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Epidemiological Study of Tuberculosis in Health Centers of Yazd City during 2005-2014

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ABSTRACT

Introduction: Tuberculosis (TB) is one of the most important infectious diseases in the recent century caused by Mycobacterium (MB) tuberculosis. Despite new medical technologies and effective drugs, it still causes human deaths. This study aimed to investigate the trend and factors affecting TB prevalence in Yazd city from 2005 to 2014.

Methods: In descriptive study, the medical files of TB patients referring to Yazd health and treatment centers from 2005 to 2014 were investigated. frequency, mean, standard deviation, and 95% confidence interval were calculated and reported for quantitative data, and the frequency and percentage are reported for qualitative data.The patients' demographics and disease features were recorded in a checklist and analyzed using SPSS version16 software.Its confidence Level was 95%.

Results: In this study, 882 TB patients were studied, out of which 51.9%(458) were male 57.7%(509) were Iranian, 42.3%(373) were from other nationalities, and 33.8%(298) Of Them were over 80 years old . The average age of TB patients studied was 49.32±17. The percentage of patients with pulmonary TB and patients with extrapulmonary tuberculosis was 71%(626) and 29%(256), respectively.

Conclusion: This study shows that health officials must pay more attention to TB disease in Yazd city. Enhancing life standards, active case-finding among prisoners, increasing physicians' and people's awareness about the health and treatment system services, and taking samples from suspected patients can play a crucial role in decreasing this disease.

Keywords: Epidemiological characteristics, Mycobacterium tuberculosis, Trend of disease, Tuberculosis

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Introduction

Tuberculosis (TB) is a chronic bacterial disease caused by Mycobacterium (MB) species, such as MB. bovis, MB.africanum (1) and, in most cases, M. tuberculosis (2). The history of TB dates back to several years ago (3). It can be categorized according to the anatomical location of the disease, including pulmonary and extrapulmonary TB. If MB involves the parenchyma of the lungs, it is called pulmonary TB, and if it involves other organs except for the lungs, it is referred to as extrapulmonary TB. Furthermore, MB can spread through the circulatory system in all organs of the body and cause pathological lesions along with general symptoms, in which case it is referred to as military TB (3). TB, among single-agent infectious diseases, causes the highest mortality rate, which accounts for 25% of preventable deaths in adults living in developing countries. According to previous studies, it is clear that untreated TB is often fatal and about one-third of patients will die within 5 years in most countries before drug therapy (3).

About one-third of the world population is infected with MB tuberculosis or is at risk of TB, about 9 million people get infected with active tuberculosis, and about 1.5 million people die from this disease (4). The income of countries and the budget allocated to health can affect the incidence of TB. In a study conducted in 2008, the incidence of TB in low-income countries was 410 cases, in countries with a moderate to low income, it was 180,in middle-income countries, there were 73, and in high-income countries, 8 cases were reported per 100,000. In general, the incidence of TB has declined since 1990, and in 2008, 5.7 million cases of TB were reported, including 2.7 million cases pulmonary TB with positive smear, 2 million cases of pulmonary TB with negative smear, and 0.8 million cases extrapulmonary TB. The goal of the World Health Organization (WHO) was to detect 70% of the cases by the year 2000, which was changed to the year 2005 after reviewing. In 2008, 110 countries achieved this goal. In 2008, the success rate of TB treatment was 86% with the DOTS strategy, which is more than the predetermined level (5-7).

According to the WHO, countries are divided into six regions in terms of TB, one of which is the Eastern Mediterranean region. This region includes countries, such as Iran, Afghanistan, Pakistan, Iraq, Jordan, Lebanon, Syria, Yemen, Saudi Arabia, Palestine, Libya, Tunisia, Somalia, Morocco, Cyprus, Kuwait, Djibouti, Oman, Qatar, and Bahrain. The number of new cases of TB in this region is about half a million people a year. The estimated annual incidence of TB in Pakistan is 135 people per 100,000 people in Pakistan. Considering the population of 140 million people in Pakistan, about 190,000 people are infected with TB per year, which is considered as the largest number of annual cases in the Eastern Mediterranean region (3). In Iran, the incidence and prevalence of TB are not the same in all parts of the country. It is more prevalent in marginal areas of the country and has a lower prevalence in central provinces (8). On average, about 70 patients with TB have filed annually in Yazd city. Filing is based on laboratory results and the diagnosis of an infectious disease specialist. These patients are followed up during treatment. Patients' information is transferred to Yazd TB notebook or TB software. Since the epidemiology of this disease in different regions may change over time and no study was conducted on the epidemiology of tuberculosis in Yazd Province in recent years, there is no study investigating the disease cases over a period of 5 years. This study examines the epidemiology of this disease in Yazd Province during the years 2005 to 2014.

Methods

This descriptive retrospective study was conducted from 2005 to 2014. The study population was all patients who suffered from TB during 2005-2014 and were filed and treated in one of the health centers of Yazd. The studied variables include age, sex, nationality, place of residence, disease location (pulmonary, extrapulmonary), type of disease (positive smear,

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negative smear), treatment outcome, and the ratecase detection. This study was conducted after obtaining legal permissions and with full respect for ethical issues.

The data were analyzed by SPSS version 16 software and descriptive and analytical statistics (quantitative data: mean, standard deviation, and 95% confidence interval, and qualitative data: the number, and percentage)were used based on the goals of the study. Since this is a descriptive study using secondary data analysis method, both quantitative and qualitative data were calculated and reported. The report is in tables and graphs according to the nature of the data.

Results

In this 10-year study of TB in Yazd, 882 patients were diagnosed with TB, 51.9% (458 people) of them were male and 48.1% (424people) were female. The mean age of TB patients in Yazd city during the study was 49.32 ± 17 years and the age range was one to 99 years old. The results of the study show that, on average, over the last 10 years, 33.8%(298 people) of patients were in the age group of 80 and older, after which the age group of 70-79 years old with 15.1% (133 people) of patients, and the lowest age group was 20-29 years with 1/1% (10 people) of patients. Investigating the frequency of TB according to different nationalities shows that 57.7% (509 people) of patients are Iranian and 42.3% (373 people) of patients are from other nationalities. According to the place of residence, 87.1% (768 people) of the patients live in the city and 12.9% (114 people) of the patients live in the village. The frequency of TB patients in Yazd in different months indicates that the highest frequency of patients is in February and March and the lowest frequency is in April.

The frequency of TB cases during the study shows that the disease trend is increasing during these 10 years. The number of pulmonary TB patients includes 71% (626 people) of all cases and extrapulmonary TB is 29% (256 people) (Table 1). The incidence of TB in recent years in Yazd Province indicates that 44.6% (393 people) of the cases are related to positive smear and 29% (256 people) have extrapulmonary and the least amount is related to MDR cases. This study indicates that 90.6% (799 people) of patients are new, 3.2% (28 people) of them are relapsed, 1% (9 people) are treatment after being absent, and 5.2% (46 people) are other cases (Table 2). Twenty-nine percent of TB cases studied during these 10 years were extrapulmonary TB. Distinguishing all types of extrapulmonary TB indicates that bone TB has 23.4% (60 people) of extrapulmonary TB cases, followed by lymph nodes with 20% (52 people) and pleuro with 16.4%, (42 people) and the urinary tract and skin has the least frequency.

The rate of detecting new cases of positive smear TB (positive smear ratio in suspected cases) is, on average, 1.58% over the past 10 years. The highest rate of detecting new cases of smear-positive pulmonary TB is in the year 2005 and the lowest is in the years 2012 and 2014. Investigating the degree of positive sputum of patients reveals that 56.8% (224 people) of cases are one positive, 13.7% (56 people) are two positive and 19.6% (78 people) are three positive. The study showed that 90.9% (802 people) of the patients were treated with treatment kit number one, 8.2% (72 people) of the patients were treated with treatment kit number two, and 0.9% (8 people) of the patients were treated with other treatment groups. The treatment group number one is mainly used for new cases and group two and other groups for failure, relapse, and MDR-TB cases. The study of the effects of drug complications in TB patients in Yazd Province during these 10 years shows that the most common symptoms during treatment include itching, a rash with fever, edema, ulcers in mucous membranes and shock, and then vomiting which is 5.8%(50 people), Jaundice 5.1%(44 people), and the lowest is related topurpura and acute renal failure. A total of 16.4% (142 people) of the patients had drug treatment complications.

The treatment results of the studied patients indicate the highest frequency was related to the

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columns of cure and completion of treatment 37.8% (333 people), 37.6% (332 people) completion treatment period, 4.2% (37 people) absence of treatment, 7.4% (65 people) death, 1.9% (17 people)transition, and 1.8% (16 people) misdiagnosis.Moreover, investigating the history of patients' admission with TB show that51% (450 people)had no history of admission and 36.9%(262 people) had a history of admission. Investigating patients and others are unknown. Besides, delayed status in the diagnosis of TB in this study reveals an average of 178 days of delay in the diagnosis of TB, which can be dangerous to other people in the community.

Table 1. Demographic status of TB patients in Yazd from 2005 to 2014 (percent)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gender	Male	52.2	48.6	45.5	56.7	59.4	50	44.3	51.5	49.2	57
	Female	47.8	51.4	54.5	43.3	40.6	50	55.7	48.5	50.8	43
Nationality	Iranian	53.7	50	63.6	61.1	53.1	48.9	52.9	57.6	63.6	66.7
	Non-Iranian	46.3	50	36.4	38.9	46.9	51.1	47.1	42.4	36.4	23.3
Place ofresidence	city	80.6	68.1	80.3	84.4	81.2	91.1	94.3	97	89	95.6
	Village	19.4	31.9	19.7	15.6	18.8	8.9	5.7	3	11	4.4
Type of TB	Pulmonary	68.6	62.5	67	72	70	74	67	70.7	82	68
	Extrapulmonary	31.4	37.5	33	28	30	26	33	29.3	18	32

Table 2. Frequency of TB from 2005 to 2014in termsofTBtypesin Yazd city

	The occurrence of pulmonary TB								
Year	Positive Smear	Relapse	Negative Smear	Unknown Smear	Treatment Failure	Fter Absence	MDR	Other	Total
2005	32	1	12	·	·	·	·	1	46
2006	33	1	10	·	·	1	·	·	45
2007	33	1	7	2	·	1	·	·	44
2008	32	3	28	1	·	1	·	·	65
2009	46	·	9	8	2	2	·	1	68
2010	48	2	3	6	3	1	1	3	67
2011	31	4	3	7	·	1	·	2	48
2012	38	5	8	11	1	·	2	8	73
2013	56	5	10	12	4	1	1	9	97
2014	44	6	13	6	2	1	3	1	78
Total	393	28	103	53	12	9	7	25	626

Discussion

The study of the status of TB patients in Yazd Province showed some epidemiological conditions about tuberculosis in this region.

In 1993, the WHO declared TB disease as a global urgent issue.There are about 10 million new TB cases in the world per year, only two-thirds of which are diagnosed and treated, and over 50% of cases are treated incompletely.The incidence of several epidemics of this disease in the last two decades has made it very obscure to control the disease shortly.The epidemic of the AIDS virus, followed by multi-drug resistant tuberculosis (MDR-TB), has pushed back the current world for more than a century (1), despite the huge advances made in the field of tuberculosis control. The reported TB for the world has been 125 cases per 100,000 people (9) and in Iran 23 cases per 100,000 people (10).However, Iran is bordered by two countries, Afghanistan and Pakistan, which are among the 22 countries with a high burden of illness in the world, as well as the vicinity of Iraq (11-12). Besides, referring a large number of Afghans to Yazd city to get the treatment can increase the cause of the issue.

In this study, the ratio of men and women was not much different. Severalyears of investigation in this study shows that in 2009 and 2014, the percentage of males had a significant increase in the incidence of TB. The number of females was more than males only in 2011. However, the

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number of males during these 10 yearswas more than in females generally. In a study done on the epidemiological investigation of TB in LorestanProvince in the years 2008 and 2009, in terms of sexual distribution, indicates that the number of male patients was more than female patients (13). Similar studies conducted by Mohammadi (14) and Najafzadeh (15) revealed thatthe prevalence of TB in males was higher; which is in line with the currentstudy.A study conducted by Gholamiet al. in Urmia(16)showed that the number of TB cases in males is more than females, which can be due to more men's presence in the community as well as more encountering with different people.Another study conducted by Hazrati in Ardebil(17) indicated that out of 96 patients with positive smear pulmonary TB,the number of men was slightly higher than women which is consistent with the results of the presentstudy. A study conducted by Soltani et al showed that the number of pulmonary TB cases was more in males than females(18).However, in some studies, inconsistent resultswere observed and the number of cases in females was more than males(19-20). Anotherstudy conducted by Sufiyan(21),demonstrated thatthe gender ratio of patients(males to females) of Arak city was 1.62, which is not in line with the present study.

Investigating the age status of patients in the last 10 years in Yazd showed that most patients were 80 years or older. The study of the mean age of patients with TB in Yazd shows that the mean age of patients during these 10 years was 49.32. Another study conducted on TB patients in Gonabad (22)Province over a period of 8 years, showed thatthe highest age group was older than 71 years old, which is consistent with thisstudy. A study conducted in Lorestan Province (13)showed thatthe most involved group was young people, which is not consistent with the results of this study. Another study conducted in Damghancity (13) showedthat TB patients over 70 years old and10-30years oldwerethe most involved age groups. A study conducted by Gholamiet al. (15).revealed that the highest incidence of the disease was observed in the age group of 31-40 years old, which is consistent with the present study. According toa study of Mohammadpour (22), the most cases were in the age group of 60-80 years old, andaccordingto a study of Alaei (23), in the age group of 61 to 70 years old and based on the studyofFarchi in Lazio, Italy (24), the mostcases were in the age group of 10 to 24 years old.The first two studies are in line with the current study and the third one does not match the presentstudy.A study conducted by Gholamiet al. (16)showedthat the mean age of the patients was 51.7 ± 19.4. Another study carried out by Hazrati(17) indicated thatthe mean age of 297 patients was 44 years old and the standard deviation was 18.1.In general, the mean age in this study was not significantly differentfrom the other parts of the country. Moreover, having a lower mean age in the patients indicates lower control measures and higher mean age indicates a better status of TB control in the region. About 49% of patients are over the age of 70 which reveals proper control measures in Yazd city for TB disease.

Most of the patients in this study were Iranian in terms of nationality, although this difference was not significant. Considering that Afghan workers usually come to different regions of the country for work and income especially to Yazd, since it has a better employment status, to be engaged in building and construction workshops. It can play a major role in the spread of the disease. Since they live in certain places with less sanitary facilities and are constantly displacing, they have a great role in the spread.In 2006, the proportion of Iranian and Afghan patients was the same and in 2010, the number of non-Iranian patients surpassed Iranian patientsof diseases in the community; therefore, a proper way of treatment is needed for them. Astudy carried out by Sufiyan in Arak (21), demonstrated that most of the patients were Iranianwhich is not in line with the results of this study. Moreover, according to the results of a study entitled "a 5-year-epidemiological

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examination of TB patients referring to Rafsanjan health centers in 2010"(25), most of the patients were Afghan.It contradicts the results of the current study. The frequency distribution of TB patients at the level of health centers in Yazd showed that the highest percentage was related to the MaskanvaShahrsazi health center and the lowest belonged to Qods health center, which was due to covering 2 health houses with a very heterogeneous population of other nationalities. Furthermore, the proximity to the furnaces and Afghans canincrease the cause of the issue.

The majority of those who were surveyed lived inside the city. Inthe study carried out by Gholamietal. (16), most of the patients lived in the city. Another study was conducted by SotoudehMarametal. (26),and it was observed that the number of patients in urban areas ishigher than in rural areas.A study carried out by Hazrati (17) on the epidemiological study of TB in Ardabil city indicated that most patients lived in the city.Sufiyan'sstudy (21) showed that most patients were urbanresidents. Inthe study conducted by Soltani et al.(18), those living in urban areas were slightly more than those living in rural areas,which is not in line with the results of the present study.

This study showed that the highest frequency of tuberculosis patients in Yazd was in February and March.Investigating the epidemiological study of pulmonary TB in Urmia (16) during the years 2005-2008 showed that most of the cases were diagnosed in May, and the lowest number of cases were diagnosed in November, which is different from the studies done in Yazd. It should be considered that in the cold months of the year, people are more likely to transmit TB, especially positive smear TB due to more accumulation in covered areas or inappropriate ventilation, and closer contacts.

The study of patients' delayed status in the diagnosis of TBshowed that there is an average of 178 days delay in the diagnosis of TB, which can be dangerous for the patient and other people in the community which causes a lot of expenses.Delay in diagnosis, in addition to increasing mortality and disability, increases the duration of disease transmission. To control TB, the delay time should not exceed 21 days, and the total delay time should not exceed 28 days (27).Studies conducted by Van Wall et al. in Tanzania (28) showed thatthe average patient delay was 162 days and the doctor's delay was 23 days. A study in Ethiopia on 700 TB patients (29) showed thatthe mean delay in referral to the physician was 78.2 days and the doctor's mean delay in diagnosis and treatment was 9.5days. Galbern et al. (30) reviewedthe doctor's delay in the diagnosis of pulmonary TB in the French population. In their study, 54% of patients had a doctor's delay of 28 days. A study entitled "Definite Delayed Diagnosis in Pulmonary Tuberculosis Patients in Mashhad" (31), stated that 86 patients were examined, and there were more men than women. The age of the patients was from 17 to 83 years old. The mean delay of the patient was 14.69 ± 10.91 days and the total mean delay was 99 ± 44.70 days in diagnosis.

One of the strengths of this study is the inclusion of all patients from 2005 to 2014 in the study (study on the whole statistical population). ProblemsHard access to patients , dispersion and being from other nations were the problems of the study.

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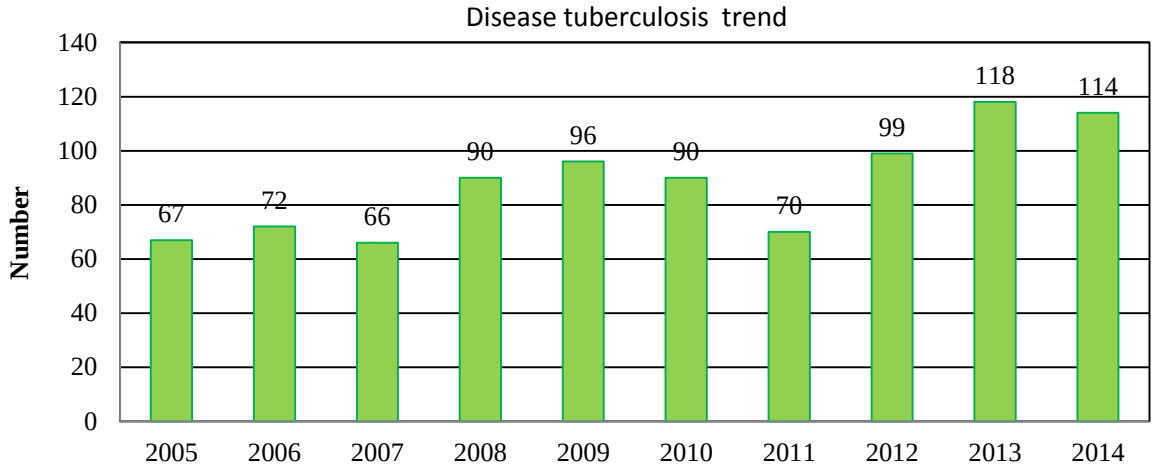

Diagram1. TB frequency in yazd 2005-2014

Conclusion

The results of this study revealed that the number of men with tuberculosis in Yazd is higher than women. Most people in the study with tuberculosis were old. The proportion of Iranians with tuberculosis in Yazd was higher than those of other nationalities. Most TB patients in this study live in urban areas. The disease trend has been increasing in Yazd Province for ten years.

The results of this study indicate that the condition of TB in Yazd requires more attention from health authorities in the field of education and treatment of this disease and more efforts should be made to resolve the existing problems.

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Author Contribution

H. Khani interpreted the data. M. Falahati helped to collect the data. MH.Lotfi participated in the planning and writing and contributed to the statistical analysis, and H. Hatami was the lead editor of the project and contributed to the writing.

All authors read and approved the final manuscript.

References

1. Mirhaghani L, Nasahi M. National TB Guidelines, Department of health and Medical Education, central management of fighting contagious disease. 2002: 1-90.
2. Rom wn, Garay SM. tuberculosis. Boston: Mass: Little, Brown and Company Publication. 1996: 395-399.
3. Shirazi GH. Tuberculosis and the Principles of Fighting. 2000.
4. Nasehi M, Mirhaghani L. National TB Guidelines, National Technical Committee Approved the Struggle Against Tuberculosis. Department of Health and Medical Education, Central Management of Fighting Contagious Diseases. 2nd Ed, 2010.
5. Dye C, Lonnroth K, Jaramillo E, et al. Trend in Tuberculosis Incidence and Their Determinants in 134 Countries. Bulletin of the World Health Organization. 2009; 87(9): 683-691.
6. Dye, C, Maher D, Weil D, et al. Targets for Global Tuberculosis Control. The International Journal of Tuberculosis and Lung Disease: The Official Journal of The International Union Against Tuberculosis and Lung Disease. 2006; 10(4): 460-462.
7. Dye C, Bassill A, Bierrenbach AL, et al. Measuring Tuberculosis Burden, Trends, and The Impact of Control Programmes. The Lancet Infectious Diseases. 2008; 8(4): 233-243.

[Downloaded from jhr.ssu.ac.ir on 2026-09-16]

[DOI: 10.18502/jchr.v9i3.4258]

8. Azizi F, Hatami H, Janghorbani M. Epidemiology and Control of Ccommon Disorders in Iran. 2nd Ed. Tehran: Khosravi Publisher Institution Publication. 2004. [Persian]
9. World Health Organization. Global tuberculosis report 2012. WHO, Geneva. 2012.
10. http://www.cdc.hbi.ir/TB-Situation- in - World.aspx.
11. Kasper DL, braunwald E, Hauser S, et al. Tuberculosis In: Harrison's principle of Internal Medicin. 17th Edition. USA: McGraw-Hill. 2008: 953-966.
12. Amani F , Bashiri J, Garousee B , et al. Epidemiologic Study of TB in Ardabil City in Years 2002-2005. Journal of Ardabil University Medical Sciences. 2007; 7(3): 236-241.
13. Raham M, Azrghon A, Zndadel A. Epidemiology of Tuberculosis in Lorestan, 2008-2009.Quarterly Research Journal(Yafte). 2012; 14(4): 41-47. [Persian]
14. Mohammadi A, Mansoryan A, Nokandeh Z. Epidemiological Study of Tuberculosis in Damghan City (Iran) During 2003-2007. Koomesh. 2008; 9(4): 315-320. [Persian]
15. Najaf Zadeh H, Ghorbani K. Epidemiology of Tuberculosis in A Health Center in Rasht City in 86 Years. Poster Presented at 5th National Congress of Tuberculosis. 2009.
16. Gholami A, Gharehaghaji R, Moosavi L, et al. Epidemiologic Survey of Pulmonary Tuberculosis in Urmia city during 2004-2007. Knowledge and Health. 2009; 4(3): 19-23. [Persian]
17. Hazrati S, Khaligh N, Moeini A, et al. Epidemiology of Tuberculosis in Ardabil City from 2005 to 2010. Journal Health and highen. 2013; 4(2): 103-109. [Persian]
18. Khalifesoltani S, Afzali H, Arbabi M. Epidemiology of Tuberculosis among Patients Referred to the Center Against Tuberculosis in Kashan, 1993-95. Feyz Journal. 1998; 4(1): 88-81. [Persian]
19. Moeinin L. Epidemiological Study of Clinical Symptoms and Paraclinical Signs of Tuberculosis Patients in Hospitalized in ValiAsr Hospital (may 1997-98). Arak Medical University Journal (Rahavard Danesh). 2002; 5(1): 37-41. [Persian]
20. Yousefi R, Bashiriyan S, Mohamadtaheri R. A Study on Radiologic Finding, Clinical Signs and PPD Tests in Sputum Positive in Hamadan during 1995-1999. Scientific Journal of Kurdistan University of Medical Siences 2000; 15(4): 24-28. [Persian]
21. Sofian M, Zarinfar N, Mirzaee M, et al. Epidemiology of Tuberculosis in Arak, Iran. Journal of Semnan University Medical Science (Koomesh). 2009; 10 (4): 261-266. [Persian]
22. Mohamadpour A, Fani MJ , Motallebi M, et al. Epidemiology of Tuberculosis during 1372-1380 in Gonabad city. Journal of Gonabad Faculty Medical Sciences(Ofogh-e-Danesh). 2002; 8(1): 45-51.
23. Alaei K, Mansouri SD, Alaei A. Study on the Prevalence Rate of Clinical Tuberculosis in HIV Positive in Kermanshah Province, 1998-2001. Journal of Mazandaran University of Medical Sciences. 2002; 12(35): 20-28 [Persian]
24. Farchi S, Mantovani J, Borgia P , et al. Tuberculosis Incidence, Hospitalization Prevalence and Mortality in Lazio, Italy, 1997-2003. The International Journal of Tuberculosis and Lung Disease. 2008; 12(2): 193-198.
25. Zia Sheikholeslami N, Rezaeian M, Heidary A. Epidemiology of Tuberculosis in Patients Referred to Rafsanjan Health Centers(2002-2006). Journal Sciences Research Health and Hygen. 2010; 1(1): 66-73. [Persian]
26. SetoudehMaram E, Fararooei M,Incidence of Tuberculosis in Cities of Fars. Journal of Qazvin University of Medical sciences.1999; 3(3): 67-74. [Persian]
27. Lambert ML, Stuyft P, Van der. Delays to Tuberculosis Treatment: Shall We Continus to Blame The Victim?. Tropical Medicine and International Health. 2005; 10: 945-946.
28. Wndwalo ER, Morkve O. Delay in Tuberculosis Case Finding and Treatment in Mwanz, Tanzania. The International Journal of Tuberculosis and Lung Disease. 2000; 4(2): 133-138.
29. Demissie M, Lindtjorn B, Berhane Y. Patient and Health Service Dealy in the Diagnosis of Pulmonary Tuberculosis in Ethiopia. BMC Public Health. 2002; 2(1): 23.
30. Gulbaran Z, Pretest S, Dusser D. from First Symptom to Diagnosis and From Diagnosis to Treatment of Tuberculosis, Still Along Dealy. Revue De Pneumologie Clinique. 1996; 52(1): 20-25.
31. Rezaeetalab F, Akbari H, Rezaeetalab GH. A Long Delay in Definite Diagnosis of Pulmonary Tuberculosis and the Role of Physician Delay. Medical Journal of Mashhad. 2008; 51(1): 37-40. [Persain]

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