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Quality of Life of Tuberculosis Patients in Kerbala Governorate - Iraq

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Abstract: ***Background: Depression prevalence is common among tuberculosis patients, especially in countries with medium and low economic status. Therefore, screening for depression in all levels of health facilities can identify patients who need support and treatment for depression. Objective: The aim of this study was to assess the prevalence and associated factors of depression among tuberculosis patients in Kerbala/Iraq. Methods: An institutional based cross - sectional study was conducted among 204 tuberculosis patients receiving tuberculosis treatment in Kerbala/Iraq from 1st February to 30th June 2022. Depression was measured using the World Health Organization - Brief Questionnaire. Directly Observed Therapy for tuberculosis patients is applied in Iraq since 2001. Data was collected consecutively until the required sample size was obtained. Tuberculosis patients who were under anti tuberculosis treatments for more than one month were included. Data were analyzed with Statistical Package for Social Sciences (SPSS) version 23, and p - values < 0.05 considered statistically significant. Results: A total of 204 tuberculosis patients were included in the study. The prevalence of depression among tuberculosis patients was 54.7%. Gender was not a significant predictor, whereaspatients'age and monthly income were significant predictors of depression. Conclusion: The prevalence of depression was high among tuberculosis patients. Age, low monthly income was associated with depression among tuberculosis patients. The health facilities should integrating mental health services with tuberculosis treatment, especially assessing and treating TB patients for depression, is vital.***

Keywords: Tuberculosis, Depression, Kerbala, Iraq

1. Introduction

Tuberculosis (TB) remains a major public health problem worldwide and is classified as a grave social disease with severe mental consequences (1) . Depression is a common mental disorder with in these consequencescharacterized by sadness, loss of interest or pleasure, feelings of guilt or low self - worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration (2) . It is usually long - lasting with recurrent bouts, substantially impairing an individual's ability to cope with daily life and might also lead to suicide. At a global level, over 300 million people are estimated to suffer from depression, equivalent to 4.4% of the world's population (2) . In 2012, the World HealthOrganization (WHO) reported that depression is the leading cause of disability and a major contributor to the overall global burden of disease for both males and females (1) . The global number of cases of depression estimated by WHO had increased by 50% between 1990 and 2017 (3) , However, depression is 50% higher for females than males (1, 2) . In Iraq, the estimated lifetime prevalence of adults who suffer from mental disorders through a national survey was 18.8% (4) . The problem is highly reported comorbidity of many other diseases (5) . In one study, the magnitude depression was 68.4% among the adult females population in Baghdad/Iraq (6) . Almost similar prevalence was reported among elderly people in Mousel/Iraq (7) .

People with tuberculosis (TB) are often suffer from depression (8, 9) . The prevalence of depression among TB patients was reported variable from different studies which is in Cameron (61.1%) (10) , Ethiopia (58%) (13) andPakistan (56 - 80%) (8, 11) . Depression is more common in Multi drug resistant TB patients than other pulmonary TB patients (12, 13) . Depression was shown to weaken the psychosocial welfare and results in negative treatment outcomes and higher dropout among TB patients (14) . It also affects negatively health - related quality of life of TB of patients (15) . In addition, TB patients with depressive symptoms have reduced social contact and may ignore social responsibilities; especially at the stage of coughing that leads to low self - esteem and hopelessness (16) . Other risk factorslike side effects of the ani - TB drugs, and the economic constraints, older age, female sex, duration of illness, level of education were also identified (17, 18).

There was medium prevalence report of TB patients attending Primary Health Care (PHC) centers in Kerbala/Iraq (19 - 22) . However, there is a scarcity of information on the comorbidity of depression with tuberculosis in Iraq, therefore, this study was tried to assess the magnitude of depression and associated factors among TB patients.

Patients and methods

This study aimed to measure the prevalence of depression among tuberculosis patients in Kerbala in 2023 and the associated socio - demographic factors such as work type, educationalstatus, economic level and other factors. A cross sectional study conducted among TB patientson treatment inPHCs in Kerbala governorate during the period from 1st February to 30th June 2022.

This study was done to measure the prevalence of depression using a self - administered questionnaire in Arabic language. The questionnaire depended on a validated WHO questionnaire (WHOQOL - Brief) (23, 24) .

Almost all TB patients attending at the PHC centers were selected from both genders andfrom different age groups and their consent were taken to answer the questionnaire.

The questionnaire contained ten demographic information questions and 26 questions related to assessment ofdepression. The answer for thesequestions was according to a Likert scale

2. Results

The sample consisted of 204 tuberculosis patients with a mean age of 39.29±18.65year. Males formed 58.8% of the sample. The occupation of the patients ranged from (1%) to retired patients (2%), and the main group was the house wife group followed by those with free earning work and official clerks (table1). The majority (54.9%) were living in rural residence. The monthly income of about two thirds of the sample (59.3%) was on lowlevel. The distribution of the tuberculosis patients according to the four health sectors of the governorate showed that more than two fifth one third of the sample were from Hussainia health sector, while one quarter were from each of city center or Hindia health sectors (table1). The educational level of the patients showed that two fifths of the patients were illiterate or had primary school (table1). The proportion of current smokers among the sample was about on quarter (%), while 17% were ex - smokers (table1).

Table 1: The distribution of demographic characteristics of the tuberculosis patients in Kerbala governorate (n=204)

Variable	Group	Frequency	Percentage
Gender	Male	120	58.8
	Female	84	41.2
Age group	Below 40 year	109	53.4
	40 year or more	95	46.6
Residence	Urban	92	45.1
	Rural	112	54.9
Health sector	City center	48	23.5
	Hindia	54	26.5
	Hurr	34	16.7
	Hussainia	68	33.3
Educational level	Illiterate	29	15.8
	Primary school	42	22.8
	Intermediate school	42	22.8
	Secondary school	45	24.5
	College graduate	26	14.1
Monthly income	Low	121	59.3
	Medium	83	40.7
Smoking	Smoker	48	24.6
	Nonsmoker	34	17.4
	Previous smoker	112	57.9
Total		204	100.0

For patients' direct evaluation of their general living condition, no patient reported very good conditions, more than one eighth of the patients (16%) estimated their general living condition as bad or very bad, while a large proportion (58%) considered it as acceptable (figure 1).

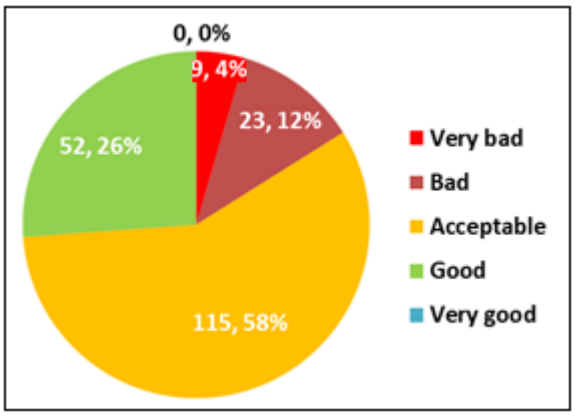

Figure 1: The distribution of the evaluation of their general living condition of tuberculosis patients in Kerbala governorate (n=204)

For the direct evaluation of patients' satisfaction about their general health condition, no patient reported very good level, while about onequarter (23%) reported bad or very bad level and two fifths (40%) reported good level (figure 2).

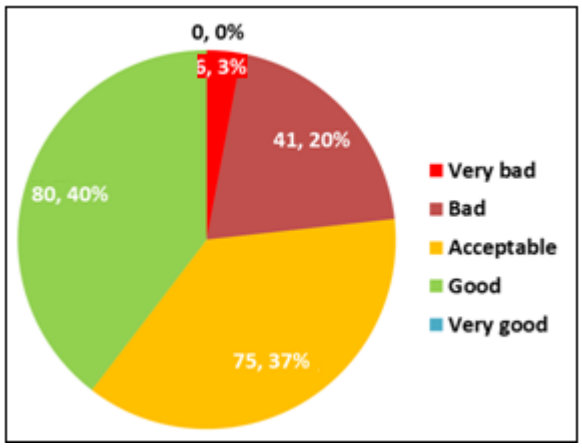

Figure 2: The distribution of the evaluation of their general health condition of tuberculosis patients in Kerbala governorate (n=204)

More than one half (55.4%) of the patients needed others help during filling the questionnaire forms, and the majority (89.7%) took five minutes for filling.

More than one half of the sample reported having negative feelings such as blue mood, despair, anxiety, depression (figure 3).

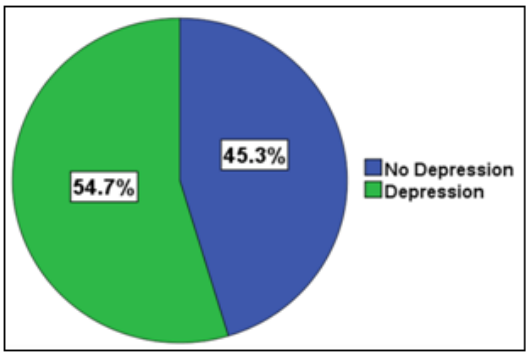

Figure 3: The distribution of having negative feelings such as blue mood, despair, anxiety, depression of tuberculosis patients in Kerbala governorate (n=204)

The physical and environmental domains were found to be severely affected among TB patients followed by psychological and then social domains (table 2). The severity of depression; as determined by the mean total score revealed that a high proportion suffered severe depression. Additionally, a significant negative association was found between monthly income and depression (p=.016).

Table 2: The mean and Standard Deviation of the four main domains and total score of the quality of life of tuberculosis patients in Kerbala governorate (n=204)

Variable	Minimum	Maximum	Mean	Mean/ maximum*100	Std. Deviation
Physical Domain Score (7 items, maximum 35)	7	31	20.73	59.22	3.83
Psychological Domain Score (6 items, maximum30)	6	27	18.72	62.39	3.65
Social Domain Score (3 items, maximum15)	3	15	9.51	63.43	2.41
Environmental Domain Score (8 items, maximum40)	8	36	23.78	59.46	4.99
Total Score (26 items, maximum 130)	26	104	72.74	55.95	12.61

The detailed scores for allthe items (questions) answers showed a general low or absent “very satisfied” answer for all items (table 3).

Table 3: The distribution of the patients answers on quality of life questions among tuberculosis patients in Kerbala governorate (n=204)

Question	Question No.	Very dissatisfied	Satisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
B1	How would you rate your quality of life?	9 (4.5%)	23 (11.6%)	115 (57.8%)	52 (26.1%)	0 (0%)
B2	How satisfied are you with your health?	6 (3.0%)	41 (20.3%)	75 (37.1%)	80 (39.6%)	0 (0%)
Domain 1 Physical Health. . . . (7 - 35)						
B3	To what extent do you feel that physical pain prevents you from doing what you need to do?	10 (4.9%)	61 (30.0%)	91 (44.8%)	31 (15.3%)	10 (4.9%)
B4	How much do you need any medical treatment to function in your daily life?	14 (6.9%)	42 (20.8%)	82 (40.6%)	51 (25.2%)	13 (6.4%)
B10	Do you have enough energy for everyday life?	9 (4.4%)	42 (20.7%)	102 (50.2%)	49 (24.1%)	1 (0.5%)
B15	How well are you able to get around?	17 (6.4%)	32 (12.1%)	114 (43.2%)	37 (14.0%)	2 (0.8%)
B16	How satisfied are you with your sleep?	12 (4.5%)	32 (12.1%)	102 (38.6%)	56 (21.2%)	2 (0.8%)
B17	How satisfied are you with your ability to perform your daily living activities?	9 (3.4%)	28 (10.6%)	107 (40.5%)	59 (22.3%)	203 (76.9%)
B18	How satisfied are you with your capacity for work?	6 (2.3%)	32 (11.7%)	112 (42.4%)	52 (19.7%)	1 (0.4%)
Domain 2 Psychological. . . . (6 - 30)						
B5	How much do you enjoy life?	10 (3.8%)	41 (15.5%)	107 (40.5%)	38 (14.4%)	3 (1.1%)
B6	To what extent do you feel your life to be meaningful?	13 (4.9%)	39 (14.8%)	98 (37.1%)	49 (18.6%)	3 (1.1%)
B7	How well are you able to concentrate?	4 (2.0%)	38 (18.9%)	100 (49.8%)	52 (25.9%)	7 (3.5%)
B11	Are you able to accept your bodily appearance?	10 (4.9%)	25 (12.3%)	102 (50.2%)	60 29.5 (%)	6 (3.0%)
B19	How satisfied are you with yourself?	6 (3.0%)	17 (8.4%)	71 (35.1%)	96 (47.5%)	12 (5.9%)
B26	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	15 (7.4%)	77 (37.9%)	78 (29.5%)	30 (14.8%)	3 (1.5%)
Domain 3 Social relationships						
B20	How satisfied are you with your personal relationships?	7 (3.5%)	18 (9.0%)	53 (26.4%)	118 (58.7%)	5 (2.5%)
B21	How satisfied are you with your sex life?	9 (6.7%)	18 (13.4%)	50 (37.3%)	50 (18.9%)	7 (5.2%)
B22	How satisfied are with the support you get from your friends?	7 (3.5%)	25 (12.4%)	70 (34.7%)	95 (47.0%)	5 (2.5%)
Domain 4 Environment. . . . (8 - 40)						
B8	How safe do you feel in your daily life?	5 (2.5%)	44 (21.8%)	90 (44.6%)	60 (29.7%)	3 (1.5%)
B9	How healthy is your physical environment?	12 (5.9%)	49 (24.3%)	98 (48.5%)	40 (19.8%)	3 (1.5%)
B12	Have you enough money to meet your needs?	13 (6.4%)	45 (22.1%)	104 (51.0%)	38 (18.6%)	4 (2.0%)
B13	How available to you is the information that you need in your daily - to - day life?	9 (4.5%)	43 (21.3%)	113 (55.9%)	35 (17.3%)	2 (1.0%)
B14	To what extent do you have the opportunity for leisure activities?	20 9.9 (%)	52 (25.6%)	97 (47.8%)	31 (15.3%)	3 (1.5%)
B23	How satisfied are you with the condition of your living place?	6 (2.9%)	30 (14.7%)	69 (33.8%)	97 (47.5%)	2 (1.0%)
B24	How satisfied are you with your access to health services?	7 (3.5%)	33 (16.6%)	61 (30.7%)	88 (44.2%)	10 (5.0%)
B25	How satisfied are you with your transport?	13 (6.4%)	45 (22.2%)	84 (41.4%)	59 (29.1%)	2 (1.0%)

Male patients scored significantly higher than females for having negative feelings such as blue mood, despair, anxiety, depression. However, no significant gender difference in all the domains. For age groups; highly significant positive difference was discovered among the age groups for social domain (mean for those below 40 years=9.43 vs. mean for those aged 40 year or more=9.64, p=.002). Additionally, significant negative differences were found for concentration ability, having the opportunity for leisure activities and moving ability.

Urban patients showed highly significantly higher scores than rural patient for social domain, having negative feelings such as blue mood, despair, anxiety, depression, concentration ability, satisfaction with transport and satisfaction with living place conditions.

No gender differnces were observed for all the items of the TB patients' answers on quality of life questions; except for having negative feelings such as blue mood, despair, anxiety, depression (table 4).

Table 4: The gender distribution of the patients answers on quality of life questions among tuberculosis patients in Kerbala governorate (n=204)

Gender		Mean	Std. Deviation	Std. Error Mean	Significance
How would you rate your quality of life?	Male	3.103	.7238	.0669	.839
	Female	2.988	.7777	.0859	
How would you rate your quality of life?	Male	3.202	.8293	.0760	.707
	Female	3.036	.8475	.0930	
To what extent do you feel that physical pain prevents you from doing what you need to do?	Male	3.2000	.93125	.08501	.241
	Female	3.0723	.88045	.09664	
How much do you need any medical treatment to function in your daily life?	Male	2.8908	1.00667	.09228	.840
	Female	3.0723	.98505	.10812	
How much do you enjoy life? To what extent do you feel your life to be meaningful?	Male	2.983	.8508	.0787	.836
	Female	2.817	.7392	.0816	
How well are you able to concentrate? How much do you enjoy life?	Male	3.000	.8925	.0818	.873
	Female	2.880	.8322	.0914	
To what extent do you feel your life to be meaningful? How well are you able to concentrate?	Male	3.136	.8260	.0760	.371
	Female	3.048	.7949	.0872	
How safe do you feel in your daily life? How healthy is your physical environment?	Male	3.118	.8455	.0775	.481
	Female	2.976	.7805	.0857	
How safe do you feel in your daily life? How healthy is your physical environment?	Male	2.866	.8726	.0800	.349
	Female	2.867	.8230	.0903	
Do you have enough energy for everyday life?	Male	2.967	.8294	.0757	.988
	Female	2.940	.7706	.0846	
Are you able to accept your bodily appearance?	Male	3.133	.8395	.0766	.727
	Female	3.133	.8663	.0951	
Have you enough money to meet your needs? How available to you is the information that you need in your daily - to - day life?	Male	2.875	.9127	.0833	.288
	Female	2.881	.7669	.0837	
To what extent do you have the opportunity for leisure activities? Have you enough money to meet your needs?	Male	2.924	.8147	.0747	.830
	Female	2.843	.7068	.0776	
How available to you is the information that you need in your daily - to - day life? To what extent do you have the opportunity for leisure activities?	Male	2.833	.9013	.0823	.528
	Female	2.578	.8571	.0941	
How well are you able to get around?	Male	2.992	.8684	.0796	.670
	Female	2.711	.7735	.0849	
How satisfied are you with your sleep? How satisfied are you with your ability to perform your daily living activities?	Male	3.100	.8541	.0780	.752
	Female	2.905	.8158	.0890	
How satisfied are you with your capacity for work? How satisfied are you with your sleep?	Male	3.175	.7633	.0697	.745
	Female	2.904	.7748	.0850	
How satisfied are you with your ability to perform your daily living activities? How satisfied are you with your capacity for work?	Male	3.109	.7568	.0694	.372
	Female	2.976	.7153	.0785	
How satisfied are you with yourself?	Male	3.454	.8611	.0789	.768
	Female	3.446	.8301	.0911	
How satisfied are you with your personal relationships? How satisfied are you with your sex life?	Male	3.500	.8301	.0758	.839
	Female	3.444	.8367	.0930	
How satisfied are with the support you get from your friends? How satisfied are you with your personal relationships?	Male	3.205	.9718	.1100	.843
	Female	3.214	.9856	.1317	
How satisfied are you with your sex life? How satisfied are with the support you get from your friends?	Male	3.395	.9134	.0837	.068
	Female	3.229	.7543	.0828	
How satisfied are you with the condition of your living place? How satisfied are you with your access to health services?	Male	3.333	.8824	.0806	.117
	Female	3.226	.7660	.0836	
How satisfied are you with your transport? How satisfied are you with the condition of your living place?	Male	3.265	.9504	.0879	.665
	Female	3.366	.8960	.0989	
How satisfied are you with your access to health services? How satisfied are you with your transport?	Male	2.883	.9184	.0838	.964
	Female	3.072	.8665	.0951	
How often do you have negative feelings such as blue mood, despair, anxiety, depression?	Male	3.3083	.95086	.08680	.017
	Female	3.4096	.74957	.08228	

3. Discussion

In spite of being the leading cause of mortality; there are limited studies that estimate the burden of depression among TB patients globally. When compared to the available evidences, magnitude of depression in our study is comparable to most published studies in Asia and Africa (9, 10, 25 - 27) . This study revealed that 44.1% of TB patients have probable depression. The finding was comparable with other studies carried out in southern Ethiopia (43.4%) (25) . It is also similar with other studies conducted sub - Saharan Africa 49.4% in Angola (26) , but lower than the rate of 61.1% of Cameroon (10). However, the prevalence of depression among TB patients in this study is higher than other similar studies elsewhere like 35% in India (28) , 19% in Turkey (27) .

The severity of depression; as determined by the mean total score, s0 diagnosing the severity may be important because individuals with advanced forms of depressions may be more likely to defaultfrom anti - TB drugs which increased risk of drug - resistance (13, 15, 29) , greater disability and worse quality of life and (15) , lack of adherence to anti - TB treatment and Poor treatment outcomes including death.

In this study, age was found to be one of the risk factors for depression. As similar to another study inEthiopian (9) , age less than 35 years carried a protective impact for depression among TB patients. This may be at younger age people have higher chance to engage in different activities to earn money which will increase social interaction and support from colleagues or relatives. While at older age, especially developing countries, life may be challenging as the motives for saving is low, engagement to economic activities becomes stressful in addition to the challenges of TB like stigma, discrimination, side effects of therapy (17) . These stressful life events and chronicity of tuberculosis were associated with depression in studies conducted in Nigeria and Ethiopia (9, 10, 25, 26, 30) .

Low monthly income and depression were significantly associated in this study. Low income in TB patients has the adverse effect on depression. This is similar to a study conducted in China (31) , South Africa (32) , shanty towns in Lima (33) . In settings with a high burden of tuberculosis, the low income generated will result in difficulty of covering costs for treatment, even if the anti - TB drugs are provided freely. The expenses for additional nutritional needs, transportation and missed work days due to fatigue, chest pain and symptoms of tuberculosis result in lower income, and lower income will result in psychological distress due to the inability to satisfy the demands of the individual and their household (34) .

It is difficult forTB patients lead socially and economically productive life with the health status currently they have due to social isolation (35) , as TB profoundly influence their mental health in the form of depression and an enormous economic burden (36 - 38) . In fact, all programs designed to control/eliminate tuberculosis in community setting at local, national or international level need also to screen and manage depression in addition to financial and social support. For patients admitted to hospitals with tuberculosis or its complication, they need to be screened for depression and plansto treat it. The management of depression will surely improve treatment outcome and play a positive role in effort to control and eliminate tuberculosis globally (39) .

Some limitations associated with this study include missing of some important variables not included in WHO - QOL - Brief tools such as substance use and smoking which might be associated with depression.

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