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*Full Length Research Paper*

# Prevalance of tuberculosis in District Dir Upper, Pakistan

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**The present study was carried out to invistigate the prevalence of tuberculosis (TB) in sub division Sheringal, Dir proper, Barawal and Wari District Dir Upper in Khyber Pakhtunkwa (KP) province, Pakistan from (January 2013 to December 2013). During this survey I collect data from four tehsils of District Dir Upper. A total of laboratory reports of 380 patients were collected from four differents tehsils, in which 98 (25.78%) were found positive and 282 (74.21%) were found negative tuberculosis patients. The higher incidence of tuberculosis was showed in tehsil sheringal 31 (28.18%). And lowest rate of tuberculosis was found in tehsil wari 18 (22.5%). And in Gender wise prevalence out of 98 positive cases 37 (22.42%) were male and 67 (28.37%) were female. This shows that the rate of tuberculosis is higher in female as compare to male. The higher infection of tuberculosis were found in the people of middle age from 13-30 (70.58%) and lowest infection are found in the children and adult about (8.57%). In month wise the higher prevalence was recorded in the month of March (46.15%) while the lowest prevalence was found in the month of April showing (16.21%).**

**Keywords:** Tuberculosis, Prevalence, Khyber Pakhtunkhwa.

## INTRODUCTION

Tuberculosis (TB) is a bacterial disease which is a major cause of morbidity and mortality throughout the world. It remained the world's leading cause of death since decades. TB becomes active disease and in 75% cases it affects lungs i.e. pulmonary tuberculosis while 25% cases suffer from extra-pulmonary tuberculosis. The main symptoms include three weeks prolonged and productive cough, chest pain and coughing up blood (WHO, 2006). Tuberculosis is caused by *Mycobacterium tuberculosis* which is slow growing facultative intracellular parasite.

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*Mycobacterium tuberculosis* is being existed in human population since ancient times, first infected humans 10,000-15,000 years ago (Ducati *et. al.,* 2006). However it was in the seventeenth century that pathological and anatomical descriptions of tuberculosis (TB) disease began to appear (National Tuberculosis Center, 2009). An estimated one third of the world's population is infected with *Mycobacterium tuberculosis*, presenting a major impediment to tuberculosis control. When the World Health Organization declared TB a global health emergency in 1992, it was prevalent in almost all countries of the world. WHO estimated a total of 9.27 million new cases worldwide in 2007 with 1.3 million deaths with >90% in developing countries (WHO, 2008).

Although 95% of TB positive cases and 97% of all deaths occur in high-endemic countries, the disease continued to be a problem in industrialized countries as well, mostly in immigrant population, in elderly individuals with reactivating latent infection, and in local outbreaks (Broekmans *et. al.,* 2002).

## AIMS AND OBJECTIVES

The objective of my study is,

- To find out the prevalence of Tuberculosis in District Dir Upper.
- To study the prevalence of TB among individuals of different age groups.

## METHOD AND MATERIALS

### Study Area and Map

District Dir is located in Khyber Pukhtunkhwa, Pakistan. The total area is 5282 $km^2$. it lies from $34^0$ $38^0$ north in latitude and from $71^0$ $30^0$ to $72^0$ $22^0$ east in longitudes. District Dir is divided into two Districts, Dir Upper and Dir Lower. I collect data from District Dir Upper from four different tehsils. Tehsil Sheringal, Tehsil Dir, Tehsil Brawl, and Tehsil Wari. Dir Upper is one of 24 district of Pukhtunkhwa, which was found 1916. Entire District lies in valley of the panjkora river which rises the Hindokash. The population of the area is 1375657. The annual rainfall is 400 mm, which is recorded in summer (UNICEF, 2008).

### Material

Following material was used to conduct my research work.

Questionnaires, Sputum collection tubes, Slides, AFB test reagents, Microscope etc.

### Methodology

This investigation has been conducted among different Tehsils of District Upper Dir at DHQ Upper Dir. The group of patients were selected within the age range of 1-60 years and above, patients having clinical features suggestive of tuberculosis as evening pyrexia, weight loss, productive cough, haemoptysis, malaise, tiredness, anorexia, chest pain, and patients with raised ESR and chest X-ray finding abnormal shadows, cavitations, and/or abnormality in the lymph nodes relative symptoms to tuberculosis were included.

A printed Performa containing a comprehensive record of all patients was filled after getting necessary information from each patient. Blood with ESR, Urine R/E, Chest X-ray, Blood Urea, Blood Sugar, and AFB smear examination by direct microscopy were been done for all patients.

AFB (Acid- Fast Bacilli) smear refers to the microscopic examination of a fluorochrome stain of a clinical specimen. The sputum specimen was placed on the slide with the help of wire loop to make a smear with the help of forceps and then acid Fast stain was put on the sample followed by carbon Facine for 5 min to fix it on the slide. Then slide was washed with decolorize for about 3 minutes. Then Methylene blue was added for a minute to examine under microscope using 100 X eye piece.

For more confirmation I also used ICT test which was carried out through blood serum collected after centrifugation of blood at high speed. 10 µL of serum was transferred to a special tube designed for ICT test followed by addition of 3 drops of buffer solution for 15 minutes. When T line turned dark, it revealed the presence of TB infection

### Statistical Analysis

The data was statistically analyzed and tabulated using Microsoft excel.

## RESULTS

The present study was conducted on the prevalence of tuberculosis (TB) in District Dir Upper. This study was based on laboratory reports of patients from different hospitals total laboratory reports were collected and grouped into Age wise, Area wise, and Gender wise. A total of laboratory reports of 380 patients were collected, in which 98 were found positive and 282 were found negative tuberculosis patients. Four Tehsils Sheringal, Dir, Brawl, and Wari of District Upper Dir were screened for prevalence of TB. The higher incidence of tuberculosis was showed in tehsil sheringal 31(28.18%). And lowest rate of tuberculosis was found in tehsil wari 18 (22.5%) (Table 1, Figure 1,). And in Gender wise prevalence out of 98 positive cases 37 (22.42%) were male and 67 (28.37%) were female (Table 2, Figure 2). This shows that the rate of tuberculosis is higher in female as compare to male. In age wise the higher infection of tuberculosis were found in the people of middle age from 13-30 (70.58%) and lowest infection are found in the children and adult about (8.57%) (Table 3, Figure 3). In month wise the higher prevalence was recorded in the month of March (46.15%) while the lowest prevalence was found in the month of April showing (16.21%) (Table 4, Figure 4).

**Table 1.** Prevalence of tuberculosis in different tehsils of District Dir Upper, Pakistan from January to December 2013

| Area | Total | Positive | % | Negative | % |
|---|---|---|---|---|---|
| Sheringal | 110 | 31 | 28.18 | 79 | 71.81 |
| Dir | 100 | 25 | 25 | 75 | 75 |
| Wari | 80 | 18 | 22.5 | 62 | 77.5 |
| Brawal | 90 | 24 | 26.66 | 66 | 73.33 |
| Total | 380 | 98 | 25.78 | 282 | 74.21 |

**Table 2.** Prevalence of Tuberculosis patients in gender wise from January to December 2013

| Gender | Total | Positive | Negative | %+ve | %-ve |
|---|---|---|---|---|---|
| Male | 165 | 37 | 128 | 22.42 | 77.57 |
| Female | 215 | 61 | 154 | 28.37 | 71.62 |
| Total | 380 | 98 | 282 | 31.63 | 68.63 |

**Table 3.** Prevalence of tuberculosis in age wise of District Dir Upper, Pakistan from January to December 2013

| Age | Total samples | Total +ive | % | -ive | % |
|---|---|---|---|---|---|
| 1-12 | 70 | 6 | 8.57 | 64 | 91.42 |
| 13-30 | 85 | 60 | 70.58 | 25 | 29.41 |
| 31-40 | 80 | 13 | 16.25 | 67 | 83.75 |
| 41-50 | 75 | 6 | 8 | 69 | 92 |
| 51-60 | 40 | 8 | 20 | 32 | 80 |
| Above 60 | 30 | 5 | 16.66 | 25 | 83.33 |
| Total | 380 | 98 | 25.78 | 282 | 74.21 |

**Table 4.** Prevalance of tuberculosis in month wise of District Dir Upper, Pakistan from January 2013 to December 2013.

| Months | Total samples | Positive | %age | Negative | %age |
|---|---|---|---|---|---|
| January | 41 | 10 | 24.39 | 31 | 75.60 |
| February | 31 | 8 | 25.80 | 23 | 74 |
| March | 26 | 12 | 46.15 | 14 | 53.84 |
| April | 37 | 6 | 16.21 | 31 | 83.78 |
| May | 33 | 8 | 24.24 | 25 | 75.75 |
| June | 22 | 7 | 31.81 | 15 | 68 |
| July | 25 | 5 | 20 | 20 | 80 |
| August | 33 | 8 | 24.24 | 25 | 75.75 |
| September | 31 | 6 | 19.35 | 25 | 80.64 |
| October | 26 | 8 | 30.76 | 18 | 69 |
| November | 33 | 8 | 24.24 | 25 | 75.75 |
| December | 42 | 12 | 28.57 | 30 | 71.42 |
| Total | 380 | 98 | 25.78 | 282 | 74.21 |

## DISCUSSION

It has been confirmed by present study that smear-positive tuberculosis has been found on individuals of low socioeconomic group and in females. The patient's family is being always on the risk of transmit the tuberculosis infection. Tuberculosis has caused tremendous amount of worldwide than any other infectious disease especially in developing countries like Pakistan where it is declared fourth major cause of death. There were 181/100,000

estimated new cases and 223/100,000 prevalent cases in Pakistan according to 2007 estimates (Nisar, 2007). Early diagnosis and effective treatment of active cases that are infectious to the community is the best way of controlling TB in our country. The main reason of the increased risk of the manifestation of the disease could possibly the delay in diagnosis and failure to cure a great percentage of smear positive cases, which might lead to the high death toll ratio and MDR cases in Pakistan. Currently for diagnosis, developing countries rely on AFB stains and culture and radiographic changes. In this study total of 380 patients were investigated for active TB.

Majority of the infected persons were from middle class Common signs at presentation were anemia had bronchial breathing. During investigation most of the patients especially female were having Hb level of 8–10 gm/dl.As they remain most functional reproductively in the age between 13 to 30 years their personal health may be compromised The higher prevalence in female is also due to longer to seek care (patient delay) due to stigma and social exclusion, heavier workloads, prioritization of other family members over own well-being lack of independence inaccessibility to financial resources and powerlessness in decision making they experience longer provider diagnostic and treatment delays they are engaged in more activities that need to be replaced in the household.In addition women have higher direct costs than men, because they often need somebody to accompany them they are less mobile and have less financial resources.

Similarly the TB is highly prevalent in age group ranging from 13 to 30 years and this is due to their extensive exposure to the outside environment characterized by poor sanitation and unhygienic conditions. And individuals of this age group remain in frequent contact with industrial environment where they inhale air rich in effluents and dust particles which may cause alveolar inflammation resulting in the immune suppression.

The conclusion of this study that lockup convicts are at amplified risk for TB infection is in line with previous studies driven in the parts of the world.It has been proposed that a TB control programmed should be introduced.There should be special attention for the personages showing positive family history for TB as they have already provoked a chance to gain the manifestation of the disease.Also deprived sanitation and freshening provide *M.tuberculosis*, a grand opportunity to persist for extensive periods and transmit it to others The improvement within ventilation sanitation and overall living conditions in our societies/ houses environment have been suggested thoroughly.We endorse an awareness program for families to acquire knowledge about the possibility for the transmission of *M tuberculosis* infection from AFB sputum smear-positive pulmonary tuberculosis.

## CONCLUSION AND RECOMMENDATIONS

The investigation report provides pulsating statistics on the TB infection condition amongst the District Dir Upper population, TB vestiges a foremost public health problem focus the tribal population and there is a need of further TB Control programs on a constant and study basis. Targeted programs must engage prisons, jails, HIV/STD programs, specific high-risk occupational groups illicit drug users, and persons living on the street. Smear positive pulmonary TB is more prevalent in females, in young age individuals, and in people of low socio economic group. For the control of tuberculosis early diagnosis of active cases and their treatment under supervision is important. Poverty, poor hygiene illiteracy, drug resistance and poor compliance with medications are important reasons for the rising incidence of TB. Effective health education access to treatment centers and trained and motivated health care providers can go a long way in making national TB control program a success. Acid fast staining of sputum is the best method if performed by experienced microbiologist, as it is reliable and economical. It can be said confidently that such kind of research will play a vital role in the fight against TB in Pakistan and especially in the district under study.

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