## Title page

Title: The Prevalence of Depression in Primary Health Care Centers in Iraq

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## Abstract

## Background

The prevalence of depressive symptoms is more frequent among patients than in the general population. There is psychoneuro-immunology connection between chronic illnesses and depression. Little is known about the prevalence rate of depressive symptoms in Iraqi patients attending primary health centers, in addition there under diagnosis and under estimation of depressive symptoms in clinical settings. For that reason, this study was designed and carried out at the department of Family medicine and Community medicine in the faculty of medicine/ Al-Qadisiyah University.

**Aim of the study:** The aim was to estimate the prevalence of depressive disorders among Iraqi patients attending primary health centers and to measure the severity of depressive disorders among those patients.

**Patients and Methods:** The study was designed to be a cross sectional study involving a cohort of Iraqi patients attending primary health centre. Patients were selected in a systemic random way from the population of patients already visiting the primary health care centre aiming at a target of at least 100 patients during the short period of this study. Any patient visiting the primary health center was included in the current without previous limitations with respect to age or gender. Any patient who was already diagnosed by a specialist to have depressive disorder was excluded from this study. The study was carried out at Al-Saniyah primary health centre. The beginning of data collection was dated on the 10<sup>th</sup> January 2018 and ended on the 1<sup>st</sup> may 2018.

**Results:** Out of 98 patients participating in the current study, 27 (27.6%) fulfilled the criteria of a diagnosis of depressive disorders. There were 17 (17.3%), 7 (7.1%) and 3 (3.1%) patients with mild, moderate and severe depression. A significant difference in mean age of patients with and without depression was observed in the present study. Patients with depression were significantly older than patients without depression,  $37.26 \pm 8.88$  years versus  $31.26 \pm 10.49$  years, respectively and the level of significance was (P = 0.045). Moreover, it was observed that the rate of depression across age intervals was significantly non-homogenous, with the highest rate being encountered in patients older than 40.

**Conclusion:** The rate of depressive disorders among patients attending primary health care centers is higher than that of the general population.

Key words: Depression, primary health care center, Iraq

#### Introduction

Depressive disorders are common with a prevalence rate of 5-10% in primary care centers (1). The majority of patients will present to primary health care centers with problems other than low mood (2). The diagnosis of depression will reside of eliciting of core and other symptoms. The criteria for diagnosis are: Symptoms must present for at least 2 weeks and represent a change from normal; symptoms are not secondary to the effect of drugs, alcohol misuse, medication or medical intervention; symptoms may cause significant distress and/ or impairment of social, occupational, or general function. Core symptoms include: depressed mood, anhedonia" diminished interest or pleasure in all, or almost all activities most of the day", weight change of more than 5% of body weight in a month, sleep disturbance "insomnia or hypersomnia", psychomotor agitation or retardation observable by others, fatigue, or loss of energy or reduced libido, feeling of worthlessness or excessive or inappropriate guilt, diminished ability to think or to concentrate or indecisiveness, recurrent thoughts of death or suicide (3). The prevalence of depressive symptoms is more frequent among patients than in the general population (4). There is psychoneuro-immunology connection between chronic illnesses and depression (5). Little is known about the prevalence rate of depressive symptoms in Iraqi patients attending primary health centers, in addition there under diagnosis and under estimation of depressive symptoms in clinical settings. For that reason, this study was designed and carried out at the department of Family medicine and Community medicine in the faculty of medicine/ Al-Qadisiyah University.

#### **Patients and Methods**

The study was designed to be a cross sectional study involving a cohort of Iraqi patients attending primary health centre. Patients were selected in a systemic random way from the population of patients already visiting the primary health care centre aiming at a target of at least 100 patients during the short period of this study. Any patient visiting the primary health center was included in the current without previous limitations with respect to age or gender. Any patient who was already diagnosed by a specialist to have depressive disorder was excluded from this study. The study was carried out at Al-Saniyah primary health centre. The beginning of data collection was dated on the 10<sup>th</sup> January 2018 and ended on the 1<sup>st</sup> may 2018. A total of 140 days was the length of the period required to collect data from involved patients. The questionnaire form was based on the following: International (ICD-10) diagnostic check list for the diagnosis of depressive symptoms (6), Beck depressive inventory-II to measure the severity of depression, Sociodemographic data including age, gender, residency, address, occupation, education level and income in addition to any chronic medical illness. Data were collected, summarized, analyzed and presented using two software programs; these were the Statistical package for social sciences (SPSS) version 23 and Microsoft Office excel 2013. Numeric variables were presented as mean, standard deviation (SD) and range, whereas, categorical variables were expressed as number and percentage. Prevalence rate of depression was expressed as percentage. Association between categorical variables was assessed using either Chi-Square test or Yates correction for continuity when more than 20% of cells have expected counts less than 5. Comparison of mean values between three groups was done using one way analysis of variance (ANOVA). The level of significance was considered at  $P \le 0.05$ .

### Results

#### Sociodemographic characteristics of the study sample

The current study included 98 patients, 48 (49.0%) males and 50 (51.0%) females. The mean age of patients was  $33.22 \pm 14.76$  years and it ranged from 13-65 years. According to marital status, there were 68 (69.4%), 23 (23.5%), 5 (5.1%) and 2 (2.0%), married, single, widowed and divorced patients respectively. According to level of education, the study included 20 (20.4%), 32 (32.7%), 21 (21.4%) and 25 (25.5%), illiterate, primary, secondary and higher education patients respectively. All patients were from Al-Sahiyah district. With respect to occupation, patients were distributed as 38 (38.8%), 14 (14.3%), 21 (21.4%), 19 (19.4%), 4 (4.1%) and 2 (2.0%), housewives, student, free worker, employee, military and retired respectively. Economically speaking, the study included 49 (50.0%), 46 (46.9%) and 3 (3.1%) patients of poor, moderate and good income respectively. The study, included 7 (7.1%), 3 (3.1%), 1 (1.0%) and 1 (1.0%) patients with hypertension, diabetes mellitus, post-partum hemorrhage and psychiatric illness respectively, as shown in table 1.

## Prevalence rate and level of depressive disorders

Out of 98 patients participating in the current study, 27 (27.6%) fulfilled the criteria of a diagnosis of depressive disorders, as shown in figure 4.1. There were 17 (17.3%), 7 (7.1%) and 3 (3.1%) patients with mild, moderate and severe depression, as shown in table 2.

Characteristic	Value
Number of cases	98
Age	
Mean SD (years)	$33.22 \pm 14.76$

 Table 4.1: Demographic characteristics of the study sample

Range (MinMax.) years	52 (13-65)
Gender	
Male	48 (49.0)
Female	50 (51.0)
Marital status	
Married	68 (69.4)
Single	23 (23.5)
Widowed	5 (5.1)
Divorced	2 (2.0)
Education	
Illiterate	20 (20.4)
Primary	32 (32.7)
Secondary	21 (21.4)
Higher education	25 (25.5)
Address	
Alsaniyah	98 (100.0)
Occupation	
Housewife	38 (38.8)
Student	14 (14.3)
Free worker	21 (21.4)
Employee	19 (19.4)
Military	4 (4.1)
Retired	2 (2.0)
Income	
Poor	49 (50.0)
Moderate	46 (46.9)
Good	3 (3.1)
Health centre	
Alsaniyah	98 (100.0)
Other medical problem	
Hypertension	7 (7.1)
Diabetes mellitus	3 (3.1)
Post-Partum Hemorrhage	1 (1.0)
Psychiatric	1 (1.0)



Figure 4.1: Pie chart showing the prevalence rate of depression among patients visiting primary health center

<b>Depression level</b>	п	% out of patients with depression	% out of all sample
Mild	17	63.0	17.3
Moderate	7	25.9	7.1
Severe	3	11.1	3.1
Total	27	100.0	27.6

 Table 2: Distribution of patients according to level of depression

#### Correlation between age and rate of depression

A significant difference in mean age of patients with and without depression was observed in the present study. Patients with depression were significantly older than patients without depression,  $37.26 \pm 8.88$  years versus  $31.26 \pm 10.49$  years, respectively and the level of significance was (P = 0.045), as shown in figure 2. Moreover, it was observed that the rate of depression across age intervals was significantly non-homogenous, with the highest rate being encountered in patients older than 40 years of age (40.7%) (P=0.044); however, there was no

significant difference in mean age among patients with mild, moderate and severe depression respectively (P = 0.432), as shown in table 3.



Figure 2: Bar chart showing mean age of patients with and without depression

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Table 4. Correlation be	ntween rate of da	nrection and	<b>900 AT T</b>	vatiente
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Age interval	n	%	<b>P</b> *	Mild	Moderate	Severe	$P^{\dagger}$
$\leq$ 20 years ( <i>n</i> =26)	9	34.6		5 (19.2)	3 (11.5)	1 (3.8)	
21-40 years ( <i>n</i> =45)	7	15.6	0.044 Significant	4 (8.9)	2 (4.4)	1 (2.2)	
> 40 years ( <i>n</i> = 27)	11	40.7	C	8 (29.6)	2 (7.4)	1 (3.7)	
Mean age $\pm SD$				$40.65 \pm 19.59$	29.71± 14.40	35.67 ±21.36	0.432 Not significant
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*n*: number of cases; SD: standard deviation; \*Chi-Square test; † One way ANOVA

## Association between depression rate and gender

The rate of depression among male patients was (22.9%), whereas, among female patients it was (32.0%). Although, rate of depression was slightly higher in

female patients compared to male patients, the difference was not statistically significant (P = 0.314), as shown in table 4.

Gender	n	%	<b>P</b> *	Mild	Moderate	Severe
Male (n = 48)	11	22.9	0.314	8 (16.7%)	3 (6.3%)	0 (0.0%)
Female $(n = 50)$	16	32.0	Not significant	9 (18.0%)	4 (8.0%)	3 (6.0%)

Table 4: Association between depression rate and gender

*n*: number of cases; \*Chi-Square test

### Association between depression rate and marital status

Rate of depression according to marital status was as following: 26.5%, 26.1%, 60.0% and 0.0% among married, single, widowed and divorced patients, respectively. Despite some differences in rate of depression among patients with respect to marital status, there was no statistical significance, (P > 0.05), as shown in table 5.

Table 5: Association between depression rate and marital status

Marital status	п	%	Р	Mild	Moderate	Severe
Married $(n = 68)$	18	26.5	0.719* NS	12 (17.6%)	4 (5.9%)	2 (2.9%)
Single $(n = 23)$	6	26.1	0.857* NS	3 (13.0%)	3 (13.0%)	0 (0.0%)
Widowed $(n = 5)$	3	60.0	0.249† NS	2 (40%)	0 (0.0%)	1 (20.0%)
Divorced $(n = 2)$	0	0.0	0.935† NS	0 (0.0%)	0 (0.0%)	0 (0.0%)

*n*: number of cases; \*Chi-Square test; † Yates correction for continuity; NS: not significant

#### 6 Association between depression rate and education level

The rate of depression according to education level was as following: 35.0%, 25.0%, 28.6% and 24.0% in patients who are illiterate, with primary, secondary

and with higher level of education respectively. The rate of depression rate in illiterate patients was the highest; however, no group showed statistically significant difference than other groups (P > 0.05), as shown in table 6.

Education	п	%	<b>P</b> *	Mild	Moderate	Severe
Illiterate	7	35.0	0.403 NS	5 (25.0%)	0 (0.0%)	2 (10.0%)
Primary	8	25.0	0.694 NS	5 (15.6%)	2 (6.3%)	1 (3.1%)
Secondary	6	28.6	0.783 NS	4 (19.0%)	2 (9.5%)	0 (0.0%)
Higher education	6	24.0	0.645 NS	3 (12.0%)	3 (12.0%)	0 (0.0%)

Table 6: Association between depression rate and education

n: number of cases; \*Chi-Square test; NS: not significant

### 7 Association between depression rate and occupation

The rate of depression according to occupation was as following: 29.0 %, 35.7 %, 23.8 %, 15.7 %, 25.0 % and 100.0% in housewives, student, free worker, employee, military and retired respectively. The rate of depression rate showed differences according to occupation; however, no group showed statistically significant difference than other groups (P > 0.05), as shown in table 7.

Table 7: Association between depression rate and occupation

Occupation	п	%	Р	Mild	Moderate	Severe
Housewife $(n = 38)$	11	29.0	0.806* NS	6 (15.8%)	2 (5.3%)	3(7.9%)
Student ( $n = 14$ )	5	35.7	0.678† NS	3 (21.4%)	2 (14.3%)	0 (0.0%)
Free worker (n $=$ 21)	5	23.8	0.665† NS	4 (19.0%)	1 (4.8%)	0 (0.0%)
Employee $(n = 19)$	3	15.7	0.201*	1 (5.3%)	2 (10.5%)	0 (0.0%)

			NS			
Military $(n = 4)$	1	25.0	1.000† NS	1 (25.0%)	0 (0.0%)	0 (0.0%)
Retired $(n = 2)$	2	100.0	0.129† NS	2 (100.0%)	0 (0.0%)	0 (0.0%)

n: number of cases; \*Chi-Square test; † Yates correction for continuity; NS: not significant

### Association between depression rate and income

The rate of depression according to income was as following: 34.7 %, 21.7 % and 0.0 % in patients with poor, moderate and good income respectively. Despite the fact that patients with good income reported 0.0% rate of depression, there was no statistical significance among groups (P > 0.05), as shown in table 8.

Income	n	%	<b>P</b> *	Mild	Moderate	Severe
Poor ( <i>n</i> = 49)	17	34.7	0.113 NS	11 (22.4%)	4 (8.2%)	2 (4.1%)
Moderate $(n = 46)$	10	21.7	0.226 NS	6 (13.0%)	3 (6.5%)	1 (2.2%)
Good $(n = 3)$	0	0.0	0.668 NS	0 (0.0%)	0 (0.0%)	0 (0.0%)

Table 8: Association between depression rate and income

n: number of cases; \*Chi-Square test; NS: not significant

## Association between depression rate and other medical problem

The rate of depression among patients with chronic illnesses was significantly higher than that in patients without chronic medical illnesses, 75.0 % versus 26.5 % (P <0.001), as shown in table 10. The risk of having depression, in terms of Odds ratio, in patients with chronic medical illnesses was 10.83 folds than patients without chronic medical illnesses and the 95% confidence interval was (2.65 to 44.24). The etiologic contribution, measured by etiologic fraction, of

depression to chronic medical illnesses was 0.68, as shown in table 9. The severity of depression in patients with chronic illnesses is shown in table 10.

Other medical problem	Patients with depression $n = 27$	Patients with no depression n = 71	$P^{\dagger}$	OR	95% CI	EF
Positive $(n = 12)$	9 (75.0%)	3 (25%)	< 0.001	10.92	2 65 44 24	0.69
Negative $(n = 68)$	18 (26.5%)	68 (73.5%)	HS	10.83	2.65-44.24	0.68

 Table 9: Association between depression rate and other medical problem

*n*: number of cases; † Yates correction for continuity; HS: highly significant; OR: Odds Ratio; CI: confidence interval

Levels of depression	Number of patients with medical illness	%
Mild ( <i>n</i> = 17)	5	29.4
Moderate $(n = 7)$	2	28.6
Severe $(n = 3)$	2	66.7

 Table 4.10: Level of depression according to medical illness

### Discussion

Total (*n* = 27)

In the present study, an objective was directed toward exploring prevalence rate of depressive disorders in Iraqi patients attending primary health centers, in addition to an attempt to figure out the possible association between a number of demographic factors and depression and to evaluate the probable risk exerted by these factors, such as age, gender, occupation, economic status, level of education and the presence of concomitant medical and / or psychiatric illness, in terms of Odds ratio and etiologic fraction in association with depressive disorders. The

9

33.3

estimated prevalence rate of depression in primary health center, in the present study, of 27.6% seems relatively high. However, it should be emphasized that this rate was calculated based on clinical rather than community setting. This may explain the relatively high prevalence rate of depression in Iraqi patients visiting primary health care centers. It has been stated in published literatures that mental disorders are more common in clinical than in community settings, one study in Kenya found that up to 40% of the patients in general medical and surgical wards were depressed and required treatment (7). Prevalence of depression was 30.3%. Direct comparison of prevalence studies for depressive disorders is difficult because of a lack of uniformity as studies differ in terms of culture, patient population, socio-demographic factors, diagnostic instrument, and methodology (8). Furthermore, some studies focus on a subset of depressive disorder while others include all forms of mental disorders. Given these limitations, the prevalence figures determined in this study are consistent with most findings reported elsewhere. The Prevalence of depression found in the present study (30.3%) was significant and in keeping with the results from both developed and developing countries. For instance, the results were congruous with the prevalence rate of 29.6% reported among Kuwait PHC patients (9); the 29.2% reported in primary care setting in Thailand (10); the 28.4% reported among primary care attendees in South India (11). Interestingly the prevalence is somehow similar to that of the international study (12) where the prevalence was 33.5%, the 31.6% prevalence rate of current major depressive episode at PHC centres in Uganda (13), and also the 32% prevalence rate of depressive disorder at a Community Health Centre in South Africa (8). In one study, the prevalence of depression among the patients attending the outpatients department was found to be 30.3%, which is approximately similar to that found in the present study, moreover, Udedi stated that detection rate of depression by clinician was 0% (2). Despite this evidence that

depression contribute a significant percentage of disease burden in the clinical setting there is also evidence which indicates that depression often goes unrecognized (14). World Health Organization report on mental health suggest that undiagnosed depression places a significant socio-economic burden on individuals, families and communities, in terms of increased service needs, lost employment, reduced productivity, poor parental care with the risk of transgenerational effects and an increased burden on care givers (15). Although depression-related health problems are estimated to be huge, a gap in the provision of services has been highlighted by various studies (16). The problem is said to be even more serious in settings that are already labouring under the burden of inadequate resources and shortage of health care personnel (17). Delays, misdiagnosis and non-specific treatments have been typical pathways to care for people with depression (18). It is evident that delays in seeking treatment, misdiagnosis and non-specific treatments have compromised appropriate care for people with depression hence depression is among the leading causes of disability in the world and cause of years of health lost to disease in both men and women (19).

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