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Research Article

### REASONS OF HIGH MORTALITY AMONG PATIENTS SUFFERING FROM TUBERCULOSIS

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**Abstract:****Objective:** The aim of this study is to evaluate the reasons of mortality among the patients suffering from tuberculosis.**Methodology:** This is a cross sectional research work conducted in Allied / DHQ Hospital Faisalabad, from 2014 to 2018. We reviewed the medical records of patients suffering from TB for the complete five years and analysis of the data of death carried out. Patients suffering from TB and fulfilling the diagnosis standard of national TB program were the part of this research work. SPSS V. 11.5 was in use for the analysis of the collected information.**Results:** Total 3.15% (n: 125) deaths with an average age of  $48.96 \pm 10.03$  years' age of patients. The rate of diabetes mellitus, smoking, chronic kidney failure, infection of HIV, imprisonment, and utilization of the drugs through injections MDR- tuberculosis 16.0%, 31.2%, 6.40%, 13.60%, 22.40% & 22.40% correspondingly. Total 67.20% (n: 84) deaths were direct attribution to TB, amongst them overwhelming tuberculosis disease, hemoptysis & MDR-TB were responsible for reasons of death in 77.40%, 13.10%, 9.50% and 6.40% correspondingly. Total 32,80% (n: 41) were because of medical abnormalities as heart diseases, AIDS, infection of bacterial super, and cancers as 21.90%, 19.50%, 17.10% and 12.20% correspondingly.**Conclusions:** This research work displayed that overwhelming disease of tuberculosis, hemoptysis, diseases of heart, infection of bacterial super and various cancers are the important reasons of deaths. Cigarette smoking, imprisonment, usage of drugs through injections and diabetes mellitus are the common risk factors for the high mortality rate among the patients suffering from tuberculosis.**Keywords:** Mortality, Bacterial, TB, Hemoptysis, Cancer, Heart, Tuberculosis, Imprisonment.**Corresponding author:**

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**INTRODUCTION:**

M. tuberculosis is the cause of infection in 1/3<sup>rd</sup> population of the world. There is a report of the 8 million new patients and 2 million mortalities every year in the whole world in which 12.0% are because of AIDS [1]. There are 25.0% deaths in the adult population in the countries which are under development are preventable [2]. Tuberculosis is among the ten leading reasons of mortalities in countries which are under development [3]. The country of Iran with 17.50% occurrence and 27/100000 population rate of incidence is the 17<sup>th</sup> country in the ranking of countries of whole world [4, 5]. M. tuberculosis is very common issue leading to death among adults in the whole world after HIV [1]. The rate of mortality of tuberculosis is very high, if not treated, 50.0% patients will meet their death, 25.0% recurs & 25.0% chronic [2]. The method of DOT (Directly Observed Treatment) has reduced the mortality rate of tuberculosis but in the countries which are under development, tuberculosis is the main cause in preventable mortalities [2, 4]. There are two groups of the reasons leading to death in the disease of tuberculosis.

The 1<sup>st</sup> group is the attribution to TB and in the 2<sup>nd</sup> group, death is the outcome of serious medical abnormalities [6-9]. Past research works have concluded that failure of pulmonary because of the involvement of the extensive pulmonary and hemoptysis were the major reasons of deaths in tuberculosis [9]. The main idea of this research work was to evaluate and find out the major reasons of mortality and its associated risk factors in the patients suffering from TB. The description of those risk factors and decrease in those factors will reduce the rate of mortality in the disease of tuberculosis.

**METHODOLOGY:**

This is a cross sectional research work. We reviewed the records of all the patients of TB in the period of the five year in the Allied / DHQ Hospital Faisalabad. We also analyzed the data of mortality among those patients. Tuberculosis diagnosed in patients according to the NTP standard was the fulfilling standard for the study [10]. The patients minimum with 2 positive sputum smear for acid fast bacillus or, an X-ray of

chest indicative of TB plus 01 SSP-AFB or positive culture of sputum for M. TB and 01 SSP-AFB was as the smear PTB+ (Pulmonary TB). The patients with medical outcome indicative for tuberculosis plus 3 negative sputum spears AFB after 2 weeks of treatment through antibiotics plus X-ray of the chest were the smear PTB- (Negative Pulmonary TB). Other identification criteria included the analysis of the fluid of cerebral spine for tuberculosis meningitis, computerized tomography scan and study of microbes for extra pulmonary TB.

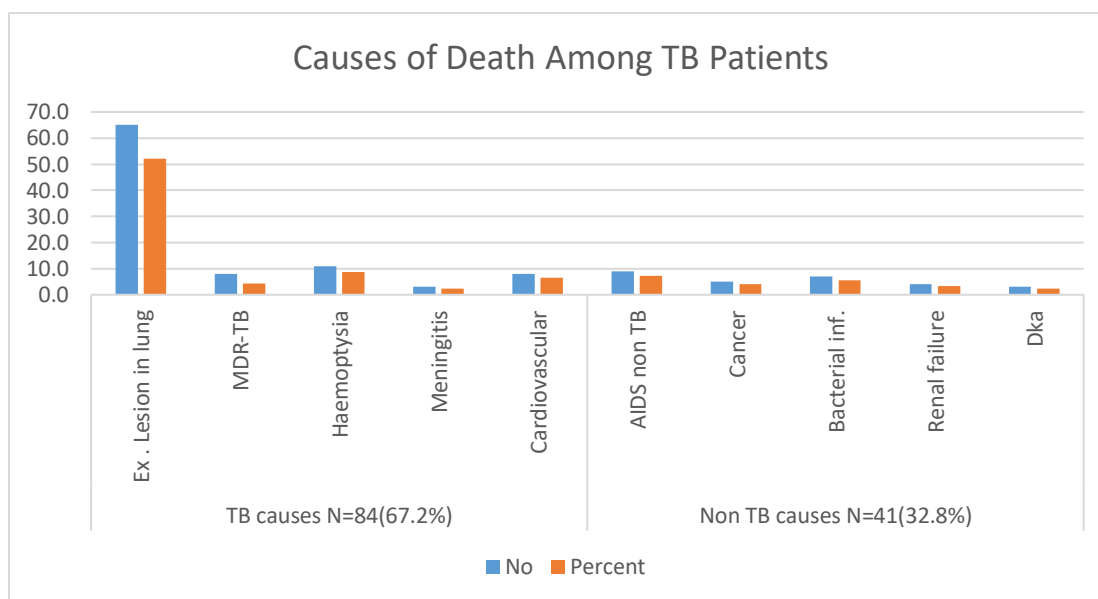
Traits of demographic information, past clinical history, imprisonment, serological status of HIV, addiction to drugs, related diseases, side effects of the drugs and other clinical abnormalities during the treatment against tuberculosis collected from the files of those patients. Analysis of the collections information carried out with the help of the Chi-square test and SPSS V. 11.5. In this research work, the follow up of the patients carried out during the course of treatment and twelve months after the completion of treatment. The rate of mortality of the six month of treatment was under consideration in this research work.

**RESULTS:**

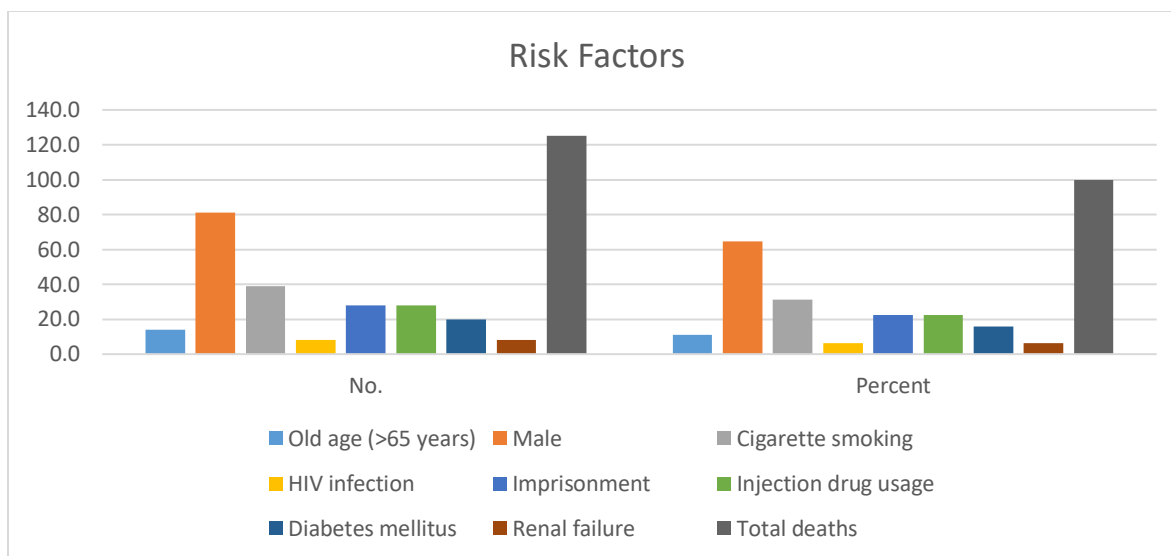
Total three thousand nine hundred and sixty patients who were getting treatment for tuberculosis were the part of this research work, 38.40% (n: 1521) patients were female & 61.60% (n: 2439) patients were male. Total 3.15% (n: 125) patients in which 35.20% (n: 44) females & 64.80% (n: 81) males with an average age of  $48.95 \pm 10.03$  met their death in the course of treatment. The rate of mortality in males and females was 3.30% & 2.80% correspondingly. Total 73.60% (n: 92) patients died within the 1<sup>st</sup> two months of treatment. Total 67.20% (n: 84) deaths of the patients were the direct attribution to TB. Overwhelming disease of tuberculosis was the reason of death in 77.40% (n: 65), most of the patients got death due to failure of respiratory system. Hemoptysis was the cause of death of 13.1% (n: 11) patients. MDR-TB was the cause of death of 9.50% (n: 8) patients. Table-1 is completely elaborating the death rates of the patients with their numbers and cause of the death. All the associated results are available in Tables-1 & Table-2.

**Table-I: Causes of Death Among Tuberculosis Patients**

Category	Causes of death	No	Percent
TB causes N=84(67.2%)	Ex. Lesion in lung	65.0	52.00
	MDR-TB	8.0	4.40
	Haemoptysis	11.0	8.80
	Meningitis	3.0	2.40
	Cardiovascular	8.0	6.40
Non TB causes N=41(32.8%)	AIDS non TB	9.0	7.20
	Cancer	5.0	4.00
	Bacterial inf.	7.0	5.60
	Renal failure	4.0	3.20
	Dka	3.0	2.40

**Table-II: Risk Factors of Death Among Tuberculosis Patients**

Risk factors	No	Percent
Old age (>65 years)	14.0	11.20
Male	81.0	64.80
Cigarette smoking	39.0	31.20
HIV infection	8.0	6.40
Imprisonment	28.0	22.40
Injection drug usage	28.0	22.40
Diabetes mellitus	20.0	16.00
Renal failure	8.0	6.40
Total deaths	125.0	100.00



### DISCUSSION:

This research work displayed that rate of mortality of TB in province Punjab was 3.150%, (2.80% among female & 3.30% among men). This outcome is consistent with the conclusion of the research work of Kourbatova [11] but greater than concluded by Xie [12]. The rate of mortality in different in every country due to epidemiological condition of tuberculosis, risk factors of tuberculosis & co-morbid complications. Regardless of the application of DOT procedure from 1997 in this field [10], rate of mortality of tuberculosis is beyond satisfaction and there is requirement of the improvement in the current anti-TB program. The very common risk factors of this research work are usage of drugs through injections, imprisonment, smoking, diabetes mellitus, HIV and kidney failures which are also consistent with many other past research works [6-9, 11-13]. In opposition to the other research works, infection of HIV and old age are not the common factors of risks for high mortality in this research work.

In this research work, majority of the deaths occurred in the initial months of the treatment. This outcome proposes that finding of the active research has the ability to decrease the rate of mortality of tuberculosis by the diagnosis and treatment in an early stage. This current research work also displayed that the mortalities in the tuberculosis have no direct relation with the disease itself but there was also the outcome of the co-morbid complications as heart diseases, cancer, diabetes mellitus and infections due to bacteria. These findings are also same with other research works [6-9, 11-13]. Comparing with the other research works, the reason of death other than tuberculosis in this research work (32.80%) is less than the conducted in the low prevalent countries of the

world [8, 9, 12] with rate from 58.0% to 69.0% but is constant with the similar prevalence country. Mathew & colleague stated that rate of mortality in tuberculosis was 9.60% & 75.0% of patients of TB met deaths because of tuberculosis whereas 25.0% deaths have no relation with tuberculosis and various factors of risks for death are older age, past treatment for tuberculosis and alcoholism [6]. In this research work, bacterial infection was also very dangerous which is similar to the works of Kuba & Tocque [9, 13]. This research work showed the association of AIDS with high rate of mortality. High occurrence of the addiction of the drugs among the prisoners and most of the AIDS patients are the outcome of the share of needle between the drug addicts [14-16].

### CONCLUSIONS:

There is very high rate of mortality in our country due to tuberculosis which is not satisfactory. The findings of this research work displayed that overwhelming disease of tuberculosis, hemoptysis, diseases of heart, super infection because of bacteria and cancers are the major reason of the mortality. Cigarette smoking, usage of injection to satisfy drug needs and diabetes mellitus are the very common factors of risk for the high mortality rate of tuberculosis. A systematic method for to treat morbid complication, surveillance of AIDS in prisons and revision in the current controls program can decrease the rate of mortality due to tuberculosis.

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