

Original Article

Healthcare providers' attitude toward patient with tuberculosis in Misurata, Libya, "An Important Public Health issue"

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Background: Nurses are frontline healthcare providers and have an important role to play in the direct management of tuberculosis (TB) patients and consequently face a high risk of infection. The **aim** of this study was to assess the attitude about TB patient among nurses in Misurata, Libya. **Methodo:** A quantitative analytic cross-sectional study using validated self-administered questionnaire among 396 nurses in public health facilities of Misurata, Libya. A was used to investigate the nurses' level of attitude on TB. **Results:** Out of the participants, 152 (38.4%) were male and 244 (61.6%) were female. The majority of the participants were in the 26–40 years age group. Only 80 (20.8%) out of the 384 participants had positive attitude towards TB. 302 (78.6%) had phobia of TB while, 82(21.4%) of them did not show this phobia, it was found that 269 (70.1%) of the 384 participants considered TB as a social stigma. The attitude was not affected by age and education level among the participants. On other hand, female participants (Adjusted OR =2.99, 95% CI=1.37- 6.53, p = 0 .006) (1.371-6.53) had almost 3 times more phobia from TB compared to male participants. However, nurses with more than five years of experience (Adjusted OR =3.49, 95% CI=1.09-11.16, p = 0 .03) had 3.49 times positive attitude generally towards TB compared to those with less than one year of experience. **Conclusion:** Majority of the nurses who participated in this study were having negative attitude and phobia toward TB patient. Active educational interventions, are required to improve attitude, reduce the phobia and minimize the social stigma toward TB patients.

Keywords: tuberculosis; assessment; attitude; nurses; Libya

Introduction:

Tuberculosis (TB) is a major health problem and a leading killer among the infectious diseases that threaten the health and well-being of people globally. Indeed, TB has reached epidemic proportions in many developing countries. In 2011, the World Health Organisation (WHO) recorded an estimated 8.7 million TB incident cases (range 8.3–9.0 million) and also estimated that worldwide eight million new cases of TB are reported annually, of which two to three million cases result in death [1].

The Libyan national TB programme has adopted the directly observed treatment short-course (DOTS) strategy since 1998 and in 2000 the strategy covered all governorates in the country. In 2008, 871 cases (621 nationals and 250 expatriates) were notified by public facilities working under the DOTS strategy. The success rate of the DOTS treatment was 63.5% in 2007. In Libya, a total 1498 new cases of TB were reported in 2011 [2].

Healthcare workers (HCWs) are at high risk of TB infection because of their frequent exposure to patients with the disease, either diagnosed or undiagnosed. The global upsurge in the incidence of TB that is being powered by the HIV pandemic, increase in the prevalence of multidrug-resistant TB, and poor hospital infection control practices have all combined to make the condition a serious occupational hazard for HCWs worldwide (3) Nurses were the first occupational group among the HCWs who were identified as being at increased risk of contracting a range of infections and

diseases, and particularly TB. This is not surprising in view of the prolonged and often close contact between hospital nurses and patients [1].

Previous studies indicate that the main factors that influence the extent of the risk posed to HCWs are a knowledge deficit and negative attitude among HCWs towards the disease and TB patients [4,6]. In Libya, although nurses play a major role in investigation, immunisation, and administration of treatment of the disease, there is a lack of empirical evidence in the literature regarding nurses' attitude on TB. Therefore, the current study was designed to investigate the level of attitude about TB among the frontline healthcare provider in Misurata, Libya.

Material and Methods**Study design, setting, period, sampling and sample size**

A cross-sectional study was conducted among 430 nurses randomly selected from seven healthcare facilities (two public hospitals and five district primary healthcare centres) in the province of Misurata, Libya from over period of 3 months (from 12th September 2025 to 30th December 2025). A total of 402 questionnaires were returned and out of these, 396 were usable (93% response rate).

Measurement tool

Basic attitude of TB was measured using attitude assessment questionnaire which is consisted of two parts. The first part included questions to gather data on the socio-demographic characteristics of the study sample. The second part contains two major components consisting of a total eight questions, four about TB phobia, while the others towards TB stigma: The attitude questions were extracted from previous studies on attitudes towards TB [7,8]

Content validity was ascertained through consultation with three academics who were expert in the field of TB. In addition, a test-retest correlation was carried out to evaluate the reliability and face validity of the questionnaire in a pilot study among 30 nurses in public hospitals. As the reliability was found to be high ($r = 0.99$), it was necessary to make just a few minor corrections to the statements in the questionnaire. After the participants had given their informed consent, they were able to complete the self-administered modified questionnaire in approximately 15 minutes.

A five-point Likert scale of agreement: (1 = strongly agree, 2 = agree, 3 = somewhat agree, 4 = disagree, 5 = strongly disagree). A cut-off point of (3) was used for this part of the questionnaire. For each of the two components, the mean was calculated and used to determine the level of attitude in relation to the cut-off point of the Likert scale. If the mean score of the component was lower than the cut-off point of the scale, the attitude was considered negative, while if it was equal to or higher than the cut-off point of scale, the level of attitude was considered positive and that was based on previous studies; (9). The final version of the questionnaire was translated into Arabic using standard translation measures.

Ethical considerations

The study protocol was officially approved and institutional ethical clearance was obtained from the medical directors of the hospitals and public health centres involved in the study. Written informed consent was also obtained from each of the participating nurses before they completed the questionnaire survey.

Statistical analysis

Statistical Package for Social Sciences (SPSS) version 20 was used in the data analysis and statistical significance was set as 0.05. Descriptive statistics were used to illustrate the demographic variables and responses of respondents in KAP survey. Multivariate logistic regression analysis was applied to determine the associations of KAP with demographic (age, gender, education levels, and residence) and work period.

Results

Demographic characteristics of participants

Table 1 shows the demographic characteristics of the study population. In the sample 84 (21.9%) were male nurses and 300 (78.1%) were female nurses; 75 (19.5%) aged from 18-25 years; 246 (64.1%) aged from 26-40 years and 63 (16.4%) aged more than 40 years. Amongst them, 136 (35.4%) had Bachelor's degree of nursing; 161 (41.9%) had Diploma of nursing and 87 (22.7%) had training course certificate. However, 48 (12.5%) had working period less than 1 year; 242 (63%) had working period ranged from 1 year to 5 years and 84 (24.4%) of total respondents had working experience more than 5 years.

Attitude among nurses towards tuberculosis

Table 2 shows the levels of attitude among the nurses about TB. The mean total attitude score was calculated to ascertain the overall attitude level of each of the participants. Based on the previous studies; (9, 10), the cut-off point was 24 as the minimum score was 8 and the maximum was 40. Hence, total score equal to or higher than cut-off point (≥ 24) were considered high while if it was lower than the cut-off point, the total level of attitude was considered low. Based on the results, the overall attitude level among the nurses was low as only 80 (20.8%) out of the 384 participants had positive level of attitude towards TB. However, 304 (79.2%) of the participants had negative attitude about TB.

Out of all the participants, 302 (78.6%) had phobia of TB (component 1) while, 82 (21.4%) of them did not show this phobia. Table 3 shows the responses of nurses regarding attitude items; out of total participants, 239 (62.2%) of the participants said that they are more likely to feel uncomfortable about being near to a TB patient. Also, nearly half of the total participants stated that it would not be safe to be in prolonged contact with a TB patient. Furthermore, 69.3% of the participants mentioned that it would be a problem to find a marriage partner if they became infected with TB. Moreover, 85% of the nurses said that they would leave their job if they contracted TB.

In addition, it was found that 269 (70.1%) of the 384 participants considered TB as a social stigma and 115 (29.9%) of them did not consider TB as a social stigma (component 2). 44% stated that if they found out they had TB; they would feel ashamed and embarrassed. Also, around 65% of the participants said that, if they had TB, others would have a low opinion about their families. Moreover, 56.6% of the nurses were worried that people would laugh at them if they got TB, while 56% said that they would hide their TB if they contracted the disease. Thus, in conclusion, the majority of the participants in this study showed negative attitude towards TB; many of the nurses had a phobia about the disease, while others considered TB as a social stigma.

Table 1: Demographic characteristics of participants (n=384)

Demographic Variable	n (%)
Gender	
Male	84 (21.9%)
Female	300 (78.1%)
Age	
18 - 25 years	75 (19.5%)
26 - 40 years	246 (64.1%)
> 40 years	63 (16.4%)
Educational Level	
Training course certificate	87 (22.7%)
Diploma of nursing	161 (41.9%)
Bachelor of nursing	136 (35.4%)
Work experience	
< 1 year	48 (12.5%)
1 -5 years	242 (63.0%)
> 5 years	94 (24.4%)

Table 2: Levels of attitude on tuberculosis of the participants (n=384)

Component	Mean ±SD	Negative attitude	Positive attitude
		n (%)	n (%)
Total attitude	2.44±0.57	0.579	80(20.8%)
Attitude component 1 (TB phobia)	2.35±.72	302(78.6%)	82(21.4 %)
Attitude component 2 (TB stigma)	2.54±.70	269(70.1%)	115(29.9)

Table 3: Frequency and proportion of responses for attitude of the nurses (n=384)

N	Attitude components	Strongly agree n (%)	Agree n (%)	Somewhat agree n (%)	Disagree n (%)	Strongly disagree n (%)
C1 (Component about phobia of TB)						
1	I wouldn't feel comfortable about being near to a tuberculosis patient	52 (13.5)	187 (48.7)	71 (18.5)	67 (17.4)	7 (1.8)
2	I wouldn't want to be in prolonged contact with a tuberculosis patient for safety reasons	47 (12.2)	144 (37.5)	112 (29.2)	68 (17.7)	13 (3.4)
3	If I had TB, it would be a problem to find a marriage partner	46 (12.0)	220(57.3)	84 (21.9)	25 (6.5)	9 (2.3)
4	I would leave my job if I got TB	120(31.3)	171 (44.5)	54 (14.1)	33 (8.6)	6 (1.6)
C2 (Component about stigma of TB)						
1	If I found out that I had TB, I would feel ashamed and embarrassed	34 (8.9)	135 (35.2)	123 (32.0)	73 (19.0)	19 (4.9)
2	If I had TB, others would think less of my family	66 (17.2)	184 (47.9)	69 (18.0)	59 (15.4)	6 (1.6)
3	I am worried that others and hospital staff might laugh at me if I got TB	39 (10.2)	178 (46.4)	96 (25.0)	66 (17.2)	5 (1.3)
4	I would hide my TB if I got it	45 (11.7)	170 (44.3)	94 (24.5)	70 (18.2)	4 (1.3)

Table 4: Association between age and attitude towards TB (n=384)

C	Age	Negative n (%)	Positive n (%)	Crude (95%CI)	OR	P-value	**Adjusted OR (95% CI)	P-value
TA	18-25ys	58(77.3)	17(22.7)	***Reference				
	26-40ys	203(82.5)	43(17.5)	0.72(0.38-1.36)	0.31	0.62(0.31-1.20)	0.15	
	>40ys	43(68.3)	20(31.7)	1.58(0.74-3.38)	0.23	1.53(0.67-3.48)	0.3	
C1	18-25ys	58(77.3)	17(22.7)	***Reference				
	26-40ys	19(28.8)	47(71.2)	0.80(0.43-1.50)	0.5	0.68(0.35-1.31)	0.25	
	>40 ys	45(71.4)	18(28.6)	1.36(0.63-2.94)	0.42	1.36(0.59-3.16)	0.46	
C2	18-25ys	52(69.3)	23(30.7)	***Reference				
	26-40ys	17(19.3)	71(80.7)	0.91(0.52-1.61)	0.76	0.83(0.46-1.49)	0.54	
	>40ys	42(66.7)	21(33.3)	1.13(0.55-2.31)	0.73	1.1(0.51-2.34)	0.8	
Gender								
TA	Male	68(81)	16(19)	***Reference				
	Female	236(78.7)	64(21.3)	1.15(0.62-2.12)	0.64	1.61(0.81-3.21)	0.173	
C1	Male	73(86.9)	11(13.1)	***Reference				
	Female	229(76.3)	71(23.7)	2.0(1.03-4.09)	0.04	2.99(1.37-6.53)	*.006	
C2	Male	60(71.4)	24(28.6)	***Reference				
	Female	209(69.7)	91(30.3)	1.08(0.63-1.85)	0.75	1.10(0.62-1.95)	0.732	
Education level								
TA	TCC	72(82.8)	15(17.2)	***Reference			0.63	
	Diploma	124(77)	37(23)	1.43(0.73-2.78)	0.29	1.39(0.66-2.89)	0.37	
	Bachelor	108(79.4)	28(20.6)	1.24(0.62-2.49)	0.53	1.14(0.53-2.46)	0.73	
C1	TCC	71(81.6)	16(18.4)	***Reference				
	Diploma	124(77)	37(23)	1.32(0.68-2.54)	0.4	1.48(0.72-3.04)	0.27	
	Bachelor	107(78.7)	29(21.3)	1.20(0.60-2.37)	0.59	1.27(0.60-2.69)	0.52	
C2	TCC	67(77)	20(23)	***Reference				0.38
	Diploma	113(70.2)	48(29.8)	1.42(0.77-2.6)	0.25	1.19(0.63-2.24)	0.58	
	Bachelor	89(65.4)	47(34.6)	1.76(0.96-3.26)	0.06	1.53(0.80-2.91)	0.19	
Work period								
TA	< 1 y	42(87.5)	6(12.5)	***Reference				
	1-5ys	194(80.2)	48(19.8)	1.73(0.69 - 4.31)	0.23	2.19(0.71-6.70)	0.16	
	>5 ys	68(72.3)	26(27.7)	2.67(1.01-7.04)	0.04	3.49(1.09-11.16)	*0.03	
C1	< 1 y	40(83.3)	8(16.7)	***Reference				
	1-5ys	191(78.9)	51(21.1)	1.33(0.58-3.03)	0.48	1.32(0.50-3.47)	0.56	
	>5 ys	71(75.5)	23(24.5)	1.62(0.66-3.95)	0.29	1.79(0.63-5.04)	0.27	
C2	< 1 y	41(85.4)	7(14.6)	***Reference				
	1-5ys	169(69.8)	73(30.2)	2.53(1.08-5.90)	0.03	2.11(0.87-5.08)	0.09	
	>5 ys	59(62.8)	35(37.2)	3.47(1.40-8.58)	.007	2.86(1.13-7.28)	*0.02	

C1 Component about phobia of TB), Attitude component 2 (TB stigma), TA (total attitude)

Association of demographic characteristics and work period with attitude

Table 4 shows the association between age and attitude towards TB among the participants. Based on the result there was no significant association between age and attitude wards TB among the nurses ($P > 0.05$). The result showed that there was significant association between and gender and attitude towards TB. Female participants (Adjusted OR =2.99, 95% CI=1.37- 6.53, $p = 0 .006$) (1.371-6.53) had almost 3 times more phobia from TB compared to male participants. However, there were no significant associations of TB- stigma and total attitude scores with gender.

The result revealed that there was no association between attitude and education among the nurses, since the obtained p -values of all adjusted odd ratios were higher

than 0.05. The result indicated that, there were statistically significant associations between work experiences among the nurses and their attitude towards TB.

The results revealed that nurses with more than five years of experience (Adjusted OR =2.86, 95% CI=1.13-7.28, $p = 0 .02$) had 2.86 times more stigma of TB compared to nurses with less than one year of experience. Also, it was found that nurses with more than five years of experience (Adjusted OR =3.49, 95% CI=1.09-11.16, $p = 0 .03$) had 3.49 times positive attitude generally towards TB compared to those with less than one year of experience. In conclusion, nurses with more than five years of experience showed less stigma and more positive attitude towards TB compared to participants with less than one year work of experience.

DISCUSSION

Tuberculosis is feared since it is contagious, and has long been associated with negative attitudes in people because it predominantly affects the poor, homeless, HIV positive and incarcerated people [4]. Our study found that 79.2 % of respondents had negative attitude towards tuberculosis. A negative of attitude was also reported among healthcare workers in other studies, [11.13] These findings are inconsistent with the findings of other studies where high proportion of positive attitude was detected [14.17]. A study conducted to assess the causes of stigma and discrimination against TB infected people revealed that the causes were fear of contracting TB (58%), poverty (40%) and lack of knowledge (34%) [5].

TB-associated stigma and phobia continue to be global problems since many years ago, and remain as important social issues of the disease. Stigma has a negative impact on TB patients, as well as healthcare providers, since it forms physical as well as mental barriers between them. Findings of another study indicated that many factors were involved in causing the drop in the quality of HCWs service towards TB patients. These include fear of contracting TB, negative attitudes towards TB patients and losing their jobs as consequences to the factors stated earlier [6].

Despite continuously working in the field, most of our participants had a phobia of TB; (62.2 %) of them said that they felt uncomfortable being very close to a TB patient. Almost half of the participants stated that it would not be safe for them to be in prolonged contact with a TB patient, and 85% of the nurses said that they would leave their job if they contracted TB. Fear of the resulting prolonged hospital admission and complicated treatment course and isolation were also reported in other study [18].

With agreement of findings reported in previous studies [7.8], about 70% of our nurses mentioned that TB could minimize the chance of marriage. In addition, it was found that 70.1% of our participants considered TB as a social stigma. A similar finding was also reported in another study [9]. 44% in our study stated that if they ever found out they had contracted TB; they would feel ashamed and embarrassed.

Around 65% of the participants said that, if they had TB, other people would have a low opinion of their families, while 56.6% of the nurses were worried that people would laugh at them if they contracted TB. 56% of the nurses said that they would hide the fact that they had contracted TB if that was the case. Loss of self-esteem, feeling ashamed, and having less respect from others were the findings of other studies which assessed the stigma of TB among healthcare workers [18.19]. Hence, prompt educational intervention should be introduced to minimise the phobia and stigma of TB among TB nurses in Libya. This would ensure optimal care and appropriate management for TB patients.

Despite there being a wide spectrum of age (18-50 years), there was no a phobia of TB found to be associated with any age group. This finding is consistent with the finding of another study [11]. In contrast, Tudor et al., 2013 reported that, phobia of the TB treatment course and cost was higher among aged nurses (>40 years) compared to that of the younger nurses. This finding could possibly be attributed to the higher level of knowledge regarding the course, cost and complications of TB treatment among the older nurses compared to that of the younger nurses. However, in another study, stigma towards TB was not different by the age of participants [19]. Moreover, participants of younger displayed a positive attitude towards TB than other older ages [10.11].

The female participants in our study had higher TB phobia compared to male participants. Similar findings were reported in other studies [12.13]. Sensitivity to contact with co-workers of TB and stigma towards TB in the society were believed to be more among women than men [14]. However, in our study, there was no significant difference between male and female nurses in their attitudes towards perceived TB stigma. This finding corresponded with other studies [17.19] The finding in our study that both phobia and stigma of TB were not interfered by the various educational levels among our nurses, was similar to that of [15]. Another study also found that the stigma of TB was not expressed by the participants despite the various education levels [19]. In some previous studies, items related to knowledge and practice on TB were considered to be attitude items in the questionnaires; however, in the fact, such items were not expressed the actual concept of attitude. Hence, to avoid any misconception and confusion, we didn't include such kind of studies in our discussion part.

In our study, the length of work experience among the nurses was found to be statistically significantly associated with their attitudes towards TB. Senior nurses with more than five years of experience had positive attitude compared to those of nurses with less than five years of work duration. It could be that the nurses with longer years of experience in TB centres were continually updating and gaining in knowledge, which then subsequently reduces their perceived stigma and phobia of TB. This finding is consistent with the finding of another study [11]. However, among the participants in other studies, the attitude towards TB was not affected by the work duration [18.19].

CONCLUSION

Majority of the nurses who participated in this study were having negative attitude toward TB patient, expressed their phobia and considered the TB as social stigma. However, their attitude was not affected by age and educational level but was affected by gender, work period experience and residence.

Authors' Contributions

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