

Research article

Tuberculosis case finding in Rafsanjan: An epidemiologic study in Iran

Ryahi A¹, Radman M², Arab BaniAsad F³, Salehi Shahrabaki MH⁴, Bidaki R^{5*}, Akbarinasab J⁶, Reza Hosseini O⁷, Assar Sh⁸

1. MD. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

2. MD. Assistant prof of Otolaryngology, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

3. Medical student. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

4. MD. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

5. MD. Assistant Professor of psychiatry. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

6. Bsc of Health policy. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

7. MD. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

8. Bsc of Microbiology. Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Corresponding author:

Reza Bidaki

Iran .Rafsanjan. Psychiatry service

Email Address: Reza_Bidaki@Yahoo.com

Tel: +983915230081

Fax: +983915230086

Abstract

Aim and Background

Tuberculosis remains a major etiology for mortality in developing countries .It is a infectious disease that is increasing in last decades . It is more prevalent in crowded and low hygienic places. The purpose of

this survey is case finding and identifying of prevalence of tuberculosis in Afghani community of the Rafsanjan region, Kerman province, Iran..

Materials and methods

This survey is a descriptive and cross-sectional study. All the Afghans in Rafsanjan were screened on physical examination and three sputum samples. Screening was done by physical examination like lung auscultation and collecting three samples of sputum. If the result was negative physical examinations were repeated and or pharyngeal exam was considered. When sinusitis diagnosed, Patients were treated by antibiotic. Follow up was done after fourteen days. Patients were excluded from the study if symptoms were disappeared. If the symptoms like cough remained after getting antibiotics three sputum samples were collecting again. If the samples were negative or the symptoms were healed on repeated visit, the patient was excluded from the study.

Results

This study was done on about 6000 persons with afghan descent in Rafsanjan. In our study 50.9 percent of patients were male and 49.1 percent were female. About 2 percent of patients have past medical history of TB. About 7.1 percent of patients had positive family history of TB. The most relative person to the patients that suffered from TB was their mothers (37%) and then their fathers (22%). About 13.2 percent of the patients' needs follow up.

Conclusion

Epidemiologic study about a disease in a population, cause acceleration of awareness about it. Its result is better than planning for attack against disease. It is concluded that Afghans population are a high risk group for TB. **Copyright © WJMMS, all rights reserved.**

Key words: Tuberculosis, Prevalence, Rafsanjan

Declaration of interest: None

Introduction

Tuberculosis (TB) prevalence surveys are the most directed tool to measure the TB burden in a population and monitor the performance of TB control programs in areas where routine surveillance systems are weak (1,2), but are logistically challenging and costly. The association between tuberculosis (TB) and poverty is well documented. Several studies and reviews concluded that, poverty not only exposes a person to more TB infection (3-10) but also influences all aspects of the TB disease process (11-14). It has been documented that poverty is associated with delayed care seeking (15, 16), late diagnosis (15, 17) progression of the disease (18), delayed initiation of treatment (15, 18), and inadequate follow up (19-21). It is also noted that poverty leads to poor adherence to treatment, more complications and poor treatment outcomes like default from treatment (4, 10, 22-25). It is clear that migration and its problems can lead to poverty and Socio-economical factors, sudden urbanization and psychological stress may influence the pattern of tuberculosis morbidity and infection among refugees as compared with the original population.

Annually 9 million new cases and 3 million mortality is because of TB (26).According to the WHO reports, 80% of patients with TB live in 22 countries specially Afghanistan and Pakistan (27-29).In England and Wales, it was shown that TB tends to be focused in some subgroups (30).In India has been reported nearly 20.7 million diabetic adults that 900,000 incident adult cases of pulmonary tuberculosis in 2000 (31).It has been shown that, incidence and prevalence of TB are higher in Golestan province in comparison with other provinces in Iran(32).

Many epidemiological studies have been conducted at different areas and at various times to determine incidence and prevalence of tuberculosis infection. We prepared this research in 2009 on all Afghans that are living in Rafsanjan region.

Materials and methods

This was an observational, ecological survey conducted during 2009. In this study, demographic form, data for diagnosis, treatment and outcomes were collected. Data were analyzed by SPSS.

In this study 30 research performers were trained about transmission ways and preparation of sputum samples and TB screening in intermittent meeting in about 2 months. About middle of September screening was started. As low socio – economic and education of population, face to face interview was suggested. Doubtful persons like who had chronic cough more than 2 weeks were been selected and standard form was completed. Screening was done by physical examination like lung auscultation and collecting three samples of sputum. Collected samples were transferred to laboratory for seeing the mycobacterium tuberculosis, etiologic agent of tuberculosis. Results of sputum samples were rendered to the doctor. If the result was negative physical examinations were repeated and oropharyngeal exams were considered. Patients were treated with antibiotic by sinusitis diagnosis. Follow up was done after fourteen days. Patients were excluded from the study if symptoms were disappeared. If the symptoms like cough remained after getting antibiotics, three sputum samples were collected again. If the samples were negative or the symptoms were disappeared on repeated visit, the patient was excluded from the study.

Results

This study was done on about 6000 persons with Afghans descent in Rafsanjan. In our study 50.9 % of patients were male and 49.1% were female. About 2 percent of patients have past medical history of TB. About 7.1 percent of patients had positive family history of TB. The most relative person to the patients that suffered from TB was their mothers (37%) and then their fathers (22%). About 13.2 percent of the patients' needs follow up.

Chart1. Distribution of 6169 patients according to sex

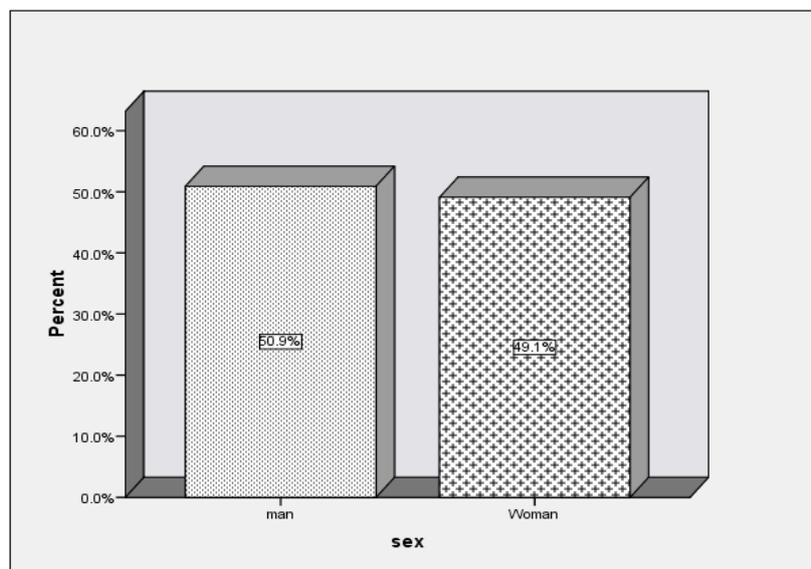


Chart2. Distribution of 6169 patients according to positive past medical history

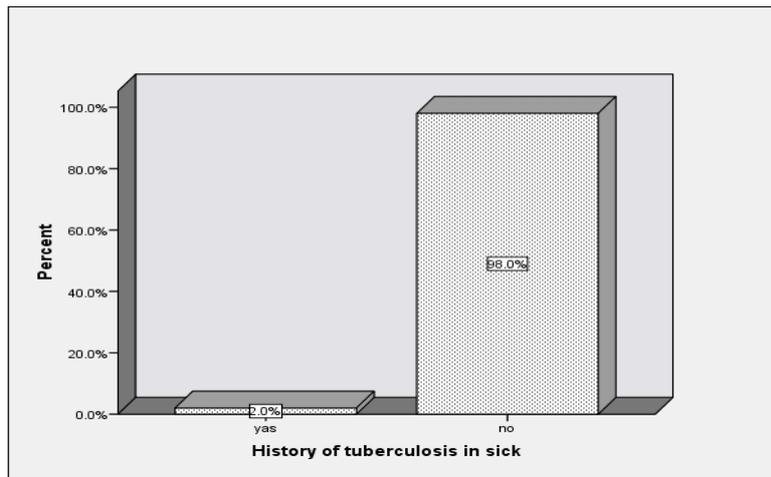


Chart3. Distribution of 6169 patients according to positive family history

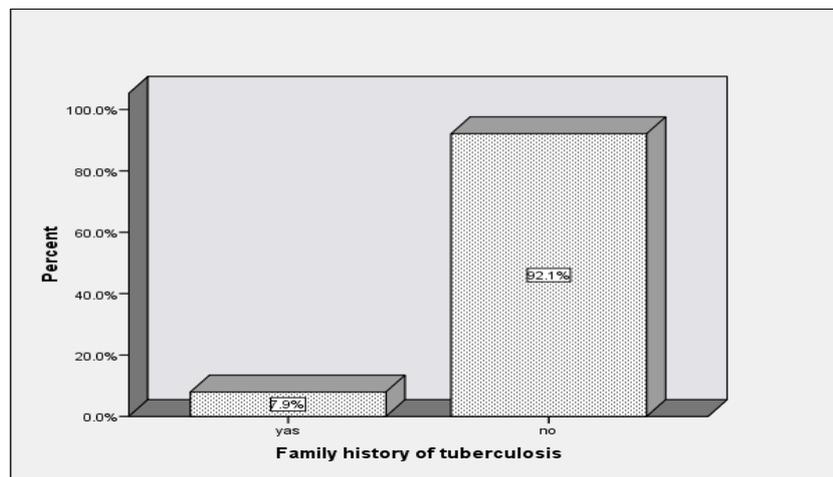


Chart4. Distribution of patients with positive family history according to irrelativeness

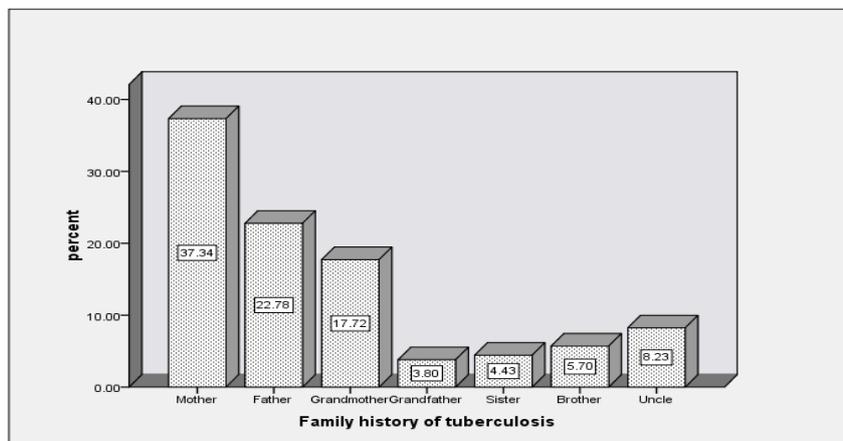


Chart5. Distribution of 6169 patients according to age

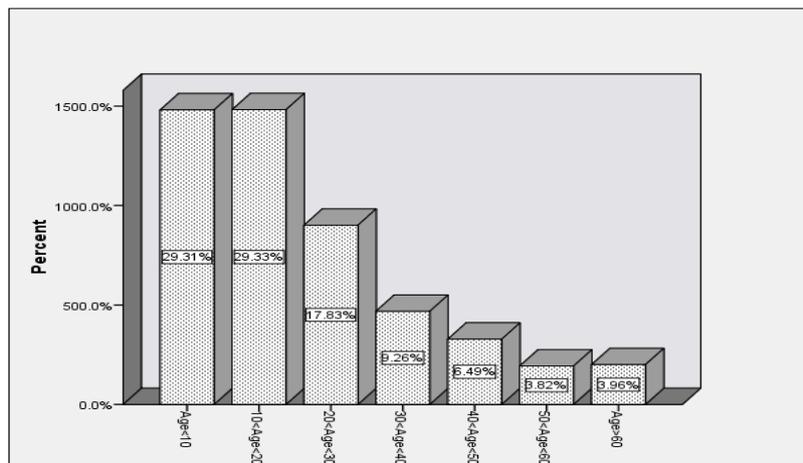


Chart6. Distribution of male patients according to age

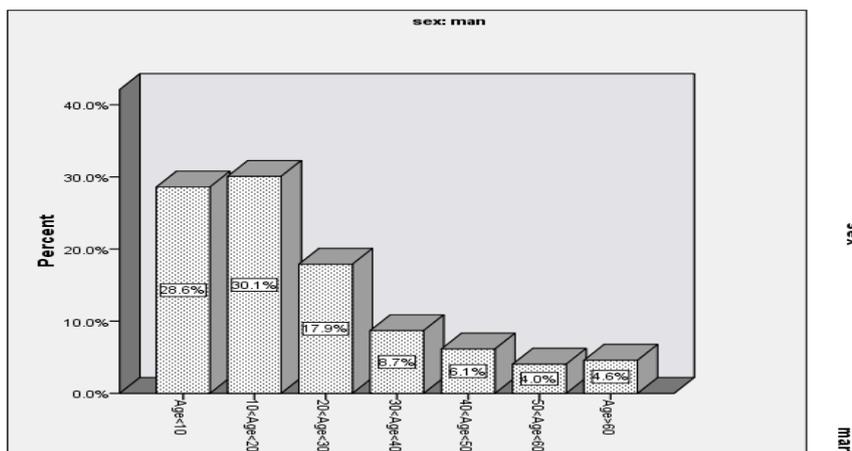


Chart 7. Distribution of female patients according to age

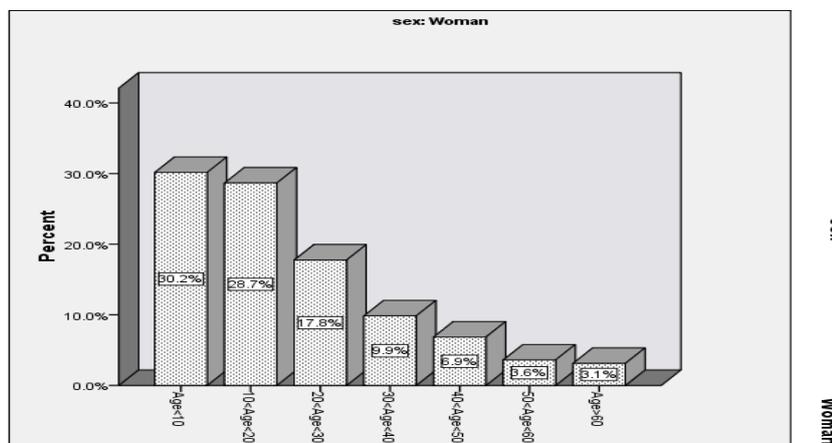


Chart8. Distribution of 6169 patients according to need for follow up

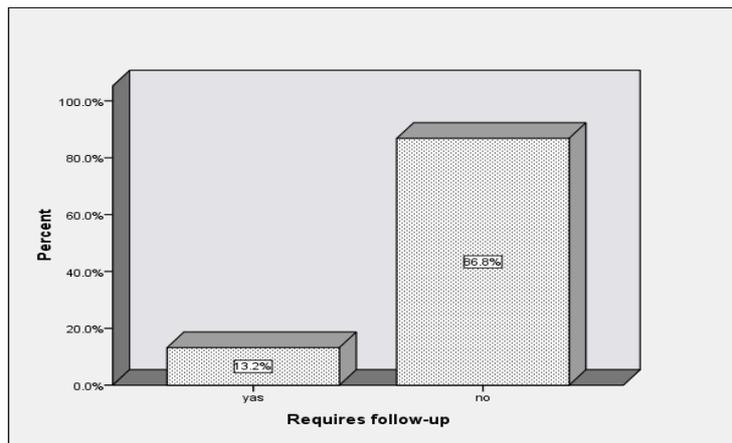


Chart9. Distribution of patients who needs follow up according to age

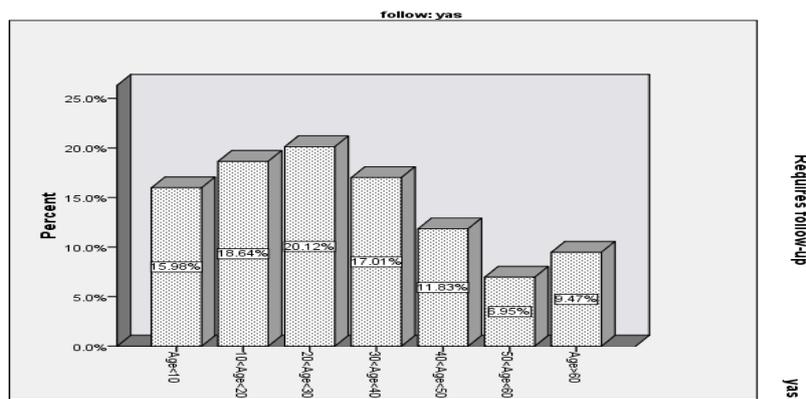
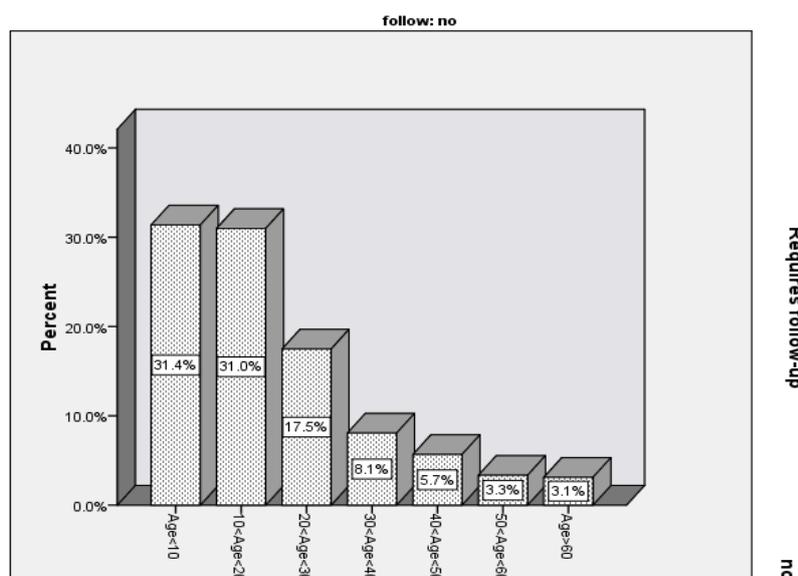


Chart10. Distribution of patients who do not need of follow up according to age



Discussion

In our study population of the both sexes were nearly equal. The population of examined region was young. Approximately, 2% of individuals had previous history of TB. Although its amount is low apparently, but it is significant. This population can spread disease among other persons in the region and out of it. According to familial history, in first irrelativeness, mothers' of patients and then their fathers and in the next relation other family were positive for TB. We could conclude that it is possible that some persons with history of TB are infected by their mother via breast feeding or duration of pregnancy. One other cause is close contact of person with mother, because their fathers are out of home most of the time because of their job. According to chart 8, 13.2% of population must be considered for follow up. As they are in high risk group.

Epidemiologic study of the disease in a population causes acceleration of awareness about it. Its result is better than planning for attack against disease. Afghan population are a high risk group for TB. The purpose of this study was to identifying of TB epidemiology and case finding in afghan province in 2010.

To stop the cycle of transmission, the risk of new generations becoming infected must be restricted by the early identification and curative treatment of newly emerging infective sources. Newly infected persons must be prevented from progression to overt disease (33).

In study that done 1989 in Pakistan the prevalence of TB among refugee children from Afghanistan was about 14 % (34).

In our study only one person was suffering from TB that is lower than Pakistan study. It might show that after 20 years there is a significant reduced in prevalence of TB among Afghan refugees. An important point is in Iran, Afghans children get routine vaccination of BCG like Iranians. It might be the reason of this significant difference.

In a study in Ardabil, Iran, it has been shown that mean age of patients with TB was five years more younger than Mazandaran, Iran study (35-37).

In our study, only one case was detected, but because of young population of this region, it is necessary to educate, train and attention specially in aged group.

Suggestions: Improving life standards like location situation could reduce incidence of TB. Screening due to cure the patients and try to clean the population from TB also must be done. More training must be done to references in consultation centers. All patients with TB may be evaluated for HIV.

Conclusion

Epidemiologic study about a disease in a studied population cause acceleration of awareness about it. Its result is better than planning for attack against disease. Afghans population are a high risk group for TB.

Acknowledgement

The authors would like to thank all the fellow coworkers in Rafsanjan health Center, Rafsanjan, Iran.

University of Medical Sciences and Health Services who cooperated sincerely in the conduction of this survey project.

References

- [1] Glaziou P, van der Werf MJ, Onozaki I, Dye C, Borgdorff MW, et al. Tuberculosis prevalence surveys: rationale and cost. *Int J Tuberc Lung Dis*. 2008;12:1003–1008.
- [2] World Health Organization. TB impact measurement policy and recommendations for how to assess the epidemiological burden of TB and the impact of TB control. Geneva: World Health Organization (WHO/HTM/TB/2009.419). 22. 2009.
- [3] Rieder H (1999) Epidemiologic basis of tuberculosis control. Paris. International Union against Tuberculosis and Lung Diseases.
- [4] Lonnroth K, Jaramillo E, Williams BG, Dye C, Raviglione M (2009) Drivers of tuberculosis epidemics: The role of risk factors and social determinants. *SocSci Med* 68: 2240–2246.
- [5] Tupasi TE, Radhakrishna S, Quelapio MID, Villa MLA, Pascual MLG, et al. (2000) Tuberculosis in the urban poor settlements in the Philippines. *Int J Tuberc Lung Dis* 4: 4–11.
- [6] Stop TB Partnership (2002) Mainstreaming a Poverty Focus within the Stop-TB Partnership. Document 10. Stop TB Coordination Board, 28–29 October 2002, Cape Town, South Africa.
- [7] de AlencarXimenes RA, de Fátima Pessoa Militão, de Albuquerque M, Souza WV, Montarroyos UR, et al. (2009) Is it better to be rich in a poor area or poor in a rich area? A multilevel analysis of a case-control study of social determinants of tuberculosis. *Int J Epidemiol* 38: 1285–96.
- [8] Jackson S, Sleigh C, Wang GJ, Liu XL (2006) Poverty and economic effects of TB in rural China. *Int J Tuberc Lung Dis* 10: 1104–1110.
- [9] Muniyandi M, Ramachandran R (2008) Socioeconomic inequalities of tuberculosis in India. *Expert OpinPharmacother* 9: 1623–28.
- [10] World Health Organization (2005) Addressing poverty in TB control-options for national TB control programmes. Geneva. World Health Organization.WHO/HTM/TB/2005–352.
- [11] Kamolratanakul P, Sawert H, Konsin S, Letmaharit S, Sriwingsa J, et al. (1999) Economic impact of tuberculosis at the household level. *Int J Tuberc Lung Dis* 3: 596–602.
- [12] Muniyandi M, Ramachandran R (2006) Socioeconomic dimensions of tuberculosis control: Review of studies over two decades from Tuberculosis Research Centre. *J Commun Dis* 38: 204–15.
- [13] Zhang T, Tang S, Jun G, Whitehead M (2007) Persistent problems of access to appropriate affordable TB services in rural China: experience of different socio-economic groups. *BMC Public Health*7: 19.
- [14] Hossain S, Larson CP, Quaiyum MA, Khan AI, Zaman K, et al. (2010) Adults with chronic cough in urban Bangladesh: healthcare utilization and management of cases by private practitioners. *World Health & Population* 12: 5–17.

- [15] Rifat M, Rusen ID, Islam MDA, Enarson DA, Ahmed F, et al. (2011) Why are tuberculosis patients not treated earlier? A study of informal health practitioners in Bangladesh. *Int J Tuberc Lung Dis* 15: 647–65.
- [16] Lonroth K, Thuong LM, Linh PD, Diwan V (2001) Utilization of private and public health-care providers for tuberculosis symptoms in Ho Chi Minh city, Vietnam. *Health Policy Plan* 16: 47–54.
- [17] Finnie RKC, Khoza LB, Van den Borne B, Mabunda T, Abotchie P, et al. (2011) Factors associated with patient and health care system delay in diagnosis and treatment for TB in sub-Saharan African countries with high burdens of TB and HIV. *Tropical Medicine and International Health* 16: 394–411.
- [18] Lienhardt C (2001) From exposure to disease: the role of environmental factors in susceptibility to and development of tuberculosis. *Epidemiologic Review* 23: 288–301.
- [19] Murno SA, Lewin SA, Smith JH, Engel ME, Fretheim A, et al. (2007) Patient Adherence to Tuberculosis Treatment: A systematic Review of Qualitative Research. *PLoS Med* 4: e238.
- [20] Jaiswal A, Singh V, Ogden JA, Porter JDH, Sharma RP, et al. (2003) Adherence to tuberculosis treatment: Lessons from the urban setting of Delhi, India. *Tropical Medicine and International Health* 8: 265.
- [21] Santha T, Garg R, Frieden TR, Chandrashekar V, Subramani R, et al. (2002) Risk factors associated with default, failure and death among tuberculosis patients treated in a DOTS programme in Tiruvallur District, South India, 2000. *Int J Tuberc Lung Dis* 6: 780–788.
- [22] Dewan PK, Arguin PM, Kiryanova H, Kondroshova NV, Khorosheva TM, et al (2004) Risk factors for death during tuberculosis treatment in Orel, Russia. *Int J Tuberc Lung Dis* 8(5): 598–602.
- [23] Bumburidi E, Ajeilat S, Dadu A, Aitmagambetova I, Ershova J, et al. . (2006) Progress towards tuberculosis control and determinants of treatment outcomes: Kazakhstan 2000–2002. *Morbidity and Mortality Weekly Report*, April 28, 55 (SUPO1); 11–15.
- [24] Lönnroth K, Aung T, Maung W, Kluge H, Uplekar M (2007) Social franchising of TB care through private general practitioners in Myanmar: an assessment of access, quality of care, equity, and financial protection. *Health Policy and Planning* 22: 156–166.
- [25] Hanson CL (2002) Tuberculosis, poverty and inequity: a review of the literature and discussion of issues. *Stop TB Partnership*. World Health Organization, Geneva.
- [26] Haas DW. Mycobacterial diseases. In: Mandell GL, Bennett JE, Dolin R, editors. *Mandell, Douglas, Bennett's principles and practice of infectious diseases*. 5th ed. Philadelphia: church Hill Livingstone; 2000. 25-78.
- [27] Tuberculosis (TB) Diagnosis. National Institute of Allergy and Infectious Diseases 2008 .from: <http://www3.niaid.nih.gov/topics/tuberculosis/Understanding/diagnosis.htm>
- [28] Diagnosis of Tuberculosis Disease. Centers for Disease Control and Prevention. 2008 from: <http://www.cdc.gov/tb/pubs/tbfactsheets/diagnosis.htm>.

- [29] Porter JD. Geographical information systems (GIS) and the tuberculosis DOTS strategy. *Trop Med Int Health* 1999; 4 (10): 631- 3.
- [30] Antoine D, Maguire H, Story A. Epidemiology and response to the growing problem of tuberculosis in London. *Euro Surveillance : Bulletin Europeen sur les Maladies Transmissibles = European Communicable Disease Bulletin* 2006, 11(3):25-28.
- [31] Catherine R Stevenson , Nita G Forouhi , Gojka Roglic , Brian G Williams , Jeremy A Lauer, Chirstopher Dye, Nigel Unwin . Diabetes and tuberculosis: the impact of the diabetes epidemic on tuberculosis incidence . *BMC Public Health* 2007, 7:234.
- [32] Soheil Rafiee, Sima Besharat, Ali Jabbari, Faranak Golalipour, Ali Nasermoaadeli. Epidemiology of Tuberculosis in Northeast of Iran: A Population-Based Study. *Iranian Journal of Medical Sciences*, Vol 34, No 3 (2009).
- [33] Talbot EA, Moore M, McCray E, Binkin NJ Tuberculosis among foreign-born persons in the United States, 1993–1998. *JAMA*. 2000. 284.22.2894.
- [34] Spinaci S, De Virgilio G, Bugiani M, Linari D, Bertolaso G, Elo O. Tuberculin survey among Afghan refugee children. Tuberculosis control programme among Afghan refugees in North West Frontier Province (NWFP) Pakistan. *Tubercle*. 1989 Jun;70(2):83-92.
- [35] Amani F, et al. Epidemiologic survey of Tuberculosis Disease in Ardebil, between 2002 and 2005 Medical survey. *Journal of Ardebil Medical Science University* 2007; 7 (3): 236- 41.
- [36] Rafiee S, et al. Smear positive pulmonary tuberculosis in Golestan province 18th national congress on tuberculosis .Sanandaj-Iran 2007.
- [37] Resaii A, et al. Tuberculosis epidemiology in Gillan. 18th National Congress on Tuberculosis.Sanandaj-Iran 2007.