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RESEARCH ARTICLE

KNOWLEDGE AND ATTITUDE OF TUBERCULOSIS AMONG BAHRAINIS FROM AGES 18-50 ATTENDING HEALTH CENTERS IN 2014.

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Abstract

Our aim for this research was to collect and evaluate the knowledge and attitude of Bahrainis towards Tuberculosis in order to raise the awareness and have better prevention. The research was conducted in the summer of 2014 as we gave out surveys in five different health centers. It was a Cross Sectional Study, with a convenient sample of 400 Bahrainis with subjects between 18-50 years old attending health centers.

After taking permission from the ministry of health, and the administration of the health centers to distribute the surveys; which didn't require any personal information and would not affect the patients' treatment. The Data was entered and analyzed using SPSS v20. The majority of the subjects knew what TB was but did not know the causative agent. About half of them did know how it was transmitted, as well as the signs and symptoms of it, and the preventive measures. The educational level of the subjects showed importance, as the majority of the ones that were aware had a Diploma/ College degree or were Secondary/ High school students. Females were more aware of TB than males.

We concluded that Bahrainis did have a basic knowledge and awareness about TB and that they had a positive attitude about the disease. When comparing with other similar researches, there was no significant difference in knowledge between medical and non-medical practitioners about TB. Recommendations to increase awareness and basic knowledge of TB should be considered as a preventative measure.

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Introduction:-

Tuberculosis (TB) is an infectious disease with an increasing incidence after almost 40 years of decline worldwide. As a result of the previous decline a large portion of the population in Bahrain happens to be unaware of it and assume that it has been eradicated when it has not.

TB kills approximately 2 million people per year; the global epidemic is growing and becoming more dangerous. It is estimated that between 2002 and 2020, approximately 1000 million people will be newly infected. In 1993, the World Health Organization (WHO) took an unprecedented step and declared tuberculosis a global emergency.

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While a breakdown in health services, the spread of HIV/AIDS, and the emergence of multidrug-resistant TB, are all factors contributing to the worsening impact of this disease.

TB is a potentially serious infectious disease that is caused by various strains of mycobacterium, most commonly *Mycobacterium tuberculosis*. It mainly affects the lungs. The disease was called "consumption" in the past because of the way it would consume infected people from within. The bacteria that cause tuberculosis are spread from one person to another through tiny droplets released into the air via coughs and sneezes.

TB is generally classified as being either latent or active. In Latent TB the bacteria is inactive but present in the body. The patient has no symptoms and is not contagious. In Active TB the bacteria is active and makes the patient ill. Active TB is contagious. The patient experiences chest pain and has a persistent cough, which often brings up blood.

Therefore it is important for Bahrainis to have an idea about TB since its incidence in 2012 was 12.5 per 100000 [1] and especially since Bahrain is a country with a high percentage of foreign workers and travelers. It is also important to provide educational programs to improve the knowledge of TB and to encourage people who are interested to know more about the disease to research and improve the control over TB by faster detection.

Literature Review:-

A research was done by Safaa AbdulAziz Alkhawaja, (MD, CABM), Saeed Hasan AlSafaar, (MD, MRCP) and Ahmed Abdulaziz AlOmran, (MD) in September 2012 and it was published in Bahrain medical Bulletin Vol #34, No. 3. Its aim was to study the epidemiology of Tuberculosis (TB) in Bahrain and identify the risk factors for transmission and potential target interventions. Between January 2004 to December 2008, 1395 patients were registered to have TB, with 279 average new cases diagnosed annually. This concluded that the incidence was 32.3 per 100,000, with 19.7 cases of pulmonary TB and 12.6 cases of extra pulmonary TB per 100,000. According to the research the incidence of TB peaked between 20-49 years of age. The majority of TB patients in the Kingdom of Bahrain are expatriates, which is possibly related to the limitations of screening programs and chest radiography for male laborers. The control of TB among expatriates can be improved by implementation of PPD to all expatriate workers upon entry to the Kingdom. [2]

One research was performed by David Achanfu yeboah in 2009 (summer) and it was published in Arab Studies Quarterly Vol #31, No. 3. The aim of the research is to examine the incidence, prevalence and the risk of acquiring tuberculosis in the Gulf region, focusing particularly on the GCC. As a result, they found that the incidence and prevalence rates of TB were relatively low and the risk of acquiring TB as a resident of GCC was also low. It also stated that preventive and curative measures were put in place by GCC Governments, and they were remarkably successful [3].

The research with a title "Knowledge of tuberculosis among medical professionals and university students in Oman" was conducted by A.A. Al-Jabri, A.S.S. Dorvlo, S. Al-Rahbi, J. Al-Abri and S. Al-Adawi in 2006. Its aim was to investigate the knowledge about tuberculosis among 142 medics (medical students, paramedics) and 133 non-medics (arts and social science students). It showed, when non-experts could be used as a reference for comparison, then this study exhibits that health care professionals in Oman have a good basic awareness of TB, but item-by-item analysis suggests that the gap in the knowledge of TB is small between medics and non-medics. This would suggest that more awareness education is needed in Oman. [4]

Another research was done by Mukhtar A. Solliman, Mohamed Azmi Hassali, Mahmoud Al-Haddad, Mukhtar M. Hadida, Fahad Saleem, Muhammad Atif and Hisham Aljadhey on 11-04-2012, and was published by the Journal of Applied Pharmaceutical Science. The aim of the research was to assess the Knowledge towards Tuberculosis among general population in North East Libya using a survey. A total of 1500 participants were approached and 1000 responded to the study. The respondents were asked whether they have heard of the disease called TB. The majority of the respondents (n=965, 96.5%) responded positively, 3.5% answered with 'no'. They were also asked about the causes of TB. Half of the respondents were able to answer this question correctly. They were also asked whether TB can be transmitted by sexual relations (from an infected person to his/her partner). Only 208 (20.8%) respondents were able to answer this question correctly.[5]

"Knowledge of TB within the Somali community in the United Kingdom" is another research that was conducted by Kate Gerrish, Naisby and Mubarak Ismail in 2013. The aim of this study was to gain insight into how TB is

understood within the Somali community, and how socio-cultural beliefs influence how Somali people may respond to the disease. The method used was a participatory approach. The results showed that most participants understood the signs and symptoms associated with TB. However, many did not understand how the disease was spread and its longer-term prognosis. TB was perceived as a stigmatizing disease, although attitudes were changing. Anxiety about becoming socially isolated was seen to influence people's willingness to disclose their illness. [6]

Another research was done by Abdullah A Al-Maniri, Omar A Al-Rawas, Fatmah Al-Ajmi, Ayesha De Costa, Bo Eriksson and Vinod K Diwan in 26 may 2008. The objective of the study was to measure TB suspicion and knowledge among private and public sector general practitioners in Oman, using a clinical vignette-based survey. A total of 257 GPs participated in the study of which 154 were private. Two questionnaires were distributed to both private and public GPs in Muscat Governorate. One questionnaire assessed demographic information and the second questionnaire had questions on knowledge of TB, its diagnosis, treatment, follow up and contact screening. The result was that private GPs had statistically significantly lower TB suspicion and TB knowledge scores than public GPs. In conclusion, GPs appear to have low suspicion and poor knowledge of TB, particularly private GPs. [7]

"Public knowledge of pulmonary tuberculosis" is a research that was conducted by Osama A Samargandi, Ahmed A Abulaban and Siraj O Wali in 2011. The research's aim was to assess the level of knowledge among people in Jeddah regarding this re-emerging disease. The results showed that the public awareness regarding pulmonary tuberculosis was under the original expectation. Essential information about the disease was lacking even among well educated people, though females were found to be more knowledgeable compared to males. [8]

Neway Tsegaye published an article with a title "TB awareness and treatment challenges" [9]. The main points of the article included; Tuberculosis (TB) is one of the major killer diseases in Ethiopia, and that it could affect all parts of the human body except the hair and nails. Late admissions of patients, and interrupting medicines before finishing prescribed doses prevent the success of treatment. And interrupting the treatment prompts the TB bacterium to develop resistance, which could lead to death. However, TB patients could regain their health, if they adhere to the proper treatment given at health centers, and take the medication that were prescribed to them.[9]

At last there was a research study conducted by C. A. METCALF, D. BRADSHAW, w. w. STINDT in 1990. And its results were that the women in the sample showed a very good knowledge of the important aspects of tuberculosis. Their knowledge of symptoms was good overall, but the study revealed misconceptions about the causes and transmission of tuberculosis. Future tuberculosis education in this group needs to be built on existing knowledge and awareness and should focus on changing attitudes such as misconceptions about transmission, and the stigmatization of the disease. [10]

Study Aim:-

To collect and evaluate the knowledge and attitude of Bahrainis towards Tuberculosis from ages 18-50 attending health centers, in order to raise the awareness and develop better preventative measures.

Study Objectives:-

To study the knowledge and attitude of Tuberculosis among Bahrainis between 18-50 years of age.

Hypothesis:-

We hope that our study results would help in improving people's general knowledge on Tuberculosis and help different health care professionals with the eradication of Tuberculosis by early detection, and compliance.

Methodology:-

Study Design:-

Cross Sectional Study, which is a type of observational study that involves data collection from a population at a specific time.

Sample Size:-

We will collect a sample size of 400 subjects from the Bahraini population between 18-50 years old.

$$n = \frac{z^2 \frac{p(1-p)}{2}}{e^2}$$

$\alpha = 0.05$

P= Prevalence= 0.5

E= Error= 0.05

$$n = \frac{(1.96)^2 (0.5)(0.5)}{0.05} = 384$$

Sampling Technique:-

The sample is a convenient sample, based on the age group chosen, in the setting of Bahrain health centers, by use of surveys. We would visit 5 health centers in Bahrain and have an equal distribution of 80 surveys for 80 visitors from each.

Inclusion Criteria:-

Those within the chosen age group “18-50 years” are who will be illegible for inclusion in this cross sectional study. The reason being that they might have been exposed to more knowledge about tuberculosis than the other age groups. We would collect data from those who are Bahraini and are willing to participate in the survey.

Exclusion Criteria:-

We excluded people below 18 and above 50 because we want to study the knowledge of Bahrainis from 18-50. The reason for the exclusion of the people bellow 18 and above 50 is based on the incidence of TB more likely peaking between 20-49 years of age according to the study mentioned in the literature review [2].

Data Collection:-

We expected that a very small number of Bahrainis would have a basic awareness of TB. Although the knowledge that they might have might not be significant enough to be considered awareness. Although the country has a low annual incidence rate, TB health education is the first line of defense against it.

The instrument that was used to collect information is a survey, which was a self-reported survey of 23 statements on general knowledge about TB that was given out and the data was be collected from Bahrain Health centers.

1. Capital governorate: Shaikh Sabah Alsalem Health Center – Manama
2. Southern governorate: Hamad Khanoo Health Center- Riffa
3. Muharraq governorate: Northern Muharraq Health Center- Muharraq
4. Northern governorate: Hamad Town Health Center- Hamad Town
5. Central governorate: Isa Town health center- Isa Town

Students from group seven under permission and supervision of the Arabian Gulf University gave out the surveys to the people attending the mentioned health centers above. The survey takes 4-5 minutes to be completed.

We did a pilot study on 10 volunteers and the results are attached.

Ethical Considerations:-

Ethical considerations have been taken in this research. We Took permission from the ministry of health and the significant health centers person to distribute the survey to the people who are attending the health centers for the study. The surveys distributed did not require any personal information or even names. It was mentioned clearly at the beginning of the survey that it is for study purposes only. The survey takes approximately 4-5 minutes to be completed. It was completely voluntary and the subjects can discontinue at any time and their participation did not have any effect on their treatment. We also added our contact information in the survey in case of any inquiries.

Statistical Analysis:-

The data has been entered and analyzed using SPSS v20. Continuous variables were expressed as mean \pm SD, while qualitative variables were reported as absolute number and percentage. Chi-square was used to analyze the

qualitative variables, while T-test and ANOVA were used to compare the difference between the mean of continuous variables. P-value less than 0.05 will be considered as statistically significant.

Project Timeline:-

Data collection will take three months and was completed by the end of August 2014. While statistical analysis and study was completed by the end of October 2014.

Results:-

In this study 400 randomly selected Bahraini individuals, from ages 18-50, distributed from 5 different district health centers were asked questions about their attitude and knowledge about Tuberculosis. 168 (42%) males and 232 (58%) females were included in this study. The mean of the ages included and presented was approximately 31 years of age.

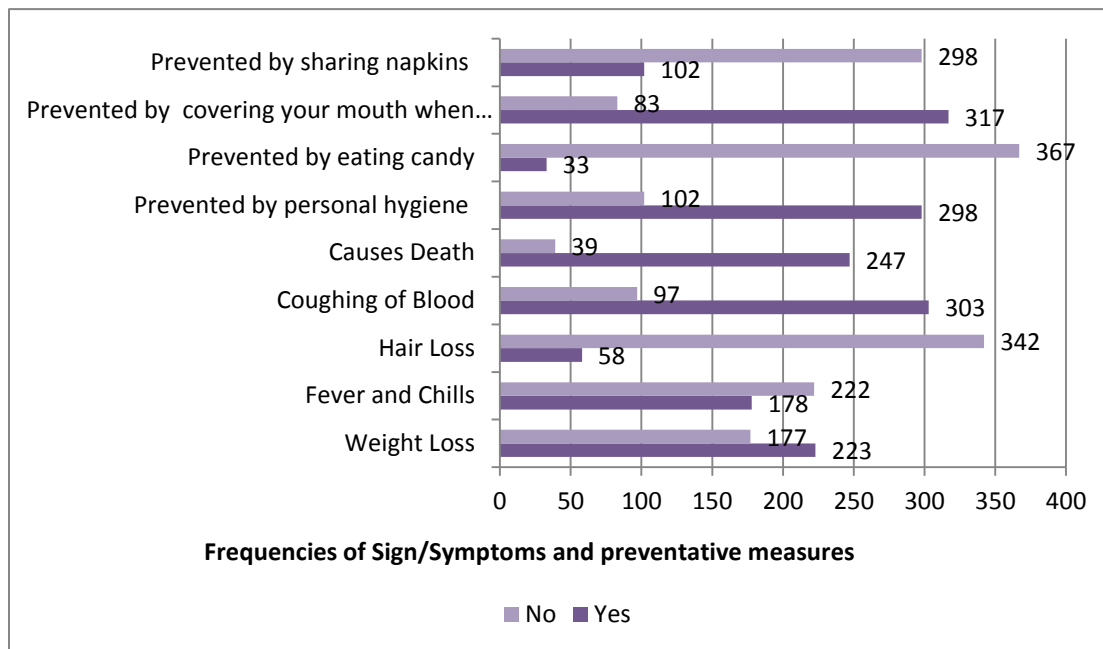


Figure 1:- Frequencies of sign/symptoms and preventative measures of TB.

In this figure, people were given different symptoms and preventive measures and were asked whether they are associated with TB or not. The majority of people answered that TB causes weight loss (55.8%), coughing of blood (75.8%), death (61.8%), and does not cause hair loss (85.5%). However they did not know that TB can cause fever and chills (55.5%).

When the group of people we studied was asked about the preventive measures of TB the majority knew that it can be prevented by personal hygiene (74.5%) and by catching your cough and sneeze (97.3%). They also knew that it couldn't be prevented by eating candy (91.8%) and by sharing napkins (74.5%).

Table 1:- Descriptive comparative analysis between Gender and Knowledge of Bahraini's about TB.

Knowledge Questions	Answers	Gender		P-Value
		Male Count (%)	Female Count (%)	
Heard about TB	Yes	139 (40.4)	205 (59.6)	0.110
	No	29 (51.8)	27 (48.2)	
An infectious disease	Yes	93 (37.2)	157 (62.8)	0.007*
	No	15 (41.7)	21 (58.3)	
	I don't know	60 (52.6)	54 (47.4)	
Everyone should be tested	Yes	68 (43.3)	89 (56.7)	0.766

	No	36 (38.3)	58 (61.7)	
	I don't know	64 (43.0)	85 (57.0)	
Some people are more susceptible than others	Yes	72 (42.1)	99 (57.9)	0.233
	No	25 (54.3)	21 (45.7)	
	I don't know	71 (38.8)	112 (61.2)	-
Mainly involves lungs	Yes	94 (37.6)	156 (62.4)	0.166
	No	13 (65.0)	7 (35.0)	
	I don't know	61 (46.9)	69 (53.1)	-
Availability of vaccine	Yes	80 (37.7)	132 (62.3)	0.113
	No	17 (45.9)	20 (54.1)	
	I don't know	71 (47.0)	80 (53.0)	-
Causes death	Yes	90 (36.4)	157 (63.6)	0.013*
	No	19 (48.7)	20 (51.3)	
	I don't know	59 (51.8)	55 (48.2)	-
TB can relapse	Yes	51 (41.5)	72 (58.5)	0.461
	No	24 (51.1)	23 (48.9)	
	I don't know	93 (40.4)	137 (59.6)	-

The results showed that 40.4% of males and 59.6% of females have heard about TB. There was no significance between the males and females that heard about TB. The calculated P-value was (0.110).

While the results showed significance when 37.2% of males knew that TB was an infectious disease while the majority of females 62.8% answered that it is an infectious disease. The calculated P-value was (0.007).

No significant difference was found between males (43.3%) and females (56.7%) that answered whether or not everyone should get tested for TB. the calculated P-value (0.766).

42.1% of males and 57.9% of females agree that some people are more susceptible to TB than others. There was no significant difference between them, with a P-value (0.233).

When people were asked whether TB mainly involves the lungs, there was no significant difference between males 37.6% and females 62.4%. P-value (0.166).

On whether or not there is a vaccine available against TB, 37.7% of males and 62.3% of females answered that there was a vaccine. No significant difference was found with a P-value of (0.113).

A significant difference was found when the subjects were asked whether TB causes death or not. A result of 36.4% from the males, 63.6% from the females answered that it does lead to death. P-value was (0.013).

The subjects were asked about relapse of TB, 41.5% of males and 58.5% of females agreed that TB could relapse. There wasn't any significance. P-value (0.461).

Only the first questions significance was calculated between who answered yes or no while the rest of the questions P-value was comparing between people knowing and not knowing the answer.

Table 2:- A Descriptive comparison between the educational level and the knowledge of people about TB.

Knowledge Questions	Answers	Educational level				P-Value ¹²
		Primary School Count (%)	Secondary/ high school Count (%)	Diploma/ college degree Count (%)	Post graduate Count (%)	
Heard about TB	Yes	5 (1.5)	164 (47.7)	155 (45.1)	20 (5.8)	0.026*
	No	3 (5.4)	35 (62.5)	16 (28.6)	2 (3.6)	
Everyone should be tested	Yes	2 (1.3)	71 (45.2)	78 (49.7)	6 (3.8)	0.020*
	No	0 (0)	45 (47.9)	39 (41.5)	10 (10.6)	

	I don't know	6 (4.0)	83 (55.7)	54 (36.2)	6 (4.0)	-
Some people are more susceptible than others	Yes	2 (1.2)	76 (44.4)	80 (46.8)	13 (7.6)	0.050*
	No	2 (4.3)	25 (54.3)	14 (30.4)	5 (10.9)	
	I don't know	4 (2.2)	98 (53.6)	77 (42.1)	4 (2.2)	-
An infectious disease	Yes	4 (1.6)	113 (45.2)	118 (47.2)	15 (6.0)	0.024*
	No	0 (0)	18 (50.0)	15 (41.7)	3 (8.3)	
	I don't know	4 (3.5)	68 (59.6)	38 (33.3)	4 (3.5)	-
Mainly involves lungs	Yes	3 (1.2)	112 (44.8)	121 (48.4)	14 (5.6)	0.078
	No	1 (5.0)	12 (60.0)	5 (25.0)	2 (10.0)	
	I don't know	4 (3.1)	75 (57.7)	45 (34.6)	6 (4.6)	-
Availability of vaccine	Yes	2 (0.9)	95 (44.8)	104 (49.1)	11 (5.2)	0.235
	No	1 (2.7)	23 (62.2)	10 (27.0)	3 (8.1)	
	I don't know	5 (3.3)	81 (53.6)	57 (37.7)	8 (5.3)	-
Causes death	Yes	2 (0.8)	115 (46.6)	114 (46.2)	16 (6.5)	0.064
	No	2 (5.1)	21 (53.8)	12 (30.8)	4 (10.3)	
	I don't know	4 (3.5)	63 (55.3)	45 (39.5)	2 (1.8)	-
TB can relapse	Yes	2 (1.6)	57 (46.3)	52 (42.3)	12 (9.8)	0.016*
	No	4 (8.5)	25 (53.2)	15 (31.9)	3 (6.4)	
	I don't know	2 (0.9)	117 (50.9)	104 (45.2)	7 (3.0)	-

The majority of people that have heard about TB were secondary/high school graduates (47.7%). While the second highest percentage came from the people that have a diploma/college degree (45.1%). The P-value was (0.026) which was significant, compared between all the educational levels and people who heard about TB.

Diploma/college graduates were the majority of the people who knew that everyone should be tested (49.7%). While secondary school/high school graduates were had a close percentage of (45.2%). The p-value was (0.020) which was significant, compared between all the educational levels and people who heard about TB.

On whether or not some people are more susceptible than others to TB, those that had diploma/college degree were the majority (46.8%) while the secondary school/high school graduates were second highest (44.4%). The result was significant when compared between all the educational levels, p-value (0.05).

47.2% of those who had a diploma/college degree were the majority who answered that TB is indeed an infectious disease, whereas 45.2% from secondary school/high school were the second most. The result was significant when compared between all the educational levels, p-value (0.024).

When asked about the main involvement of the lungs in TB, 48.4% were the majority with a diploma/college degree, while 44.8% were from secondary school/high school. There was no significance between all the educational levels, with a P-value (0.078).

On questioning about the availability of a vaccine against TB, people with a diploma/college degree were the majority 49.1%, while the second highest were from secondary school/high school bracket 44.8%. P-value of (0.235) was calculated between all educational levels and was not found to be significant.

Whether TB is fatal or not the majority was from secondary school/high school (46.6%) while the diploma/college graduates were the second highest 46.2%. No significance was found as the p-value was (0.064).

The majority of answers about relapse of TB came from secondary school/high school with 46.3% while second most were from diploma/college degree people 42.3%. The results showed a clear significance with a p-value of (0.016).

The P-values that were calculated were a comparison between whether people know or don't know the answers to the different questions that were presented in this table.

Table 3:- Cross tabulation between the knowledge of TB and involvement in the medical field.

Knowledge Questions	Answers	Health care professional		P-Value
		Yes Count (%)	No Count (%)	
Heard about TB	Yes	56 (16.3)	288 (83.7%)	0.286
	No	6 (10.7)	50 (89.3)	
An infectious disease	Yes	46 (18.4)	204 (81.6)	0.019*
	No	6 (16.7)	30 (83.3)	
	I don't know	10 (8.8)	104 (91.2)	
Everyone should be tested	Yes	22 (14.0)	135 (86.0)	0.082
	No	23 (24.5)	71 (75.5)	
	I don't know	17 (11.4)	132 (88.6)	
Some people are more susceptible than others	Yes	41 (24.0)	130 (76.0)	0.002*
	No	4 (8.7)	42 (91.3)	
	I don't know	17 (9.3)	166 (90.7)	
Mainly involves lungs	Yes	48 (19.2)	202 (80.8)	0.007*
	No	3 (15.0)	17 (85.0)	
	I don't know	11 (8.5)	119 (91.5)	
Availability of vaccine	Yes	36 (17.0)	176 (83.0)	0.123
	No	8 (21.6)	29 (78.4)	
	I don't know	18 (11.9)	133 (88.1)	
Causes death	Yes	40 (16.2)	207 (83.8)	0.008*
	No	13 (33.3)	26 (66.7)	
	I don't know	9 (7.9)	105 (92.1)	
TB can relapse	Yes	28 (22.8)	95 (77.2)	0.016*
	No	7 (14.9)	40 (85.1)	
	I don't know	27 (11.7)	203 (88.3)	

83.7% of people who have heard about TB were not health care professionals while 16.3% were health care providers. There was no significance between the knowledge of health care providers and non-health care providers. P-value (0.286).

The majority of non-health care professionals 81.6% knew that TB is infectious. On the other hand 18.4% of health care professionals were aware of it. This showed a strong significance among healthcare and non-healthcare professionals. P-value (0.019).

There was no significant difference between health care professionals 14% and non-healthcare professionals 86% when they were asked if everyone should be tested for TB. P-value (0.082).

When questioned about susceptibility of TB, there was a significant difference in answers between health care professionals 24% and non-healthcare professionals 76%. P-value (0.002).

19.2% of healthcare professionals and 80.8% of non-healthcare professionals knew that TB mainly involved the lungs. P-value of (0.007) showed significant differences.

17% of healthcare professionals and 83% of non-healthcare professionals agreed that there is a vaccine available against TB. There was no significant difference in the answers provided with p-value (0.123).

On whether or not TB leads to death, 16.2% of healthcare professionals and 83.8% of non-healthcare professionals answered yes. There was a significant difference among the answers with a p-value (0.008).

Table 4:- A cross tabulation between the educational level and attitude towards TB.

Attitude Questions	Answers	Educational level				P-Value
		Primary school Count (%)	Secondary/ high school Count (%)	Diploma/ college degree Count (%)	Post graduate Count (%)	
When to report the cases to MOH	After 6 months	0 (0)	5 (33.3)	8 (53.3)	2 (13.3)	0.766
	Within a week	1 (1.7)	29 (50.0)	26 (44.8)	2 (3.4)	
	Within 24hours	3 (1.5)	84 (43.3)	92 (47.4)	15 (7.7)	
	I don't know	4 (3.0)	81 (60.9)	45 (33.8)	3 (2.3)	-
Non symptomatic TB patients should be treated	Yes	3 (1.5)	87 (42.4)	104 (50.7)	11 (5.4)	0.124
	No	0 (0)	20 (74.1)	6 (22.2)	1 (3.7)	
	I don't know	5 (3)	92 (54.8)	61 (36.3)	10 (6.0)	-
Patient's relatives should be tested	Yes	6 (2.2)	136 (48.9)	119 (42.8)	17 (6.1)	0.136
	No	0 (0)	19 (38.0)	28 (56.0)	3 (6.0)	
	I don't know	2 (2.8)	44 (61.1)	24 (33.3)	2 (2.8)	-
TB patients should be isolated	Yes	4 (1.7)	110 (46.6)	104 (44.1)	18 (7.6)	0.061
	No	1 (1.9)	25 (46.3)	26 (48.1)	2 (3.7)	
	I don't know	3 (2.7)	64 (58.2)	41 (37.3)	2 (1.8)	-

The majority of people who were non-healthcare professionals 77.2% agreed that TB can relapse while only 22.8% of the healthcare professionals did. There is a significant difference among them as p-value is (0.016).

194 out of 400 (48.5%) knew that TB should be reported within 24 hours. The majority of those who knew the answer had a diploma or a college degree (92/400) second being the secondary/high school students (84/400).

When the subjects were asked about treating non symptomatic TB patients, the majority answered that even non symptomatic patients require treatment (205/400). The majority of those who answered had a diploma/ college degree (104/400) and next came secondary/ high school students (87/400).

The majority or people agreed that patients' relatives should be tested for TB (278/400) and the bulk were from the secondary/high school group (136/400).

When subjects where asked about isolation of TB patients the majority knew that they should be isolated (236/400) the bulk were from secondary/ high school students (110/400).

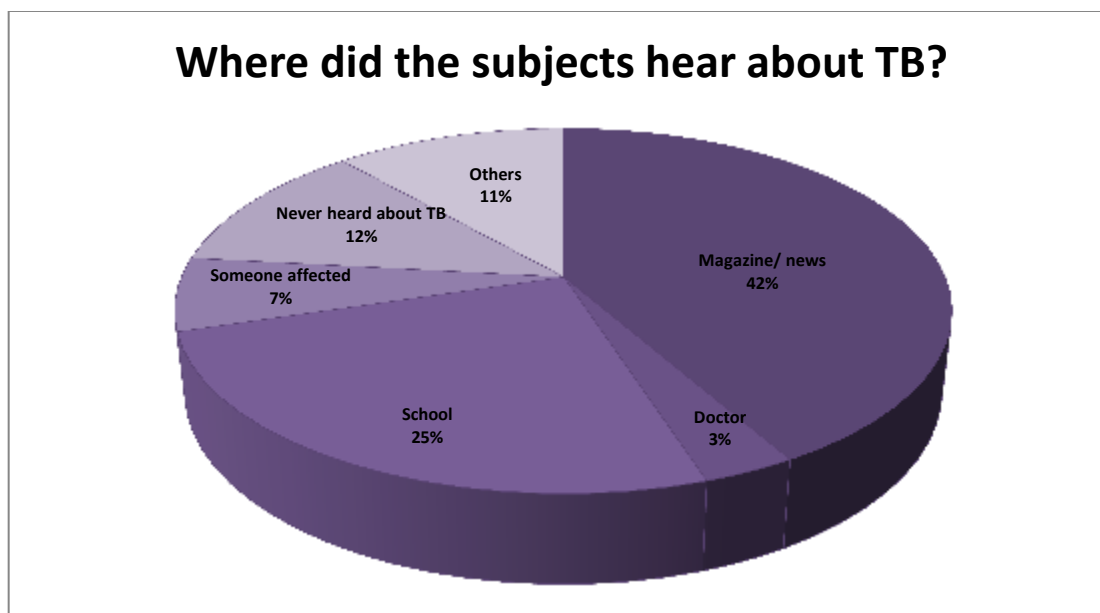


Figure 2:- Where did the subject hear about TB?

The majority of the subjects heard about TB from magazines and news. The least amount of subjects heard about it from their doctor.

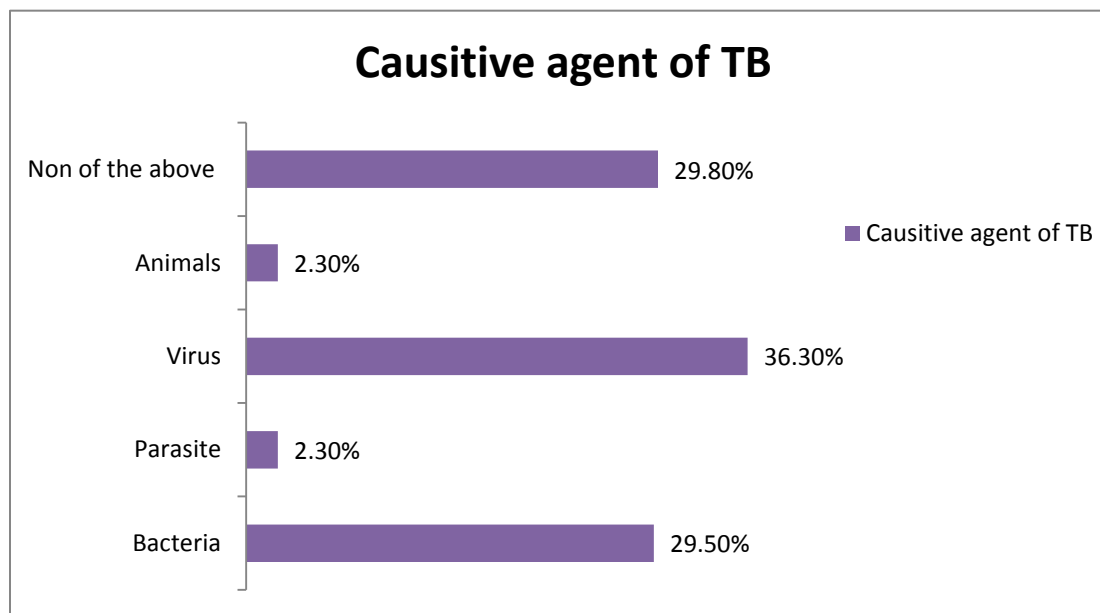


Figure 3:- Causative agent of TB

The Majority of the subjects did not know the causative agent of TB. Most of them answered that Viruses could cause TB (37.3%).

Discussion:-

After computing and analyzing our results and comparing them to other studies and researches. We identified some similarities and differences in the outcomes.

In our study the majority of the subjects heard about TB. However they did not know the causative agent. But about half of them did know how it was transmitted, as well as the signs and symptoms of it, and the preventive measures.

The educational level of the subjects showed importance as the majority of the ones that were aware of the disease had a diploma/college degree or were secondary/ high school students.

Similarly to the research that was conducted in Oman comparing people who worked in the medical field and those who didn't, we concluded that there was no significant difference in the knowledge about TB between the two groups.

A previous research conducted in Libya assessing the awareness and causes of TB, showed that only 3.5% of the subjects did not hear about TB. While in our study 14% of the subjects did not hear about it, showing that there is a significant difference and that there are more Bahrainis that are unaware of TB than Libyans. However, both researches showed that the majority of the subjects did have a basic awareness of TB. Regarding the transmission of TB we concluded that the majority of the subjects in our research did not know the causative agent of TB, while the majority of the Libyans were aware of the cause.

Similarly to the study conducted on the Somali community in the United Kingdom our research had the same outcome that showed that most participants understood the signs and symptoms associated with TB. However, in the Somali research many did not understand how the disease was spread but in our research the majority did know about the transmission.

We found similar results in our research as in the research conducted in Jeddeh, which showed that females are more aware of TB than males.

Similarly in Ethiopia women were found more knowledgeable than males and both our subjects and theirs did not know about the causative agent of TB. The difference lies in the fact that our subjects are more aware of the transmission of TB than the Ethiopian subjects.

Conclusion:-

After conducting the research we concluded that the majority of our subjects had the basic awareness of TB and its mode of transmission but not enough knowledge to help prevent its spread, nor did they know the causative agents and hence cannot defend against them. The research proved useful in assessing the knowledge and attitudes of Bahrainis, as there wasn't any significant stigmatization against those who suffer from TB.

When it came to questions about isolation, screening and reporting the cases to the ministry of health, our research showed that the subjects shared a very positive attitude towards TB.

Limitation:-

The limitations that we faced included that some people were reluctant to answer our survey or did not have time to complete it. While some people were visually impaired and needed us to fill in the survey for them. The data was hard to analyze as it was not computerized and had to be entered manually.

Recommendations:-

Although the majority of the Bahraini subjects were aware of TB, the need for spreading more awareness is still required. We recommend that lectures and seminars should be held at schools and universities. Pamphlets should be distributed among healthcare and non-healthcare workers. TV commercials about TB would help spread awareness. Posters about TB could be hung around in hospitals and public places.

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Appendix 1**Questionnaire**

This survey is for study use only. The purpose of the study is to know Knowledge and attitude of tuberculosis among Bahrainis from ages 18-50 attending health centers. No personal information is required and no information will be revealed or used for other than study. Participation is voluntary and refusal to participate will not effect your treatment and will involve no penalty. You may also discontinue participation at anytime without penalty.

Directions: This survey will take 4-5 minutes of your time. Please read the 23 questions below and answer them by filling in the circle before your answer or placing a tick (□) or an (X) on it. In some questions you will find a table, please tick one answer either yes or no for each question.

General information**1. Gender:**☐

Male

☐

Female

2. Age: _____ years**3. Education level:**

- ☐ Primary school degree ☐ College degree
- ☐ Secondary school degree ☐ Postgraduate degree
- ☐ Diploma
- 4. Do you work in the health care (ex: Doctor, medical student, nurse...etc.)?**
- ☐ Yes ☐ No

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Knowledge

5. Have you heard about Tuberculosis (TB)?

- ☐ Yes ☐ No

6. Where did you hear about TB?

- ☐ Magazine/news ☐ I know someone with TB
- ☐ My doctor ☐ I haven't heard about it
- ☐ School ☐ Other (please specify): _____

7. What is the causative agent of TB?

- ☐ Bacteria ☐ Fungi ☐ Virus
- ☐ Animals ☐ None of the above

8. Is TB an infectious disease?

- ☐ Yes ☐ No ☐ I don't know

9. How is TB spread from one person to another?

- ☐ By air ☐ It is not transmitted from person to another
- ☐ By blood ☐ By food and water

10. Should everyone be tested for TB?

☐ Yes **11.** ☐ No ☐ I don't know

Some people get TB

easier than others:

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☐ True ☐ False ☐ I don't know

12. The initial treatment for TB is:

☐ Surgery ☐ No treatment for TB
☐ Medication ☐ I don't know

13. TB mainly affects the lungs?

☐ True ☐ False ☐ I don't know
☐ I don't know

14. If you have TB you should take medication even if you don't feel sick:

☐ True ☐ False ☐ I don't know

15. If you are given TB medications how long should you take them?

☐ 1 month ☐ 3 months
☐ 6 months ☐ I don't know

16. Is there a vaccine for TB?

☐ Yes ☐ No ☐ I don't know

17. Can TB cause death?

☐ Yes ☐ No ☐ I don't know

18. Which one is a symptom of TB (tick the answer):

Symptom	Yes	No
Weight loss		
Fever and chills		26
Hair loss		
Coughing blood		

19. When should we report a patient with TB to the ministry of health?

☐ After 6 months ☐ Within 1 week

☐ Within 24 hours ☐ I don't know

☐ Yes ☐ No ☐ I don't know

20. If a person had TB can he/she get it again?

21. Should a patient with TB be isolated

Method	Yes	No	True	I don't know	False
Personal hygiene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eating candy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Covering mouth when sneezing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing napkins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

☐ Yes ☐ No

22. If a family member is affected with TB should you test yourself?

I don't know