

*Original Article***The study of epidemiology of Tuberculosis in Bane (Kurdistan) between 2003 and 2010**\*Jamshid Yazdani Charati.<sup>1</sup> Masoud Moradi.<sup>2</sup>

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\* [jamshid\\_1380@yahoo.com](mailto:jamshid_1380@yahoo.com)**Abstract**

**Background and purpose:** Tuberculosis is a bacterial infection that is commonly caused by Mycobacterium Tuberculosis. As Kurdistan province is close to Iraq (risky due to political instability in recent years), the Bane city had high interaction with Iraq, so the aim of this study was to evaluate the prevalence of tuberculosis in Bane (Kurdistan) between 2003 and 2010.

**Materials and Methods:** This descriptive longitudinal study was done from 2003 to 2010. The number of people with TB was 94 cases taken from the registry. The data included age, sex, type of disease, age and place of registration. The data were analyzed using descriptive and inferential statistical methods through SPSS 20 software.

**Results:** Among the 94 cases recorded in this analysis, the women had higher percentage than men (41.49 percent and 58.51 for men and women, respectively) and the incidence rates were found to be 7.93 in men and 11.64 in women 100000 persons; therefore, there were significant differences between men and women (a p-value <0.01) in all patients in this study. Fifty five percent were from the urban and some others the rural areas and 98.9 percent of them were from Iran.

**Conclusion:** The incidence rate of tuberculosis in females is higher than males. In addition, the average delay time of symptoms to diagnosis was 191 days, so this time, it is relatively high because TB is an infectious disease.

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**Key words:** Tuberculosis, Bane, Incidence Rate, Extra pulmonary

## 1. Introduction

Tuberculosis (TB) is a life threatening infectious disease which represents a wide range of clinical diseases mainly caused by mycobacterium tuberculosis (1). This disease could be pulmonary (85%) or extra pulmonary (15%) which involves vertebral column, kidney, skin, gastrointestinal system, lymph nodes, genitourinary system and but the pulmonary involvement is more important, cause it is considered as a reservoir of diseases in the population. Approximately one-third of global population (about 2 billion person) are infected by tuberculosis but it doesn't definitely progresses to an active disease because the human immune system protecting against it. In immune suppression conditions like aging and immune suppressant drug usage, 5 to 10% of infected people progress to an active disease, which if left untreated can transmits the disease to 10 to 15 people. In spite of medical science improvements tuberculosis is still one of the most common causes of death in low and intermediate income countries (1-3). Because of increased incidence rate of HIV infection and drug resistant tuberculosis during recent years, WHO declare TB as a global emergency in 1994 (1, 4-7). TB is the main cause of death in HIV positive patients so it is still considered as a health problem. Tuberculosis causes one death per 10 seconds in global population. Based on WHO reports about 80% of tuberculosis patients live in 22 countries which two of them are Pakistan and Afghanistan, so in our country, tuberculosis is still considered a serious public health issue because of its' adjacency with Pakistan and Afghanistan in the east, and also adjacency with Asian countries in the north because of persistence of drug resistant TB. Furthermore, Iraq in the west is another issue with progressive incidence rate of TB because of its' political revolutions (6-9, 7, 14). According to the reports of disease management branch of Health ministry of Iran, there is 1000 new TB cases per year in our country which half of them is in the 15-45 y/o age group whom are productive age group of the country.

Incidence rate of tuberculosis in our country is 13 per 100000 people, and this rate is the most in Sistan and Golestan cities. Incidence rate of tuberculosis in Iraq is increasing because of its' political changes in recent years, so in Kordistan because of its' adjacency with Iraq TB should be considered a critical issue especially in Baneh city, considering high amount of transportation to this country. So, we performed this study to verify the incidence rate of TB in this city, during years 2003-2010.

## 2. Materials and Methods

This is a descriptive and longitudinal study, based on available data during years 2003-2010 in Baneh city. All tuberculosis patients referring to health care centers of Baneh during years 1382-89 were detected by their archived documents and included in this study. These patients were diagnosed by pathological studies done by health care center or private medical centers. Finally 94 patients' data were categorized based on age, gender, type of disease (pulmonary or extra pulmonary), and time and location of diagnosis. In the process of analysis we use descriptive statistical methods including mean, standard deviation for age and mean period of delay in diagnosis. We also use frequency schedules for descriptive variables like gender, incidence rate of age and sex and ratio test.

## 3. Results

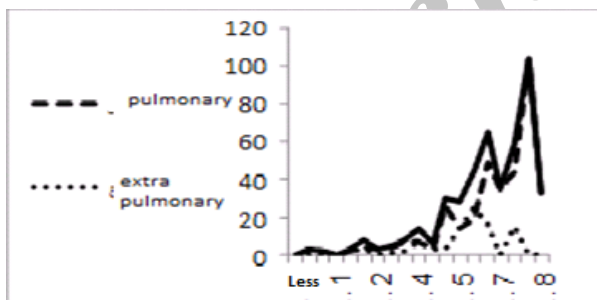
Overall, 39 of 94 patients (41.49%) are male and 55(58.51%) are female. 54.25% of patients live in the urban areas and 47.75% live in rural areas. Totally 61 patients are in the age range 15-65 years old (70.21%) and 27(25%) are more than 65 years old, 4 are less than 15 years old. The incidence rate of TB in Baneh is 8.9 per 100000 which is the most in the pulmonary type (6.5) and is the least in the extra pulmonary type (2.4). As shown in table 1, TB incidence rate in male is 7.93 per 100000, and 11.64 per 100000 in female.

The incidence rate in female is more than male (P value<100). 10% of patients were dead because of TB. The average weight of patients is  $54\pm 10$ .

**Table1.** Age mean and incidence rate mean based on gender

Incidence rate based on gender			
Variable	Meaningful estate	male	Female
Age(mean $\pm$ standard deviation)	NS	45.44 $\pm$ 21	53.3 $\pm$ 24
Incidence rate(per 100000)	0.01	7.93	11.64

As shown in diagram 1 TB incidence rate is the most in the age group 80-84 y/o (104.4) and furthermore the risk is increased by aging. Age mean in male is 45.44 and in female are 53.33 which are not meaningful. Also the incidence rate in city and rural places is not meaningful. The most common form of extra pulmonary type of TB is Gastro intestinal involvement. The mean delay period in diagnosis is  $191\pm 41$ .



**Figure 1.** Incidence rate of TB based on gender and type of involvement.

## 4. Discussion

Accumulative incidence rate of TB in Baneh (8.96) is less than this rate in whole country (13.4)(8,7). Incidence rate of smear positive TB in Baneh is less than the whole country .diagnostic rate of TB in Iran is 61% whereas this rate should be at least 70% according to WHO reports. Based on this diagnostic rate, expected incidence rate in Iran are 22. Low diagnostic rate and delay in diagnosis are considered as main causes of spread of TB and considered characteristics for evaluation of the quality of health care services. Any untreated smear positive tuberculosis patient could spread to 10-15 other people during a year, so early onset diagnosis of smear positive tuberculosis and effective treatment are the best ways to prevent and control tuberculosis in the general population(15).

Overall, the amount of incidence rate of TB and incidence rate of smear positive TB in Baneh shows that diagnostic rate of smear positive tuberculosis patients is low according to expected diagnostic rate (13 per 100000) especially considering Baneh 's adjacency to Iraq. Additionally the delay rate in diagnosis of smear positive patients in Baneh is more than its' expected rate in the whole country (127 day) (18,1). In comparison with other studies in Italy and England, the delay rate in diagnosis in our country is more. This rate in Saudi Arabia is 60 days (18). Furthermore high incidence rate of extra pulmonary tuberculosis in comparison with global rate (15%) could be because of the failure in diagnosis of pulmonary tuberculosis, false positive diagnostic cases and increased incidence of HIV infection (15). Extra pulmonary tuberculosis in Baneh involves abdomen more than the other organs which is similar to whole country. According to significant gap between the incidence rate of TB in Baneh and its' expected rate, it is important to identify epidemiological differences and at risk points of the city.

Also diagnostic interventions especially in at risk age groups, assessment of diagnostic procedures in health care centers, enrichment of related frameworks, people training, enforcement of health care workers playing role in control of TB, and following up people whom in close contact with tubercular patients is necessary.

The most incidence rate of TB in Baneh is in age group 65 and above. This pattern is similar to industrial countries, but in these countries this result is because of tight control and suitable diagnostic interventions, but in developing countries the risk of TB infection has still remained high such that more than 75% of these patients are younger than 50 y/o and the most mortality rate related to TB is in the productive age groups (15-59 y/o), so the most complications of this disease is related to this age group (15,2,1).

The incidence rate of TB in female is more than male in Baneh, according to studies done in Iran, this rate is more in female than male in all age groups. The incidence rate of TB before adolescence in female is 5.2 times more than male, which is similar to Golestan and Ardebil, but a study in Mazandran shows no meaningful differences between male and female (16,17). Some studies show significant differences between female and male, for example in some studies in India and other Asian countries the incidence rate of TB in female is more than male (18). HIV co-infection with Tuberculosis is a public health issue and its' control need epidemiological studies and the first step is assessment the prevalence of HIV infection in tubercular patients. more efforts are needed to reach to the expected smear positive TB diagnostic rate (70%) and also to decrease the prevalence rate and mortality rate of TB to 50 until 2015 and eradication of TB until 2050 (decrease the incidence rate to 1 per 1000000)(19-21).

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