

# Assessment of Knowledge, Attitudes and Practices Regarding Pulmonary Tuberculosis among Saudi Arabia Community in 2017

Arwa Abdullah Aseeri<sup>1</sup>, Raghad Abdulaziz Turkestani<sup>2</sup>, Mohammed Ali Alamri<sup>1</sup>, Ghadah Abdulrahman Algabr<sup>3</sup>, Saif Abdulrahman Alobaysi<sup>4</sup>, Zohair Radi Alghazal<sup>5</sup>, Asma Mohammed Alghamdi<sup>2</sup>, Wala'a Ali Abdulmotaali<sup>1</sup>, Maram Ali Almane<sup>1</sup>, Sultan Hassan Asiri<sup>1</sup>

1-King Khalid University, 2-Ibn Sina National Collage, 3-Pavol Jozef Šafárik University, 4-Taif University, 5-University of Dammam

## ABSTRACT

**Background:** Despite the improvements in the health care education of management in KSA, the prevalence of tuberculosis remains alarming. **Objectives:** Evaluation of the knowledge, attitude and practice among Saudi population regarding pulmonary tuberculosis (TB) in Kingdom of Saudi Arabia (KSA). **Methods:** A multi-center community cross sectional study was assessed among random sample of 2056 adult Saudi subjects from different regions in KSA. All participants filled out a questionnaire that included questions about demographics, awareness, attitude and practice about pulmonary tuberculosis.

**Results:** Most of participants (76.8%) had general knowledge about TB disease and only 23.2% haven't heard about TB before. The majority of Saudi adult (74.9%) have inadequate knowledge about TB and only 25.1% have good knowledge regarding TB. The attitude of respondents about TB was negative among most of them while most of participants had a good practice level but it needs to be increased. There was a significant association between young age and high educational degree with good knowledge about TB.

**Conclusion:** KAP of Saudi population toward TB seems to be facing some challenges in the Kingdom of Saudi Arabia. The awareness, attitude and practice need to be significantly evaluated in different studies to improve control policies for reducing the disease incidence in our society. The prevention of TB and management are based on good knowledge and education of Saudi population thus the health authorities should intensify efforts and arranging specific educational programs about the disease and the consequences of spreading infection among large sector of the population. Also, means of discovery, medication should receive special attention by the governmental medical authorities.

**Keywords:** Knowledge, Attitude, Practice, Pulmonary Tuberculosis (TB), general population, KSA

## BACKGROUND

Tuberculosis (TB) is an air borne disease which represents a chief public health hazard on the general population around the world<sup>(1)</sup>. It is caused by various types of mycobacteria but Mycobacterium tuberculosis is usually the causative agent<sup>(2)</sup>. The prevalence of TB was estimated according to the WHO to be increased as about 20.000 subjects are infected and 5000 died from the disease every day<sup>(3)</sup>. The situation in KSA showed that the prevalence of TB was decreased but still alarming and the successful achievement in this regard was due to the implantation of the National TB Control Program (NTP) for more than 3 decades<sup>(4)</sup>. However, there is a lack in the studies regarding the prevalence of TB in KSA. The latest incidence of TB in the Riyadh region was 8.5% while it was 23.1% in Hail for Saudi subjects<sup>(5)</sup>. Also, the prevalence rate among Saudis ranged between 8.6 and 12.2 for every 100,000 subjects<sup>(6)</sup>. The education was a chief constituent of TB control thus assessing the knowledge of Saudi subjects and implanting public awareness programs could improve the elimination of TB in KSA<sup>(7,8)</sup>.

## AIM OF THE STUDY

The study was conducted to evaluate the knowledge, attitude and practice among Saudi

population regarding pulmonary tuberculosis (TB) in Kingdom of Saudi Arabia (KSA).

## METHODS

### Study design

A cross sectional community survey study was conducted at several parts of Saudi Arabia during the period from March to June 2017.

### Study population and sample size

The Kingdom of Saudi Arabia is divided into 13 regions then each region was stratified into 4 quarters (East, North, West and South) then 2 large malls were randomly chosen from each part using a stratified random sampling technique. Then a total of 104 malls were included in the study where 2056 Saudi educated adult subjects are present.

### Study tools

An eligible questionnaire was translated into Arabic language then distributed among the respondents. The questionnaire included 2 tools: the first tool considered the subject's demographics and the second part included questions about the knowledge, attitude and practice regarding the pulmonary TB disease.

### Ethical approval

Ethical approval was given by the review board of King Khalid University for conducting the study.

Also, written consent was obtained from participants who were enrolled in the study.

**Statistical analysis**

The SPSS software was used for data processing. Quantitative data were shown as frequency and percentages. The Chi square test was used for the categorical variables. P value  $\geq 0.05$  is considered significant.

**RESULTS**

**Demographics of the studied subjects**

The age of included respondents was 20-40 years old among 55.2% and 40-60 years among 44.8%. The females represent 60% of subjects and the males represent 40% of respondents. Most of the participants (76.7%) were graduated from college, 16.5% had secondary school and 6.8% had primary school. The majority of participants were employers and only 22.2% were jobless (Table. 1).

**Table (1): Demographic of respondents information (2056).**

	No.	Percentage
<b>Age</b>		
20-40	1135	55.2%
40-60	921	44.8%
<b>Gender</b>		
Female	1233	60%
Male	823	40%
<b>Education</b>		
Collage	1577	76.7%
Secondary School	340	16.5%
Primary School	139	6.8%
<b>Occupation</b>		
Working	1600	77.8%
Jobless	456	22.2%

**Assessment of knowledge about TB**

The awareness of the participants is shown in Table. 1. Most of the participants (76.8%) had general knowledge about TB disease and only 23.2% haven't heard about TB before. About 37.2% of respondents rated bacteria as the etiology of TB, 23.2% rated cold air and smoking as the most common cause while 27.7% had misconceptions that TB is a hereditary disease. But 11.9% stated that they don't know the cause of TB. Most of the participants knew that TB can be transmitted through coughing droplets, while the most had wrong thoughts that shaking hands would result in TB infections. Also, 24.5% declared that the disease could be transmitted through sharing equipment while 19% proposed that it could be transmitted through crowding. Only 29.8% indicated that persistent cough for 2 weeks could be a sign for TB, 15.7% rated sputum with blood as the most common symptom for TB, 20% marked

loss of appetite and weight as marked sign for TB while most of respondents 34.5% wrongly rated chest pain as the most common sign of TB. More than half of the respondents (52%) answered that TB can be prevented while 40.2% believed that TB couldn't be prevented and 7.8% don't know if it could be prevented or not. Moreover, less than half of participants (44.6%) believed that TB is treatable. Most of the respondents have inadequate knowledge about using prescribed drugs as 22.5% stated that TB need only home rest without treatment, 14.7% thought herbal drugs would treat TB and 24.5% thought that self-medications could result in treatment of TB.

**Table (2): Assessment of the level of knowledge regarding TB:**

	No.	Percentage
<b>Do you know the TB disease?</b>		
Yes	1580	76.8%
No	476	23.2%
<b>What causes TB?</b>		
Bacteria	765	37.2%
Cold air and smoking	477	23.2%
Hereditary disease	570	27.7%
I don't know	244	11.9
<b>TB is a contagious disease</b>		
Yes	1490	72.5%
No	566	27.5%
<b>Mode of transmission</b>		
Coughing droplets	470	22.9%
Handshakes	690	33.6%
Sharing equipment	504	24.5%
Crowding	392	19%
<b>Signs and symptoms</b>		
Persistent cough for 2 weeks	614	29.8%
Sputum with blood	322	15.7%
Chest pain	709	34.5%
Loss of appetite and weight	411	20%
<b>TB can be prevented</b>		
Yes	1070	52%
No	826	40.2%
I don't know	160	7.8
<b>TB can be treated</b>		
Yes	917	44.6%
No	763	37.1%
I don't know	376	18.3%
<b>Treatment</b>		
Prescribed drugs	787	38.3%
Home rest without treatment	463	22.5%
Herbal drugs	302	14.7%
Self-medications	504	24.5%

**Level of knowledge among respondents**

Table 3 shows that the majority of Saudi adult (74.9%) have inadequate knowledge about TB and only 25.1% have good knowledge regarding TB.

**Table (3): awareness of the participants about TB**

Knowledge level	Frequency	Percent (%)
Good	517	25.1%
Poor	1539	74.9%

**Attitude of included subjects**

The attitude of respondents about TB was negative among most of them as the majority thought they can't suffer from TB, 62.2% would feel fears toward TB and only 37.8% would search for treatment. Also, only 38.4% rated TB as very serious, 35.6% rated it moderately serious and 26% rated TB as a light issue. In addition, most of participants would have negative attitudes toward helping TB patients as 42.3% would avoid them, 29.9% would fear from them (Table. 4).

**Table (4): Subjects' attitude toward tuberculosis (n=2056)**

You may be susceptible for TB	No.	Percentage (%)
Yes	611	29.7%
No	1445	70.3%
<b>Your reaction for having TB would be</b>		
Sadness	778	37.8%
Fear	1278	62.2%
<b>What is your thoughts about TB seriousness</b>		
Very serious	790	38.4%
Not serious	534	26%
Moderately serious	732	35.6%
<b>What is your attitude toward TB patients?</b>		
Help them	572	27.8%
Avoid them	870	42.3%
Fear from them	614	29.9%

**Practice pattern of included subjects**

The pattern of practice of respondents is shown in Table. 5. Most of participants had a good practice level as 44.7% would choose modern health care as the treatment of choice for TB. Also, 74.8% would visit a health care facility if they suffered the symptoms of TB and 43.6% would visit the physician just after realizing the TB symptoms.

**Table (5): Practice level toward tuberculosis (n=2056)**

What is your choice for TB treatment?	No.	Percentage (%)
Modern health care	920	44.7%
Herbal remedies	678	33%
Self-medications	458	22.3%
<b>I will visit a health care facility if I showed the symptoms of TB</b>		
Yes	1538	74.8%
No	518	25.2%
<b>When you will visit the health care facility</b>		
After realizing the TB symptoms	896	43.6%
After 3-4 weeks of symptoms	560	27.2%
I will not go to physician	600	29.2%

**Association between subjects' knowledge and demographics**

Using Univariate logistic regression model to assess the correlation between knowledge and demographics of subjects (Table. 6). There was a significant correlation between young age and educational degree with good knowledge about TB.

**Table 6: Association between knowledge of TB and demographic variables**

	Good (n=517)		Poor (n=1539)		P-value
<b>Age</b>					
<b>20-40</b>	385	74.5%	750	48.7%	0.001
<b>40-60</b>	132	25.5%	789	51.3%	
<b>Gender</b>					
<b>Female</b>	260	50.3%	973	63.2%	0.32
<b>Male</b>	257	49.7%	566	36.8%	
<b>Educational Level</b>					
<b>Collage</b>	419	81%	1158	75.2%	0.05
<b>Secondary School</b>	70	13.6%	270	13.5%	
<b>Primary School</b>	28	5.4%	111	7.3%	
<b>Occupation</b>					
<b>Working</b>	411	79.5%	1189	77.3%	0.55
<b>Jobless</b>	106	20.5%	350	22.7%	

OR; Odds Ratio, 95%CI: Confidence Interval

**DISCUSSION**

The present study has some limitations as the targeted population was only taken from malls allover KSA. Also, there were some limitations for transportations and the short period allowed to cover many places within the estimated time. Most of subjects have heard about TB and have general knowledge about its definition and this was consistent to other studies in KSA (9) and other countries (1, 10-12).

Also, most of participants have inadequate knowledge regarding the ways of TB transmission, symptoms, prevention and proper treatment of TB. In the same pattern, another study in KSA showed an inadequate level of knowledge among Saudi students (9). The same results were found in Pakistan (13), Malaysia (10) and china (14). In contrast, other studies in African countries showed that the knowledge about TB was good among most of participants (15-17).

The attitude of the subjects was negative while the level of practice was good as most of them are highly educated and working and this could be a purpose for high practice pattern among the subjects.

Most of respondents would have fears from TB and the seriousness of TB and this was revealed also in other studies (18, 19).

The young age and high educational degree were associated with good knowledge that indicate the need for strengthening on health education

about TB causes, transmission, and treatment consequences.

In the same contest many studies revealed the association between level of knowledge with educational background (18, 20, 21) and young age of respondents (9).

**CONCLUSION**

KAP of Saudi population toward TB seems to be facing some challenges in the Kingdom of Saudi Arabia. The awareness, attitude and practice need to be significantly evaluated in different studies to improve control policies for reducing the disease incidence in our society. The prevention of TB and management is based on good knowledge and education of Saudi participants. Thus, the health authorities should intensify efforts and arranging specific educational programs about the disease and the consequences of spreading infection among large sector of the population. Also, means of discovery, medication should receive special attention by the governmental medical authorities.

**REFERENCES**

- 1. Workneh MH, Bjune GA, Yimer SA (2017):** Prevalence and associated factors of tuberculosis and diabetes mellitus comorbidity: A systematic review. PloS one, 12: e0175925.
- 2. Lin Y, Li L, Mi F, Du J, Dong Y, Li Z et al. (2012):** Screening patients with diabetes mellitus for tuberculosis in China. Tropical medicine & international health : TM & IH., 17: 1302-1308.

3. **WHO (2016):** World Health Organization. Global tuberculosis report. Available at <http://apps.who.int/iris/bitstream/10665/250441/1/9789241565394-eng.pdf?ua=1>.
4. **Al-Kahtani N, Al-Jeffri M (2003):** Manual of the National TB Control Program. Ministry of Health, Saudi Arabia. Available at: <http://www.sciepub.com/reference/193482>.
5. **Gleason JA, McNabb SJ, Abduljadayel N, Abouzeid MS, Memish ZA (2012):** Tuberculosis trends in the Kingdom of Saudi Arabia, 2005 to 2009. *Annals of epidemiology*, 22: 264-269.
6. **Al-Orainey I, Alhedaithy MA, Alanazi AR, Barry MA, Almajid FM (2013):** Tuberculosis incidence trends in Saudi Arabia over 20 years: 1991-2010. *Annals of Thoracic Medicine*, 8: 148-152.
7. **Shibl A, Tufenkeji H, Khalil M, Memish Z (2013):** Consensus recommendation for meningococcal disease prevention for Hajj and Umra pilgrimage/travel medicine/Recommandations consensuelles sur la prevention de la meningococcie pendant les pelerinages (Hadj et Omra) et sur la medecine des voyages. *Eastern Mediterranean Health Journal*, 19: 389.
8. **Abouzeid MS, Zumla AI, Felemban S, Alotaibi B, O'Grady J, Memish ZA (2012):** Tuberculosis trends in Saudis and non-Saudis in the Kingdom of Saudi Arabia—a 10 year retrospective study (2000–2009). *PloS one*, 7: e39478.
9. **AlSalem SB, AlEisa AM, Raslan IA, BinJawhar AS, Khouqeer AF, Gad A (2015):** Tuberculosis: awareness among students in a Saudi university. *Health*, 7: 175.
10. **Koay T (2004):** Knowledge and attitudes towards tuberculosis among the people living in Kudat District, Sabah. *The Medical journal of Malaysia*, 59: 502-511.
11. **Hoa NP, Chuc NT, Thorson A (2009):** Knowledge, attitudes, and practices about tuberculosis and choice of communication channels in a rural community in Vietnam. *Health Policy*, 90: 8-12.
12. **Adane K, Spigt M, Johanna L, Noortje D, Abera SF, Dinant GJ (2017):** Tuberculosis knowledge, attitudes, and practices among northern Ethiopian prisoners: Implications for TB control efforts. *PloS one*, 12: e0174692.
13. **Khan JA, Irfan M, Zaki A, Beg M, Hussain SF, Rizvi N (2006):** Knowledge, attitude and misconceptions regarding tuberculosis in Pakistani patients. *JPMA. The Journal of the Pakistan Medical Association*, 56: 211-214.
14. **Lu SH, Tian BC, Kang XP, Zhang W, Meng XP, Zhang JB *et al.* (2009):** Public awareness of tuberculosis in China: a national survey of 69 253 subjects. *Int J Tuberc Lung Dis.*, 13: 1493-1499.
15. **Kanjee Z, Catterick K, Moll AP, Amico KR, Friedland GH (2011):** Tuberculosis infection control in rural South Africa: survey of knowledge, attitude and practice in hospital staff. *The Journal of hospital infection*, 79: 333-338.
16. **Heunis C, Wouters E, Kigozi G, Janse van Rensburg-Bonthuyzen E, Jacobs N (2013):** TB/HIV-related training, knowledge and attitudes of community health workers in the Free State province, South Africa. *African journal of AIDS research* : *AJAR.*, 12: 113-119.
17. **Temesgen C, Demissie M (2014):** Knowledge and practice of tuberculosis infection control among health professionals in Northwest Ethiopia; 2011. *BMC health services research*, 14: 593.
18. **Esmael A, Ali I, Agonafir M, Desale A, Yaregal Z, Desta K (2013):** Assessment of Patients' Knowledge, Attitude, and Practice Regarding Pulmonary Tuberculosis in Eastern Amhara Regional State, Ethiopia: Cross-Sectional Study. *The American journal of tropical medicine and hygiene*, 88: 785-788.
19. **Irani L, Kabalimu TK, Kasesela S (2007):** Knowledge and healthcare seeking behaviour of pulmonary tuberculosis patients attending Ilala District Hospital, Tanzania. *Tanzania health research bulletin*, 9: 169-173.
20. **Long Q, Li Y, Wang Y, Yue Y, Tang C, Tang S *et al.* (2008):** Barriers to accessing TB diagnosis for rural-to-urban migrants with chronic cough in Chongqing, China: a mixed methods study. *BMC health services research*, 8: 202.
21. **Mushtaq MU, Majrooh MA, Ahmad W, Rizwan M, Luqman MQ, Aslam MJ *et al.* (2010):** Knowledge, attitudes and practices regarding tuberculosis in two districts of Punjab, Pakistan. *Int J Tuberc Lung Dis.*, 14: 303-310.