

## Prevalence of Tuberculosis in District Khar Bajaur Agency, Khyber Pakhtunkhwa Pakistan

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### Abstract

**Background:** Mycobacterium tuberculosis (TB) are a slow-growing facultative intracellular parasite. TB is one of the most common infectious diseases of developing countries including Pakistan. TB is commonly diagnosed by microscopic examination of spontaneously expectorated sputum.

**Objective:** To find out the prevalence of tuberculosis in the District Khar Bajaur Agency, Khyber Pakhtunkhwa, Pakistan.

**Methods:** A cross-sectional study was conducted in the District hospital Khar Bajaur Agency, Khyber Pakhtunkhwa, Pakistan from 1st January 2011 to 31<sup>st</sup> December 2012. There were 1173 patients with 662 (56.43%) males and 511 (43.57%) female screened by using sputum smear microscopy. The data were distributed according to the gender, age, weight, past history and treatment of Tuberculosis infection.

**Result:** The overall prevalence was 33.08% (388/1173). Out of all affected samples 206 (31.12%) were male and 182 (35.62%) were females. The highest prevalence 48.74% (99/232) was recorded in 11-20 year age ranges while the lowest 19.82% (45/227) was recorded in age ranges 01-10 year.

**Conclusion:** There is a high prevalence in the selected area due to the lack of migration and war on terrorism, poor medical facility and lack of awareness. It was concluded that Pulmonary TB is the most common prevailing disease in the rural communities in Khar Bajaur Agency, and high incidence was recorded in female as compared to male. There is an urgent need for strategic planning in private and government sector to overcome the high prevalence of tuberculosis infection. In order to reduce the prevalence of Tuberculosis in backward areas of the world, there is an urgent need for strategic planning in private and government sector to overcome the high prevalence of tuberculosis infection.

**Keywords:** Tuberculosis; Bajaur; Prevalence; Hospital; Infection

### Introduction

Tuberculosis is an infectious, chronic disease caused by *Mycobacterium tuberculosis* [1]. It is the main problem in public health. In developing countries, among infectious diseases, TB is one of the leading causes of mortality and morbidity among all ages and Over 95% of TB deaths occur in low- and middle-income countries. TB is among the top three causes of death for women aged 15 to 44 [2,3]. It is estimated approximately  $1.7 \times 10^5$  children die due to the T.B. annually, worldwide [4]. Pakistan ranked 6<sup>th</sup> worldwide in abundance in T.B. prevalence [5]. T.B. is more common in developed countries at older ages (above 50), while in developing countries, it is common under 50 years of individuals [6]. The overall prevalence in Pakistan is above 1% account for 1.5 million of the total population and annually about  $2.6 \times 10^5$  new cases appear and roughly about 25% of the cases are never diagnosed in the country [7]. From different reports it is estimated that approximately  $1.7 \times 10^5$  children die annually due to T.B. infection. It is thought that T.B. is fourth major cause of all deaths in Pakistan. There is little study reported on gender infection, but there is difference in gender infection. But it is estimated that women have great progression of infection of tuberculosis, but male in most countries are more affected than females [8]. The data so far in the region of Khyber Pakhtunkhwa (KPK) and northern areas of Pakistan are very less conclusive. The positive smear cases for pulmonary T.B. were 557/10,000 in the village of northern area [9] while the KPK prisoner study shows 48% prevalence [1]. It is well known that TB spread to different organs and locations within the body, such as brain, bones, abdomen, heart, lymphatic system, urinary tract and lungs [10]. General for the diagnostic of tuberculosis Culture studies, chest radiographic findings and sputum smear, microscopic methods were used [11].

There is no valuable study conducted to detect the prevalence of T.B. in the District Khar Bajaur Agency, KPK. This hospitalized based study shows the prevalence of Tuberculosis among the population of District Khar Bajaur Agency, KPK.

### Objective

The present study aimed to determine the prevalence of TB infection in District Khar Bajaur Agency, Khyber Pakhtunkhwa (KPK), Pakistan.

### Methods

A detailed study was conducted in the District hospital Khar Bajaur Agency, Khyber Pakhtunkhwa (KPK), Pakistan from 1<sup>st</sup> Jan 2011 to 31<sup>st</sup> Dec 2012. Initial screenings of 14350 patients were recorded for the symptoms of T.B. out of these patients, 1173 were diagnosed with T.B. while the rest were excluded from the study.

For each patient three specimens of sputum were collected and

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examined by microscopy by means of Ziehl–Neelson staining method. First sputum sample was taken after coughing, 2<sup>nd</sup> sputum on the second day and 3<sup>rd</sup> sputum sample was taken on the third day. The result with at least two positive smears was identified as a positive tuberculosis case, while one or no positive smear is diagnosed as negative case for tuberculosis infection. Each patient data was recorded such as gender, age, weight, past history of T.B. infection and its treatment.

The patients were classified according to the history of previous treatment, severity of disease and the result of smear pattern. A patient whose has never been diagnosed with T.B., or have been on anti-TB treatment for less than four weeks was considered as New (N). Relapse (R): A patient who has been declared cured or treatment completed for any form of T.B. in the past, but who reports back to the health service and is found to be sputum smear-positive or culture positive. Treatment after previous treatment failure (F): A patient who, while on treatment remained sputum smear-positive or became sputum smear-positive at the end of the five months or more, after commencing treatment. Treatment after default (did not complete previous treatment) (D): A patient who had previously been recorded as defaulted from treatment and returns to the health service with smear-positive sputum. Transfer in (T): A patient who is transferred from another district to continue treatment. Other (O): A patient who does not fit into any of the above categories.

### Statistical analysis

Data were analyzed by using SPSS Ver. 16 software and parameter was represented in tabular and diagrammatic form using Microsoft Excel 2010.

### Results

During the study period there were a total of 1173 patients screened for T.B. infection. Out of 1173 patients there were 662 (56.43%) males and 511 (43.56%) female and Out of 388 infected patients 206 (31.12%) were male and 182 (35.62%) were females (Table 1). The overall prevalence of T.B. infection in this hospitalized based study population was 33.08% (388/1173). Of 388 patients, higher prevalence 48.74% (99/232) was recorded in age ranges from 11-20 year, while the lowest were recorded in 19.82% (45/227) was recorded in age ranges

from 01-10 year (Table 2). The total prevalence in 2011 was 31.71% and increased in 2012 to 34.49%.

### Discussion

Tuberculosis in many cases have high morbidity and mortality among different infectious diseases [12]. Worldwide about 3.5 million cases (44%) appeared annually [13]. This study was conducted in the district Bajaur agency and the overall prevalence in our study was 33.08%. The people of this area like other areas are afraid to disclose the diagnosis due to fear of discrimination by the community and think that once this infection occurs then it leads to death. The main causes of high prevalence are migrating to camps due to political instability in the region, lack of education, poor medical facilities and lack of awareness among the population [14].

The perceived symptoms of T.B. are generally referred to as simple cough or prolonged fever [15]. Very few respondents talked about weight loss or night sweats. Females are generally unaware of symptoms like blood in the sputum.

Our study shows that there is an increase in the prevalence of T.B. In 2011 the prevalence was 31.71% and in 2012 it increased to 34.78%, which gives a silent increase in the prevalence of T.B. in population.

Our study indicates that based on gender classification T.B. prevalence was recorded high in female 35.62%, compared to male's 31.12%. Our data suggest a direct correlation with the previous findings [16]. This high difference in male/female ratio of T.B. results due to the lack of female education, carelessness, hard work, and poor health care offered by community [17,18]. The increased awareness of gender inequalities in health care will hopefully lead to increased research resources and efforts to understand inequities in health and health care use.

A high prevalence (42.67%) was determined at the age of 11-20 years group while the lowest prevalence (19%) was determined in 01-10 age groups. These results are consistent with the previous findings [16]. Efforts are needed to improve the knowledge of doctors and urgent need of effective Standardized treatment protocol to support with National T.B. control program. There is need of educational improvement, health facility and increase awareness in the population.

Year		No of Samples	Affected	% age
2011	Males	344	101	29.36
	Females	252	88	34.92
	Total	596	189	31.71
2012	Males	318	105	33.02
	Females	259	94	36.29
	Total	577	199	34.49

Table 1: Gender wise prevalence of tuberculosis.

Years Ages	2011-2012 Total screen	Total affected (%age)	2011 Male affected (%age)	Female affected (%age)	2012 Male affected (%age)	Female affected (%age)
01-10	227	45(19.82%)	17(24.28%)	12(26.66%)	10(14.92%)	6(13.33%)
11-20	232	99(42.67%)	21(32.81%)	20(40.81%)	32(50%)	26(47.27%)
21-30	268	98(36.56%)	26(31.32%)	23(36.50%)	23(34.32%)	26(47.27%)
31-40	165	50(30.30%)	13(30.95%)	10(28.57%)	12(27.27%)	15(34.09%)
41-50	107	37(34.57%)	12(36.36%)	10(38.46%)	8(30.76%)	7(31.81%)
51-60	98	32(32.65%)	6(26.08%)	7(31.81%)	12(38.70%)	7(31.81%)
61-70	50	20(40%)	5(27.77%)	4(44.44%)	4(40%)	7(53.84%)
71-80	26	7(26.92%)	1(9.09%)	2(66.66%)	4(44.44%)	0(0%)
Total	1173	388(33.07%)	101(29.36%)	88(34.92%)	105(33.01%)	94(36.29%)

Table 2: Prevalence of tuberculosis at age and year based.

YEAR	TYPES OF PATIENTS					
	N	R	F	D	T	O
3-Jul	169	9	7	0	3	1
4-Jul	170	20	6	0	0	3
TOTAL	339	29	13	0	3	4

**Table 3:** Classification based on tb patients type.

N: New, R: Relapse, F: Treatment after previous treatment failure, D: Did not complete previous treatment, T: Transfer in, O: Other.

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