
Knowledge, Attitude and Practice Regarding Tuberculosis: Community-based study in Al-Anbar Governorate; Iraq

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Abstract:

Background: The Iraqi National TB Program (NTP) implemented Directly Observed Treatment Short-course (DOTS) in all 15 of Iraq's southern governorates in 2000. However, the tuberculosis (TB) case detection rate in Iraq continues to lag behind the WHO target of >70%. The assessment of a population's current knowledge, attitudes, and practices to TB provides a basis for developing an informed outreach program. This study provides that essential information, as a first step in rebuilding Iraq's post-conflict TB surveillance and care systems.

Objectives: The study aimed to explore TB knowledge, attitudes and practices in Al-Anbar Governorate, Iraq.

Subjects & Methods: A community-based cluster study conducted in October 2008, within the seven main sectors of Al-Anbar Governorate. After receiving informed verbal consent, subjects were directly interviewed one subject per household via a pre-tested, written questionnaire. Questionnaires were filled covering the three aspects of TB (knowledge, attitude & practice) for each selected participant.

Results: Completed surveys were obtained from 692 subjects, 10.6% of them met study criteria for having good knowledge of TB, they were more frequent health care seekers ($p < 0.001$), although more likely to be dissatisfied with the availability of medicine and equipment at health clinics ($p < 0.001$), with higher percentages of them felt that TB affects relationship with friends ($p < 0.001$), family ($p = 0.039$) and work performance ($p = 0.036$). Community members from a wide-range of socioeconomic and educational levels require information about TB.

Key words: TB, Knowledge, Attitude, Practice, Iraq.

Introduction

Although the Iraqi Ministry of Health has recognized TB control as a top priority since 1998^[1], the country continues to have one of the highest TB rates in the region (56/100,000 in 2006)^[2].

To address this widespread issue, the Iraqi National TB Program (NTP) implemented Directly Observed Treatment Short-course (DOTS) in all 15 of Iraq's southern governorates in 2000^[3]. Unfortunately, beginning in 2003, war and sectarian violence disrupted the provision of TB health services throughout the country. However, the NTP is now in the process of restoring itself, including the rebuilding of TB laboratories, restarting of DOTS, retraining of health workers, and redevelopment of surveillance systems^[4].

In 2007, health authority in Iraq registered 2726 new smear positive TB cases all over Iraq, 90 cases of these were discovered in Al-Anbar governorate (area of this study), which represent 43% and 25% of TB cases estimated by NTP-WHO respectively^[5]. It is clear that TB detection rate in Iraq continues to lag behind the WHO target of >70%, at only 47% (40% for sputum-positive cases)^[6]. Increasing the TB case detection rate is a necessary key to disease reduction^[7]. Population outreach is known to raise case detection rates by encouraging infected individuals to seek treatment^[8-10]. Ensuring that this outreach is targeted to the appropriate demographics leads to the most effective

efforts^[11]. The assessment of a population's current knowledge, attitudes, and practices to TB provides a basis for developing such an informed outreach program^[12,13].

Although there was limited local TB research in Iraq prior to the 2003 invasion^[14-17]. Conflict-associated challenges have now confounded understanding of the disease within the country. One recent study provides data about knowledge, attitude, and practice in Baghdad^[18]. However, to date, there has been no available research on the geographically vast landmass of Al-Anbar Governorate (including the cities of Ramadi and Fallujah), an area with historically high TB rates and some of the worst violence during the recent conflict.

This study was conducted aiming to provide this essential information, as a first step in rebuilding Iraq's post-conflict TB surveillance and care systems.

Subject & Methods:

Sample

The survey was conducted in Anbar Governorate, Iraqi governorate located in the western portion of the country and representing 32% of Iraq's total surface area. Estimates from the Iraqi Central Statistical System, for the seven sampled districts within Anbar Governorate, gave

a total population under study of 1.5 million. Within the Anbar governorate, we calculated the sample size needed to evaluate the TB survey question items, with a power of 80% and a 95% confidence level, to be 692 respondents.

Data Collection

A community-based cluster study conducted in October 2008, within the seven main sectors of the Anbar Governorate (Ramadi, Fallujah, Fares Arabi, Heet, Hadeetha, and Qaem). At the first stage of sampling, investigators, all Iraqi paramedical staff with previous community medical experience and two days of training for this study, listed districts units within the Anbar governorate by population. Then they selected seven units at random and proceeded to find the largest building (e.g. school, market, or Mosque) within each unit. Investigators then numbered the surrounding houses in a clockwise direction, before randomly selecting a start household. They then proceeded to the adjacent residences, passing over empty houses or those that refused to participate, until investigators interviewed 94 households in all locations. After receiving informed verbal consent, the teams directly interviewed one subject per household (defined as a unit that ate together, and had a separate entrance from the street or a separate apartment entrance) via a pre-tested, written questionnaire. The interviewers had the responsibility and authority to change to an alternate location, if they perceived the level of insecurity or risk to be unacceptable. Guidelines precluded the interviewers from doing callbacks during nighttime, due to the security situation.

The study received prior ethical approval from the Tuberculosis Steering Committee of the Anbar governorate and the Iraqi Ministry of Health. It additionally received ethical approval for subsequent data analysis from the Los Angeles Biomedical Institute.

Questionnaires were filled covering the three aspects of TB (knowledge, attitude & practice) for each selected participant including the following information;

-TB knowledge: Heard about TB, source of information, thoughts about disease seriousness, possible modes of transmission, persons at risk for getting TB & possible modes of prevention.

-TB related practices: Number of times clinic or hospital visited, who talk with him about TB, place attended for suspected TB, satisfaction with

governmental service on TB, satisfaction with private services on TB, best source for TB awareness, perception of Chest Disease Facility (CDF) or Primary Health Center (PHC) services, perception of doctor behavior at CDF or PHC, CDF or PHC is well-equipped & medication available at CDF or PHC.

-TB related attitudes: Would they be ashamed of having TB, would they want to hide that they had TB, Does TB affects relationship with others, would they prefer to live in isolation if they had TB, does TB affects a marital relationship, family responsibilities, relationship with friends and others, do they think there are chances of getting married due to TB diagnosis & Do they think TB affects work performance.

Good-Knowledge was defined as a respondent indicating on the survey both that he/she had heard of TB and correctly identifying all of the following: airborne route as way for contracting TB; covering mouth and nose, as way of preventing TB; and, all people, as a group at risk for getting TB. Any respondent who answered any one of these questions incorrectly was excluded from the Good-Knowledge sub-group.

Statistical Analysis

After data blinding, data entry and statistical analysis were performed with SPSS version 17.0 (SPSS Inc., Chicago, Illinois), including a descriptive analysis of the full dataset. Then subgroup analyses were performed using the Chi-squared test to compare overall participants to participants with Good-Knowledge of TB. A 5% significance level was used as the cutoff for determining statistical significance.

Results

Of the total sample of 692 respondents to this survey, 70 (10.1%) had "Good-Knowledge" of TB. 493 (71.2%) respondents were male and 199 (28.8%) were female (**Table 1**). In the Good-Knowledge sub-group, 50 (71%) were male and 20 (29%) were female ($P > 0.05$). The mean age of respondents was 30 ± 10 years, ranging from 15 to 72 years. In the Good-Knowledge group, 58.6% of respondents had attained higher than a secondary school level of education, compared to just 33.8% of the total sample ($P = 0.0001$). Interestingly, income was not associated with Good-Knowledge.

Table 1: Sociodemographic Data of All Subjects Compared to Those with Good-Knowledge

	Total Sample		Good-Knowledge		Significance
Population Characteristics	No.	(%)	No.	(%)	
Age (Years)					
15–19	119	17.2	8	11.4	Not Significant
20–29	249	36.0	23	32.9	
30–39	179	25.9	20	28.6	
40–49	132	19.1	16	22.9	
50+	13	1.9	3	4.29	
Sex					
Female	199	28.8	20	29.0	Not Significant
Male	493	71.2	50	71.0	
Education					
Illiterate	117	16.9	7	10.0	Significant p < 0.001
Can read and write	159	23.0	7	10.0	
Primary education	182	26.3	15	21.4	
Secondary	133	19.2	17	24.3	
Tertiary/higher	77	11.1	16	22.9	
Other	24	3.5	8	11.4	
Residence					
Rural	298	43.1	27	38.6	Not Significant
Urban	394	56.9	43	61.4	
Family Monthly Income					
<\$300	263	38.0	13	18.6	Not Significant
\$300 to<\$500	264	38.2	35	50.0	
\$500 to \$1000	117	16.9	13	18.6	
>\$1000	48	6.9	9	12.8	

Knowledge

The majority (87.9%) of respondents indicated that they had heard of TB (**Table 2**), although the source of information about TB was not statistically associated with Good-Knowledge. When asked about the seriousness of TB in general, 98.5% of respondents with Good-Knowledge identified TB as a serious disease while only 78.2% of the total sample saw it as a serious (P=0.0001). Similarly, 81.4% of the Good-Knowledge group identified TB as a serious problem in Iraq as compared to 60% of the total sample (P=0.002).

Practice

Those with Good-Knowledge were more likely to have visited a hospital twice in the last year, when compared to the total sample (P=0.0001) (**Table 3**). Of those in the Good-Knowledge subgroup, 84.3% reported that they had talked to a doctor or other medical worker about TB, while only 52.6% of the total sample had spoken to a health professional (P=0.0001).

Additionally, knowledge and perceptions of TB services were higher in the Good-Knowledge subgroup, which

was more likely to be satisfied with public (P=0.002) and private (p<0.001) services. Similarly, 77.2% of respondents with Good-Knowledge perceived the Chest Disease Facility (CDF) or Primary Health Center (PHC) services to be good or excellent, compared to only 57.8% of respondents in the total sample (P=0.0002). Likewise, 80% of respondents with Good-Knowledge reported that they found doctor behavior at CDF/PHCs to be good or excellent, compared to only 52.2% of the total sample (P=0.0001).

Interestingly, the Good-Knowledge subgroup was actually more likely than the total sample to believe that the CDFs/PHCs in their area were poorly equipped (47.1% of the Good-Knowledge subgroup compared to 27.2% of the total sample) (P=0.0001). Additionally, 42.9% of the Good-Knowledge subgroup believed that CDF/PHCs had adequate medication available, compared with 25.6% of the total sample (P=0.0001).

Table 2: Knowledge of TB: All Subjects Compared to Those with Good-Knowledge

	Total Sample		Good-Knowledge		Significance
Item	No.	(%)	No.	(%)	
Heard About TB					
Yes	608	87.9	70	100	Significant P=0.001
No	84	12.1	0	0	
Source of information about TB					
TV	392	56.6	38	54.3	Not Significant
Radio	16	2.3	0	0	
Billboards	6	0.9	1	1.4	
Newspaper/Magazine	37	5.3	5	7.1	
Doctor	71	10.3	14	20.0	
Pharmacy	6	0.9	1	1.4	
Religious Leaders	3	0.4	0	0	
Friends/Relative	99	14.3	9	12.9	
Others	15	2.2	1	1.4	
Teachers	47	6.8	1	1.4	
Thoughts about TB seriousness					
Very serious	298	43.1	42	60.0	Significant P=0.002
Somewhat serious	117	16.9	15	21.4	
Not very serious	156	22.5	6	8.6	
Don't know	121	17.5	7	10.0	
Possible Modes of TB Transmission					
Handshaking	160	23.1	0	0	Significant P=0.0001
Eating in same dishes	163	23.6	0	0	
Air, when TB patient coughs or sneezes	199	28.8	70	100	
Sharing sheesha pipe	26	3.8	0	0	
Smoking	75	10.8	0	0	
Touching items in public places	11	1.6	0	0	
Others (Blood)	1	0.1	0	0	
Don't Know	57	8.2	0	0	
Possible Modes of Preventing TB					
Avoid shaking hands	164	23.7	0	0	
Covering mouth & nose when coughing or sneezing	234	33.8	70	100	
Avoid sharing dishes	105	15.2	0	0	
Washing hands after touching items in public places	54	7.8	0	0	
Closing window at home	31	4.5	0	0	
Good nutrition	23	3.3	0	0	
Other	7	1.0	0	0	
Don't know	74	10.7	0	0	
Persons at Risk for Getting TB					
Anybody	261	37.7	70	100	Significant P=0.0001
Only poor people	236	33.4	0	0	
Only homeless people	40	5.8	0	0	
Only alcoholics	13	1.9	0	0	
Only drug users	11	1.6	0	0	
Only people with HIV/AIDS	18	2.6	0	0	
Only people in prison	26	3.8	0	0	
Don't know	92	13.3	0	0	

Table 3: Practices Related to TB: All Subjects as Compared to Those with Good TB Knowledge Scores

		Total Sample		Good-Knowledge		Significance
Item	No.	(%)	No.	(%)		
Number of Times Clinic or Hospital Visited						
Twice a year	251	36.3	43	61.4	Significant p < 0.001	
Once a year	174	25.1	6	8.6		
Less than a year but twice in the past	97	14.0	10	14.3		
Once in the past 5 years	71	10.3	3	4.3		
Not in the past year	99	14.3	8	11.4		
Who You Talk About TB With						
Doctor or other medical workers	301	43.5	59	84.3	Significant p < 0.0001	
Pharmacy	63	9.1	0	0		
Spouse	28	4.0	0	0		
Parent	102	14.7	3	4.3		
Child	1	0.1	1	1.4		
Other family member	121	17.5	4	5.7		
Close friend	58	8.4	2	2.9		
No one	18	2.6	1	1.4		
Place Attended if TB Suspected						
Government hospital	517	74.7	56	80.0	Not significant	
Private clinic	140	20.2	13	18.6		
NGO clinic	6	0.9	0	0		
HIO	9	1.3	0	0		
Pharmacy	10	1.4	1	1.4		
Don't know	10	1.4	0	0		
Satisfaction with Governmental TB Services						
Satisfied	399	57.7	57	81.4	Significant p = 0.0001	
Not satisfied	184	26.6	9	12.9		
Don't know	109	15.8	4	5.7		
Satisfaction with Private TB Services						
Satisfied	406	58.7	57	81.4	Significant p = 0.0001	
Not satisfied	140	20.2	9	12.9		
Don't know	146	21.1	4	5.7		
Best Source for TB Awareness						
TV	419	60.5	50	71.4	Not Significant	
Radio	53	7.7	1	1.4		
Newspaper/Magazine	50	7.2	7	10.0		
Doctor	95	13.7	9	12.9		
Friends	22	3.2	1	1.4		
Relative	11	1.6	1	1.4		
Medical store	1	0.1	0	0		
Information booklets	3	0.4	0	0		
Pharmacy	1	0.1	0	0		
Don't know	37	5.3	1	1.4		
Perceptions of CDF or PHC Services						
Excellent	99	14.3	4	5.8	Significant p = 0.0001	
Good	301	43.5	50	71.4		
Poor	165	23.8	8	11.4		
Don't know	127	18.4	8	11.4		
Perception of Doctor behavior CDF/PHC						
Excellent	111	16.0	3	4.3	Significant P= 0.0001	
Good	251	36.3	53	75.7		
Poor	171	24.7	8	11.4		
Don't know	159	23.0	6	8.6		
CDF or PHC is Well-Equipped						
Yes	244	35.3	24	34.3	Significant p = 0.0001	
No	188	27.2	33	47.1		
Don't know	260	37.6	13	18.6		
Medication Available at CDF or PHC						
Yes	177	25.6	30	42.9	Significant p = 0.0001	
No	255	36.8	29	41.4		
Don't know	260	37.6	11	15.7		

Attitudes: The majority of respondents in both the Respondents in the total sample were more likely to Good-Knowledge subgroup (77.1%) and the total say that would want to a hide a case of TB, as sample (67.9%) believed that TB affects relations compared to respondents with Good-Knowledge with others ($P>0.05$). But 82.9% of respondents with ($P=0.0001$) (**Table4**). The total sample was also Good-Knowledge believed that a person's chances of more likely to say they would prefer to live in getting married are reduced due to a TB diagnosis, isolation if they had TB (31% vs. 17.1% compared with 63.3% of the total sample ($P=0.001$). respectively) ($P=0.0001$). For the Good-Only about half of each group believed that TB Knowledge respondents, 82.9% believed TB affects a marital relationship already established work performance, while just 69.4% of the total ($P>0.05$). sample believed similarly ($P=0.032$).

Table 4: Attitudes Related to TB: All Subjects vs. Those with Good TB Knowledge Scores

Item	Total Sample		Good-Knowledge		Significance
	No.	(%)	No.	(%)	
Would you be ashamed of having TB?					
Yes	397	57.4	41	58.6	Not Significant
No	234	33.8	27	38.6	
Don't know	61	8.8	2	2.8	
Would you want to hide that you had TB?					
Yes	487	70.4	30	42.9	Significant p = 0.0001
No	114	16.5	36	51.4	
Don't know	91	13.2	4	5.7	
Does TB affect relationships with others?					
Yes	470	67.9	54	77.1	Not Significant
No	166	24.0	13	18.6	
Don't know	56	8.1	3	4.3	
Would you prefer to live in isolation if you had TB?					
Yes	214	31.0	12	17.1	Significant p =0.0001
No	367	53.0	54	77.1	
Don't know	111	16.0	4	5.8	
Does TB affect a marital relationship?					
Yes	350	50.6	35	50.0	Not Significant
No	175	24.1	19	27.1	
Don't know	167	25.3	16	22.9	
Does TB affect family responsibility?					
Yes	413	59.7	47	67.1	Significant P=0.049
No	156	22.5	18	25.7	
Don't know	123	17.8	5	7.2	
Does TB affect relationships with friends & others?					
Yes	477	68.9	53	75.7	Significant P=0.035
No	128	18.5	15	21.4	
Don't know	87	12.6	2	2.9	
Do you think there are less chances of getting married due to a TB diagnosis?					
Yes	438	63.3	58	82.9	Significant P=0.001
No	125	18.1	9	12.9	
Don't know	129	18.6	3	4.2	
Do you think TB affects work performance?					
Yes	480	69.4	58	82.9	Significant p =0.032
No	142	20.5	9	12.9	
Don't know	70	10.1	3	4.2	

Discussion:

The study provides much-needed information about TB knowledge, attitude, and practice among residents in post-invasion Iraq, specifically in the conflict-stricken Anbar governorate. Of our respondents, the vast majority lacked even basic TB knowledge, with only 10.1% having heard of TB and able to correctly answer three simple questions about the disease's spread prevention, and transmission. Although the NTP has made efforts to provide tuberculosis education across Iraq, the recent conflict has limited its ability to intervene. The results of this survey indicate that there is a definite need to increase TB education in the Anbar Governorate, a finding similar to several other recent KAP studies conducted in Morocco [19] and Delhi [20].

Data from this survey provides useful clues for targeting such future education. Although limited by a higher male response rate (a culturally typical finding), there was no statistically significant association between good TB knowledge and age, gender, residence, or income. As such, TB outreach programs in the area need to be wide reaching and span multiple demographics.

Although people at all educational levels displayed poor knowledge of TB, there was highly significant association between good knowledge and level of education (consistent with past studies in Serbia [21] and Manila [22]). Therefore, any TB interventions within the Anbar population will need to be accessible to a wide range of educational levels. Integrating TB education into elementary school curricula as a potential solution is suggested. Using wide reaching media sources (e.g. commercials during popular television shows) is another potential solution.

Although Good-Knowledge was not influenced by the source of information about tuberculosis, our finding that television was by far the most reported resource for TB education further supports such an approach.

Respondents in the Good-Knowledge subgroup were more likely to have seen a doctor twice in the last year. However, the direction of this relationship is open to speculation.

Persons with good TB knowledge may seek more care because they have better general health knowledge. Alternatively, more frequent health care seekers may learn more about TB from their increased contact with health professionals. In either case, this survey clearly demonstrates that outreach programs in the area must extend beyond healthcare facilities, if they are to reach those with the poorest understanding of TB.

Interestingly, compared to the overall sample, the Good-Knowledge subgroup was simultaneously more likely to seek care and to believe their local health facilities were ill-equipped. This may reflect a greater

knowledge of the actual conditions in the local health facilities, and highlights the importance of accompanying TB outreach campaigns with improvements in clinical TB care. Increased demand for TB screening following the completion of an educational campaign can be short-lived, a problem which can be exacerbated by inadequate or unavailable services.

Because the respondents with Good-Knowledge were more likely to have an understanding of the seriousness of TB, it is not surprising that they were more likely to believe that the disease impacts a person's work performance and interpersonal relationships.

Any future outreach campaigns should strive to convey the seriousness of TB and importance of seeking treatment, including its potential impact on daily activities, while not promoting stigmatized views of TB [23].

The recent conflict in Iraq has disrupted the provision of many health services, including those of TB treatment and control. Now, as Iraq reinstates many of these public programs, the country has an opportunity to increase its TB control efforts. This survey provides data necessary to understand the current knowledge, attitudes, and practice of the Iraqi people in one of the areas hardest hit by violence.

With that understanding, authorities may appropriately design targeted improvements in TB education and continue to improve services for the at-risk populace.

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