## Original paper

# Community Knowledge and Attitudes towards Pulmonary Tuberculosis in Kirkuk 

Mohammed Ali Khalaf ${ }^{\wedge *}$, Dilshad Sabir Mohammed^, Mohammad Mustafa^<br>${ }^{\wedge}$ Department of Medicine, College of Medicine, Kikuk, Iraq.


#### Abstract


Background: Tuberculosis is one of the primary public health problems in developing countries. Knowledge about the disease has been known to increase the risk of spreading the bacteria and the risk of developing the disease.
Objectives: The objective of this study was to assess the level of Tuberculosis knowledge, attitudes among population in Kirkuk city.
Subjects and Method: A community based cross-sectional study using structured questionnaire, 400 respondents were asked questions regarding cause, symptoms, method of transmission of pulmonary TB and their attitude to person infected with pulmonary Tuberculosis.
Results: Most of respondents had heard of pulmonary Tuberculosis with males having better (though not significant) knowledge than females. Although attitude toward TB did not influence caring for sick relatives or friends, it impeded social interactions and marriage prospects with infected persons within the community
Conclusion: Knowledge and attitude toward pulmonary Tuberculosis was generally good in this community. Efforts should be intensified by health authorities in the local government to raise awareness and knowledge of the disease, so as to improve social perception and early recognition of infection.
Keywords: Knowledge, Attitude, Pulmonary tuberculosis, Kirkuk city.

Introduction
Tuberculosis (TB) is a chronic granulomatous bacterial disease mainly caused by Mycobacterium tuberculosis, the disease is mainly transmitted through air droplet containing bacilli and inhaled by healthy individuals, though TB primarily affects the lung, it also affects any parts of the body including kidneys, intestine, brain, bone and lymph nodes ${ }^{(1)}$.
TB is a public health problem in many developing countries, the world health organization (WHO) reported that there were 8.8 million incident cases of TB in $2010{ }^{(2)}$, with rising numbers of human immune deficiency virus (HIV) infections and acquired immune deficiency syndrome (AIDS) case there is a threat of resurgence of TB ${ }^{(3)}$.

Globally the disease kills 5000 people daily with $98 \%$ of the deaths occurring in developing countries mostly affecting young adults in their in their productive years ${ }^{(4)}$, among the 15 countries with the highest prevalence rate, 13 are in Africa which accounts for $31 \%$ of global total, more so as countries in the sub-Saharan region are experiencing great burden of HIV infection, increasing the risk of TB infection in these African countries ${ }^{(5)}$. The control of TB depends mainly on case management using Direct-Observed Treatment Short courses (DOTS) Regimen, DOTS as strategy entails that medications is taken in the presence of care provider ${ }^{(6)}$, DOTS was launched in 1995 as the main strategy in the control of TB ${ }^{\text {(7). }}$

Certain local practices and belief and failure to recognize symptoms early may delay the diagnosis and hence increasing the spread of the disease in the community ${ }^{(8)}$, TB is often associated with Stigmatization and thus may create resistance among patients to seek proper diagnosis and treatment ${ }^{(9) .}$
It is important for the community members to know and realize the symptoms of the disease in order to seek treatment properly ${ }^{(10)}$, In a community with a low level of awareness about the cause, mode of transmission and preventive methods the spreading of TB could be high ${ }^{(11)}$.
Iraq has a high burden of TB and ranks 44th worldwide among countries with a high TB burden and 7th among the countries of the Eastern Mediterranean Region. The estimated incidence of all TB cases based on a total population of 22.9 million was at least 135 per 100000 in the year $2001^{(12,13) .}$
In 2001 a total of 10478 TB cases were notified, which corresponds to a case notification rate of 48 per100 000, and means that Iraq can be categorized as a country with a medium level notification rate ${ }^{(14,15)}$.
In 2012, 2,760 new pulmonary sputum smear positive TB cases were detected against a targeted $3,360(11 / 100,000$ of the population), with an $82 \%$ achievement of the target in comparison with $69.8 \%$ achievement in 2011. ${ }^{(28)}$
The aim of this study was to determine community knowledge and attitude towards pulmonary TB in Kirkuk city.

## Subjects and Methods

This is a community-based descriptive cross-sectional study done in Kirkuk city from the period of $20^{\text {th }}$ October 2013to $1^{\text {st }}$ April 2014, a total of 400 person interviewed, in the hospital (relatives of patients), in the primary health care centers visitors, in the markets and general populations in Kirkuk city respondent socio-demographic characteristics (age,
gender, education, marital status and religious) were recorded.
Data were collected using structured questionnaires; the questionnaires were prepared in English and local languages questions were prepared (Arabic, Kurdish and Turkish).
The knowledge of the correct cause of pulmonary Tuberculosis (PTB) was assessed. A score of one (1) was given to the correct response (bacteria), and zero (0) for the incorrect response and I do not know response, only respondents who were ever heard of TB were asked knowledge questions. A score of 1 was assigned to a response that represented a good attitude for the question, and a score of 0 for poor attitude
Regarding the attitude of people towards PTB, respondent were asked whether patients with PTB should participate in social functions and allowed in public places.
Descriptive data were represented as tables, Chi-square test was used to examine statistical associations between variables and level of significance set as $\mathrm{P}<0.05$.

## Results

Four hundred persons participated in the study. Socio-demographic characteristics are shown in table (1) mean age distribution was 33.2 year.
Regarding the cause of TB, 266 ( $66.5 \%$ ) of respondents knew the cause to be bacteria. Virus (38\%), cold (39\%) smoking (51.5\%), alcohol (41.5\%), and dust (43\%) were incorrectly mentioned as causes of PTB as well as shown in table 2.
Table 3 show that 316 ( $79 \%$ ) respondents knew prolonged cough, 303 ( $75.7 \%$ ) blood stained sputum, 271(67.7\%) chest pain, 265(66.2\%) fever, less commonly weight loss 258(64.5) and night sweating 238 (59.5\%) to be symptoms of PTB.

Cough and sneeze from someone infected with the disease was correctly mentioned as mode of transmission by a greater
proportion of respondents, 319 (79.7\%). Fewer respondents knew hereditary ( $48 \%$ ), sharing drinking utensils ( $18.5 \%$ ), body contact ( $27.8 \%$ ), drinking raw milk ( $22.8 \%$ ) were not methods of transmission of PTB. (58.7\%) respondents said a pregnant woman can transmit PTB to her unborn child as shown in table 4.
A greater proportion of respondents said the PTB is a treatable disease and can be prevented by vaccination. ( $61.2 \%$ and $62 \%$, respectively), with regard to attitude toward persons with PTB, while a greater
proportion where against the acceptance of persons with PTB in social function and public places $(50.7 \%$ and $51 \%$, respectively) as shown in table 5 .
Table 6 show that the association between educational level of respondents and their knowledge of correct cause of PTB is not statistically significant ( $\mathrm{P}>0.05$ ).
The association between the gender of respondents and their knowledge of correct cause of PTB was not statistically significant $(\mathrm{P}>0.05)$ as shown in table 7 .

Table 1. Socio-demographic characteristics of respondents in Kirkuk city in 2013-2014

| Variable |  | Frequency No. | Percentage \% |
| :---: | :---: | :---: | :---: |
| Age(years) | <30 | 231 | 57.75 |
|  | 30-39 | 62 | 15.5 |
|  | 40-49 | 51 | 12.75 |
|  | 50-59 | 40 | 10.0 |
|  | $\geq 60$ | 16 | 4.0 |
| Sex | Male | 202 | 50.5 |
|  | Female | 198 | 49.5 |
| Marital state | Married | 173 | 43.25 |
|  | not married | 227 | 56.75 |
| Educational level | Not educated | 25 | 6.25 |
|  | Primary | 48 | 12.0 |
|  | Secondary | 95 | 23.75 |
|  | Tertiary* | 232 | 58.0 |

Table 2. Respondents knowledge about cause of PTB*

| Causes | Yes |  | No |  | I don't know |  | Total |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | No. | $\%$ | No. | $\%$ | No. | $\%$ | No. | $\%$ |
| Bacteria | 266 | 66.5 | 87 | 21.75 | 47 | 11.7 | 400 | 100.0 |
| Virus | 152 | 38.0 | 177 | 44.25 | 71 | 17.7 | 400 | 100.0 |
| Cold | 156 | 39.0 | 166 | 41.5 | 78 | 19.5 | 400 | 100.0 |
| Poor nutrition | 190 | 47.5 | 136 | 34.0 | 74 | 18.5 | 400 | 100.0 |
| Smoking | 206 | 51.5 | 126 | 31.5 | 68 | 17.0 | 400 | 100.0 |
| Alcohol | 166 | 41.5 | 155 | 38.7 | 79 | 19.7 | 400 | 100.0 |
| Dust | 172 | 43.0 | 136 | 34.0 | 92 | 23.0 | 400 | 100.0 |
| Poor sanitation | 190 | 47.5 | 109 | 27.2 | 101 | 25.2 | 400 | 100.0 |

*PTB: Pulmonary Tuberculosis.
Table 3. Respondent's knowledge of symptoms of PTB

| Symptoms | Yes |  |  | No |  | I don't know |  | Total |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :---: |
|  | No. | $\%$ | No. | $\%$ | No. | $\%$ | No. | $\%$ |  |
| Prolonged cough | 316 | 79.0 | 46 | 11.5 | 38 | 9.5 | 400 | 100.0 |  |
| Blood stained sputum | 303 | 75.75 | 54 | 13.5 | 43 | 10.75 | 400 | 100.0 |  |
| Fever | 265 | 66.25 | 59 | 14.75 | 76 | 19.0 | 400 | 100.0 |  |
| Weight loss | 258 | 64.5 | 71 | 17.75 | 71 | 17.75 | 400 | 100.0 |  |
| Night sweat | 238 | 59.5 | 65 | 16.25 | 97 | 24.25 | 400 | 100.0 |  |
| Chest pain | 271 | 67.75 | 76 | 19.0 | 53 | 13.3 | 400 | 100.0 |  |

Table 4. Respondent's knowledge of method of transmission of PTB

| Method of transmission | Yes |  | No |  | I don't know |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | No. | \% | No. | \% | No. | \% | No. | \% |
| Cough and sneeze from infected person | 314 | 79.7 | 41 | 10.3 | 40 | 10.0 | 400 | 100.0 |
| Hereditary | 120 | 30.0 | 192 | 48.0 | 88 | 22.0 | 400 | 100.0 |
| Sharing drinking utensils | 245 | 61.3 | 74 | 18.5 | 81 | 20.2 | 400 | 100.0 |
| Contact with body clothes, sweating of infected persons | 223 | 55.7 | 111 | 27.8 | 66 | 16.5 | 400 | 100.0 |
| Drinking raw milk | 215 | 53.7 | 91 | 22.8 | 94 | 23.5 | 400 | 100.0 |
| Mother to child transmission | 235 | 58.7 | 80 | 20.0 | 85 | 21.3 | 400 | 100.0 |

Table 5. Respondent's knowledge about the management and their attitude towards persons infected with PTB

| Variable | Yes |  | No |  | $\begin{aligned} & \hline \text { I don't } \\ & \text { know } \end{aligned}$ |  | Total |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | No. | \% | No. | \% | No. | \% | No. | \% |
| PTB is a treatable disease? | 245 | 61.2 | 65 | 16.3 | 90 | 22.5 | 400 | 100.0 |
| There is a vaccine for PTB? | 248 | 62.0 | 45 | 11.3 | 107 | 26.7 | 400 | 100.0 |
| Person with PTB shouldn't be allowed to participate in social function? | 203 | 50.7 | 129 | 32.3 | 68 | 17.0 | 400 | 100.0 |
| Person with pulmonary TB shouldn't be allowed in public place? | 204 | 51.0 | 142 | 35.5 | 54 | 13.5 | 400 | 100.0 |

Table 6. Educational level of respondents as predictor of the knowledge of correct cause of PTB

| Educational level | Knowledge level |  | Total |
| :--- | :--- | :--- | :--- |
|  | Poor | Good |  |
| None | 12 | 13 | 25 |
| Primary | 25 | 23 | 48 |
| Secondary | 51 | 44 | 95 |
| Tertiary | 46 | 186 | 232 |
| Total | 134 | 266 | 400 |
| $\mathbf{X}^{\mathbf{2}}=46.6 \quad$ df $=3$ | $\mathrm{p}>0.05$ |  |  |

Table 7. The gender of respondents as predictor of the knowledge of correct cause of PTB

| Sex | Knowledge level |  |  |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
|  | Poor | Good |  |
| Male | 138 | 64 | 202 |
| Female | 128 | 70 | 198 |
| Total | 266 | 134 | 400 |

## Discussion

TB continues to present significant morbidity and mortality in low income countries in spite of effective and available treatment. Poor knowledge about the cause, mode of transmission, and symptoms, as well as appropriate treatment of TB not only affect the healthseeking behavior of patients, but also could affect control strategy, thereby
sustaining the transmission of the disease within the community ${ }^{(16)}$
The present study aims at gaining an insight into the level of awareness about various aspects of TB among the general population of Kirkuk city. The study showed that the majority of people had heard of PTB.However, findings from this study show that more men were aware. This might probably be as a result of a greater contact of men in the study area with the health facilities compared with
women. The higher knowledge of PTB among men than women has also been documented in other studies, ${ }^{(17, \text { and } 18)}$ and in this study may be as a result of the higher level of education in men than women, even as the study also showed that educational level influenced knowledge. The study also showed that highly educated were the more awareness of information on TB for the majority. However, as much as they create the awareness of PTB, gaps in knowledge still exist, as about two-thirds of respondents knew the cause of TB to be bacteria, and $51.1 \%$ mentioned cigarette smoking as a causative agent. The poor knowledge of bacteria as a cause has also been demonstrated in other studies ${ }^{(19,20, ~ a n d ~}$ ${ }^{21)}$ and needs to be addressed as misconceptions about the cause may affect treatment seeking behavior. The mention of smoking as a cause may not be unconnected to the higher incidence of respiratory disease among smokers, and their higher knowledge of cough as a symptom, a finding also reported in other studies ${ }^{(22,}$, 23, 24)
Encouragingly, majority of the respondents were aware that PTB is treatable. This is important as compliance with treatment is one of the pivots of effective therapy. The poor attitude toward persons with PTB in this study has similarly been reported in an earlier study' ${ }^{(25)}$ and signifies a stigmatization of the disease and those who suffer from it. Such stigmatization has been identified in studies carried out in South Africa and India ${ }^{(26,27)}$

## Conclusion and Recommendation

Majority of respondent had heard of PTB, however gaps exist in their knowledge of etiology, mode of transmission and manifestation of PTB with the generally having a better knowledge of PTB. Health educators in the local government should intensify campaigns to educate people about PTB, disseminating information to
correct identified misconceptions and improve community perception of the disease. Other route of information disseminating such as the media should be encouraged to play a more active role in enlightenment campaigns in order to enhance the success of the control strategies and subsequent elimination of PTB.

## Acknowledgements

Greater thanks for the students for help us: Mustafa Adnan Hamdi, Hawre Ahmed Muhammed Ameen and Nazli Nail Hakki.

## References

1. Kumar V, Abbas AK, Fausto N, Mitchel RN. In Robbins Basic Pathology $8^{\text {th }}$ edition Saunders Elsevier 2007: 516-522.
2. Global TB control: Epidemiology, Strategy, Financing WHO report. World Health Organization Geneva, Switzerland 2011.
3. Candice K. Kwan and Joel D. Ernst, HIV and Tuberculosis: a Deadly Human Syndemic, Clin Microbiol Rev. 2011; 24: 351-376.
4. Elizabeth L. Corbett, PhD; Catherine J. Watt, DPhil; Neff Walker, PhD; Dermot, et al. The Growing Burden of Tuberculosis Global Trends and Interactions With the HIV Epidemic, Arch Intern Med. 2003;163:10091021
5. Asamoah-Odei E., Garcia Calleja J. M., Boerma J. T. HIV Prevalence and Trends in Sub-Saharan Africa: No Decline and Large Subregional Differences. Lancet. 2004;364:35-40
6. An Expanded DOTS Framework for Effective TB control. World Health Organization, Geneva 2002.
7. TB control program in Handbook of Resolutions and Decisions of the World Health Assembly and the Executive Board Vol.3, World Health Organization, Geneva, $3^{\text {rd }}$ edition 1993:1985-1992.
8. Aver C, Sarol JJ, Tanner M, Weiss M. Health seeking and perceived causes of TB among patients in Manila. J Trop Med Int Health 2000:5:112.
9. Odusanya OO, Babafeni JO. Pattern of delay among pulmonary TB patients in Lagos, Nigeria BMC Public Health 2004:4:18.
10. Rubel AJ, Garro LC. Social and cultural factors in the successful control of

Tuberculosis. Pub Health Rep. 1992:107:626636.
11. Yimer S, Bjure G, Alere G. Diagnostic and treatment delay among pulmonary TB patients in Ethiopia a cross-sectional study. BMC Infect Dis 2005:5:112.
12. Stop TB Annual report. Geneva, World Health Organization, 2002:1(WHO/CDS/STB 2002).
13. Global Tuberculosis Control- surveillance, planning, financing. WHO report 2002? Geneva, World Health Organization, 2002:159-160(WHO/CDS/TB2002, 295).
14. Annual TB report 2000 (National Tuberculosis Control Program). Baghdad, Iraqi Ministry of Health 2000.
15. Pio A. Tuberculosis Handbook, Geneva, World Health Organization 1998(WHO/TB 98.253).
17. Oluwadare C, Ibirinde B. Health seeking behaviour of tuberculosis patients in Ekiti state, Nigeria. Ethno Med 2010; 4:191-7.
18. Bonita R, Beaglehole R, Kjellstrom T. Basic Epidemiology. $2{ }^{\text {nd }}$ ed. Geneva: WHO Press; 2006. p. 81.
19. Fatiregun AA, Ejeckam CC. Determinants of patient delay in seeking treatment among pulmonary tuberculosis cases in a government specialist hospital in Ibadan, Nigeria. Tanzan J Health Res 2010; 12:1-9.
20. Yadar SP, Mathur ML, Dixit AK. Knowledge and attitude towards tuberculosis among sandstone quarry workers in desert parts of Rajasthan. Indian J Tuberc 2006;53:187-95
21. Promtussananon S, Peltzer K. Perceptions of tuberculosis: Attributions of cause, suggested
means of risk reduction, and preferred treatment in the Limpopo province, South Africa. J Health PopulNutr 2005; 23:74-81.
22. Okuonghae D, Omosigho S. Determinants of tuberculosis case detection in Nigeria: A survey. Glob J Health Sci 2010; 2:123-7.
23. Zhang T, Liu X, Bromley H, Tang S. Perceptions of tuberculosis and health seeking behaviour in rural Inner Mongolia, China. Health Policy 2007; 81:155-65.
24. Singh MM, Bano T, Pagare D, Sharma N, Devi R, Mehra M. Knowledge and attitude towards tuberculosis in a slum community of Delhi. J Commun Dis 2002; 34:203 14.
25. Dodor EA, Kelly S. 'We are afraid of them': Attitudes and behaviours of community members towards tuberculosis in Ghana and implications for TB control efforts. Psychol Health Med 2009; 14:170-9.
26. Sharma N, Malhotra R, Taneja DK, Saha R, Ingle GK. Awareness and perception about tuberculosis in the general population of Delhi. Asia Pac J Public Health 2007; 19:10-5.
27. Cramm JM, Finkenflügel HJ, Møller V, Nieboer AP. TB treatment initiation and adherence in a South African community influenced more by perceptions than by knowledge of tuberculosis. BMC Public Health 2010; 10:72.
28. Annual TB report 2012 (National Tuberculosis Control Program). Baghdad, Iraqi Ministry of Health 2012.

