive at the fifth month or later during treatment or patients found to harbor a MDR strain at any point of time during the treatment whether they are smear negative or positive.

Not evaluated (NE): It is defined as a patient who had been transferred to another recording and reporting unit and whose treatment outcome was unknown at the original registering unit.

Other variables included in the study were socio-demographic characteristics (age, sex, weight and residence), type of tuberculosis (PTB+, PTB-, and EPTB), category of TB patients (new, relapse, treatment after failure, return after default, transfer in), year of enrolment, Treatment outcomes of Patients.

Results

Demographic epidemiology of tuberculosis;

Total 1235 TB patients were registered during this study period, of which 8 patients were NE so excluded from the study. Thus for our study we included 1227 TB patients for analysis. Figure 1 showed that number of patients gradually increased with time at this center. Of the total included, 630 (51.3%) were males. Mean age of participants were 36.8 years with SD of ±16.3. Moreover, high proportions of TB patients; 363 (29.4%) and 323 (26.3%) were in the age groups of 11-20 and 21-30 years, respectively. Most of the study cases 96.6% were on CAT I treatment and of total 54.7% were PTB patients (Table 1). Yearly breakup of patients on basis of site of infection were presented in Figure 2.

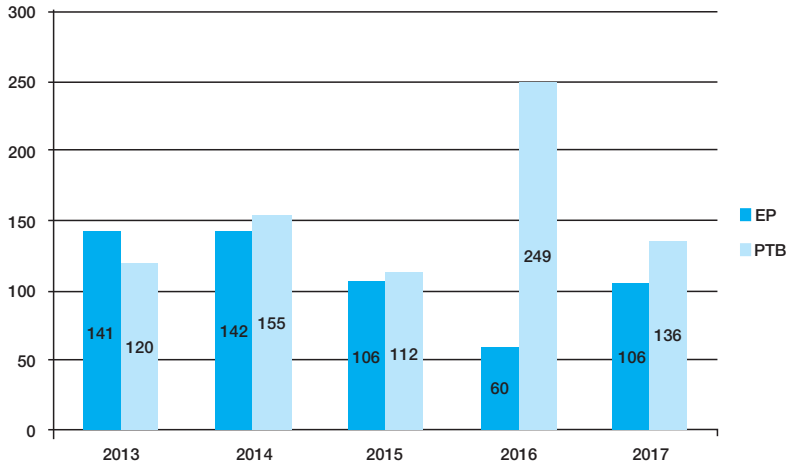

Figure 1: Total registration during study time (2013 – 2017)

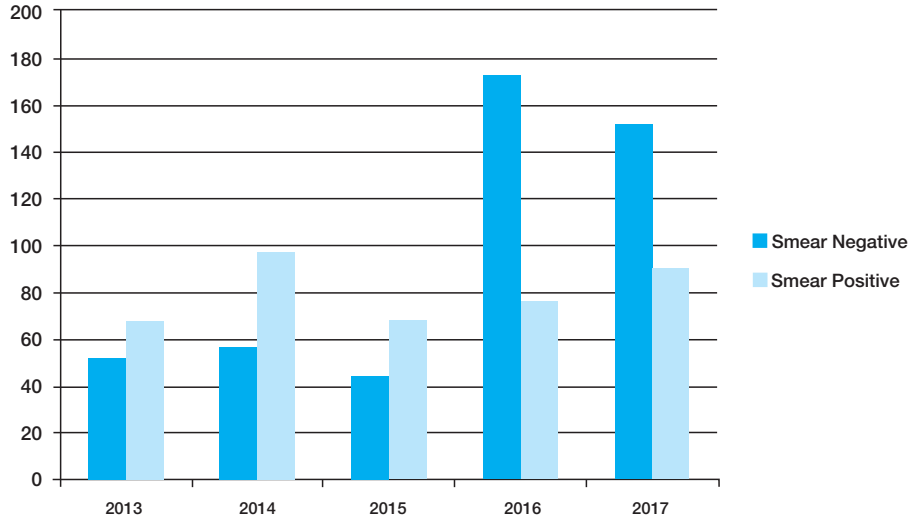

Figure 2: Registration on the basis of smear negative vs smear positive pulmonary TB cases during study time (2013 – 2017)

Table 1: Baseline socio-demographic characteristics of the subject cases

Characteristics		Frequency (N)	Percentage (%)
Gender	Male	630	51.3
	Female	597	48.7
Age distribution (Years)	=10	94	7.6
	11-20	363	29.4
	21-30	323	26.3
	31-40	128	10.4
	41-50	101	8.2
	=51	220	17.9
Treatment Category	Category I	1186	96.6
	Category II	41	3.4
Site of Disease	Pulmonary TB	672	54.7
	Extra-pulmonary TB	555	45.3
Smear result	Positive	389	57.8
	Negative	283	42.2
Smear grading	Scanty	62	15.9
	1+	97	24.9
	2+	152	39.2
	3+	78	20.0
Registration group	New	1186	96.6
	Relapse	39	3.2
	Failure	2	0.2

Table 2: Successful vs unsuccessful treatment outcomes among study cases (2013-2017)

Outcome	Frequency (N)	Percentage (%)
Successful treatment outcome	1148	93.5
Unsuccessful treatment outcome	79	6.5
Total	1227	100.0

Table 3: Treatment outcome during the study years (2013-2017)

Outcome	Pulmonary TB		Extra-Pulmonary TB	
	No	Percentage	No	Percentage
Cured	602	89.6	00	
Treatment Completed	32	4.7	514	92.5
Treatment Failure	06	0.9	07	1.3
Died	28	4.2	32	5.8
Default	04	0.6	02	0.4
Total	672		555	

Discussion

TB remains a major public health problem through the world, especially in developing and under-developing countries like Pakistan. Assessment of outcomes of TB treatment is very important for stakeholders and health workers to evaluate the performance of TB treatment strategies such as DOTS and patient-related factors. This was a retrospective study included patients enrolled from 2013-2017 at DOTS center LRH Peshawar, Pakistan. LRH is one of oldest and biggest hospital of this area where patients from all over KP, adjacent tribal areas and Afghanistan attended this hospital for treatment of different disease. Its Chest Out door patient department (OPD) and chest ward entertained patients having chest related problems.

Patients infected with Mycobacterium tuberculosis (MTB) treated at DOTS center or at Programmatic Management of Drug Resistant TB unit (PMDT) according to the types of MTB infected them. Drug resistant TB (DR-TB) is more complex form of TB, the treatment of which consist of more toxic and less effective second line drugs (SLDs) with poor outcomes.[7,10] This is man-made problem which occurred due to incomplete or irregular treatment of susceptible TB.[11,12] So need of the day is to strengthen the DOTS programme and increased the registration of infected patients for treatment with good compliance. Another important point is that regularly study the registration status and treatment outcomes of enrolled patients to check out the DOTS which help in the future planning. So this study was conducted for this reason at DOTS center to study the profile and treatment outcomes of enrolled patients from 2013 to the end of 2017. This study included a total of 1227 enrolled TB patients, of which 51.3% were males and 48.7% were female. Reason for this may be greater exposure of male as compared to female. These all reports revealed constantly high prevalence rates of TB among the male population. However, few emerging reports show host genetic bases for such differences.[13,16] Furthermore, sexual hormones, sex-related genetic background and genetic regulations, and metabolism, among other factors, might contribute in susceptibility differences between men and women.[14,17] Recently, an X chromosome susceptibility gene has been suggested as explaining the higher susceptibility of males than females to TB.[14]

Mean age of participants were 36.8 years with SD of ±16.3. Majority of patients (55.7%) were from age group 11 to 30 years of age, which is a productive age of the community. This result is comparable with the study in Nigeria show greater prevalence of TB in the age group of 25-44 years. The high prevalence of TB in younger age may be due to working age group as men are at the greater possibility for MDR or susceptible TB because of their ambulatory nature. There was no significant difference found between the disease with age and sex. Similar results were reported by Obiebi et al. Further, during these five years, TB was more prevalent at 54.7% than extrapulmonary TB with 45.3%. Study conducted by Avanish et al reporting 75.02% PTB patients while 24.98% of EPTB.[1]

389 (57.8) were showing smear-positive results while 283 (42.2) were smeared negative. This result is quite different from the study reported by Chidubem L et al (84.3%) smear positive and 15.7% smear negative). Among the smear positive, the sputum AFB microscopy results of respondents were as follows: 15.9% scanty, 24.9% were 1+, 39.2% were 2+ and 20.0% were 3+ of the PTB patients. This results is comparable with the study reported by Oyefabi et al.

Among the registration group, new patients were 1186 (96.6%), 39 (3.2%) were relapsed due to inadequate supervision, irregular intake of ATT and certain other complications and failure were 2 (0.2%).

Total 672 were pulmonary TB patients, among them 602 (89.6%) were cured, 32 (4.7%) have completed their treatment course while 6 (0.9%) failed to complete their treatment course due to poor compliance. 28 (4.2%) died due to certain complications. 4 (0.6%) defaulted to the treatment. In the present study, the proportion of patients with successful treatment outcomes (cured and completed) was found to be 90.9%, which is higher than the WHO target set for the Millennium Development Goal (MDG) of 85% and comparable to that of the milestone target set globally for 2025 of >90%. Comparable findings were reported by other Ethiopian studies.[27-31] Irregular intake of drugs, poor compliance and interference of associated drugs for co-morbid illness are may be the principal reason for poor disease outcome and default.

555 were extra pulmonary TB patients, among them 514 (92.5%) completed their treatment course while 7(1.3%) failed in the completion of their treatment course. 32 (5.8%) died and 2 (0.4%) were reported default. This result of our study is quite good compared with the same study in India: reporting 82.01% treatment completion, 8.86% default, 0.24% failure and 8.86% death.32

The frequency of successful treatment outcome was 1148 (93.5%) which is higher than the WHO target set for the Millennium Development Goal(MDG) of 85% and comparable to that of the milestone target set globally for 2025 of >90%. Comparable findings were reported by other Ethiopian studies.

The results of our study should be applied with caution when evaluating the overall TB treatment success rate in the studied region. The results of this study also indicate that TB is still a major public health problem at the studied area.

Conclusion

This study showed that TB mainly affected individuals in the reproductive age group. The proportion of patients who were successfully treated was above the MDG target of 85% treatment success rate and comparable with the milestone target of >90% treatment success rate. This study concluded that TB is still a major public health problem at the studied area.

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