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Maha Alsulaimani

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Maha Alsulaimani
Family and Community Medicine Department at KKUH, King Saud University, Saudi Arabia
Corresponding Author's Email: mahasulaimani@hotmail.com

Abstract

Background: Depression is a common illness with rising burden worldwide; which is associated with decline in social, occupational and health aspects. Despite of its consequences; little is known about risk factors potentiating it in Saudi females. Therefore, the current study aimed at exploring prevalence and risk factors of depression in Saudi females.
Subjects and methods: Through a cross sectional study design, 317 Saudi females aged 18-65 years were selected randomly from the primary care clinics at King Khalid University hospital, they were screened for depression using Patient Health Questionnaires (PHQ-2), positive cases proceeded to Patient Health Questionnaire-9 and negative respondents proceeded directly to the study questionnaire. Chi-square test was used to assess the significance of categorical variables; and logistic regression was conducted to explore significant predictors of depression.
Results: An overall 66.2% of the respondents had some degree of depression which ranged between minimal depression in 4 women (1.3%) and moderately severe depression in 51 women (16.1%). The bivariate analysis showed that the factors significantly associated with depressive symptoms were marital status, education level, occupation, major familial changes and financial status $p<0.05$. While regression analysis revealed that marital status (widowed, separated, widowed) and being jobless are significant predictors for depression in females.
Conclusion and recommendations: Depressive symptoms are common among studied Saudi females; significant risk factors included being widowed, divorced and separated; illiterates and those who can just read and write, and jobless women. It is recommended that women should be routinely screened for depression in the primary clinics for early detection and management.

Keywords: *Depression, depressive symptoms, risk factors, Saudi, females.*

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Introduction

Depression is a state of low mood and aversion to activity or apathy that can affect person's thoughts, behavior, feelings, and sense of well-being. People with depressed mood can feel sad, anxious, hopeless, helpless, worthless, guilty, irritable, angry or restless.(1) It is considered a major cause of disability and morbidity worldwide; patients usually experience relationship difficulties and may contemplate, attempt or commit suicide. Moreover, the concomitant insomnia, excessive sleeping, fatigue, aches, pains, digestive problems, or reduced energy inevitably affect social, personal and occupational life of the patients.(2) Currently, depression occupies the third highest global burden of disease;(3) and expected to be the leading cause of disease burden in 2030.(4) The recent reports of WHO indicated that the annual prevalence of depression is 6.6%, and its lifetime prevalence is 16.2%; with about 700 million people affected worldwide, out of them, about 800,000 commit suicide each year, making depression one of the leading causes of death in young adults aged 15 to 29 years; coming second to road traffic accidents. Moreover, people with major depression have a 40% higher chance of dying prematurely than the general population.(5)

In Saudi Arabia, few studies reported different rates for prevalence of depression among adolescent and adult females. Al-Gelban et al., (2009) reported prevalence of depression symptoms at 41.5% among female secondary school students in Abha City, Aseer region,(6) while in Jeddah city, Desouky et al., (2015) reported prevalence of significant depression at 42.9% among female secondary school students in Taif City.(7) Also, in Jeddah City, Alsharif et al., (2018) showed that the prevalence of depression among adult women was 12.4%.(8) Several researches pointed that the prevalence of major depression is higher in women than in men; in 2010, the global annual prevalence of women and men was 5.5% and 3.2%, respectively, representing a 1.7-fold greater incidence in women.(4) Several factors were reported to be related with higher prevalence of depression. Most of the researches agreed about the variation in the prevalence according to gender and age; however, other factors such as social and economic factors were not consistent.(9) Most of these studies recommended further researches to broaden understanding about factors associated with depression.

Subjects and methods

Through a cross sectional study design, 317 adult female Saudi patients aged between 16-65 years were selected randomly from attendants of the primary care clinics at King Khalid University hospital. Three face to face questionnaires were used; two were used for screening, and one for identifying possible risk factors associated with depression (study questionnaire). The Patient Health Questionnaires (PHQ-2) and (PHQ-9) were used for screening; where (PHQ-2) was applied first to all participants, those who showed positive response to either question or both, proceeded to (PHQ-9). Otherwise, negative response to both questions, proceeded directly to the study questionnaire. The Patient Health Questionnaire (PHQ) is a multiple-choice self-report version of the Primary Care Evaluation of Mental Disorders (PRIME-MD), it is used as a screening and diagnostic tool developed in the mid-1990s by Pfizer Inc.(10) The Patient Health Questionnaire-2 may rule out, but not definitively diagnose, depression. It is as effective as longer screening instruments, such as the Beck Depression Inventory or Zung Depression Scale; its sensitivity reaches up to 97% and specificity 67% in adults, with a positive predictive value (38%) and negative predictive value (93%). In adolescents, the sensitivity reaches 74% and sensitivity 75%.(11) The Patient Health Questionnaire-9 is one of the most common instruments used for

depression screening. Although it can be used on its own as a screening test or to monitor treatment, it is increasingly administered to confirm positive PHQ-2 results. The PHQ-9 is valid, it demonstrated 61% sensitivity and 94% specificity for mood disorders in adults, and 89.5% sensitivity and 77.5% specificity in adolescents. The PHQ-9 classifies depression severity as: minimal depression (score 1: 4), mild depression (score 5: 9), moderate depression (score 10 : 14), moderately severe depression (score 15 :19) and severe depression (score 20 :27). The study questionnaire included factors possibly associated with depression; like age, marital status, educational level, health condition, occupation, home and family circumstances, personal and social conditions and financial status. All participants, either who showed positive or negative result for depression, had to fill the study questionnaire. Data entry and analysis was done by using the statistical products and services solution program (SPSS) version 20. The chi-square test was used to assess the significance of categorical variables; and binary logistic regression was used to identify significant factors predicting depression. P value <0.05 was considered as indication for statistical significance.

Results

Most of the participants aged more than 30 years (78.9%), out of them 41% aged 41+ years. Slightly more than one third of the responded women (36.6%) were married, while 17.4% were separated and 16.4% were divorced. Regarding education level, 40.4% of them completed the school stages, while 32.5% had higher education. Only 30.9% of the women indicated that they had a job, and 31.3% were jobless **[Table 1]**. An overall 66.2% of the respondents had some degree of depression which ranged between minimal depression in 4 women (1.3%) and mild depression in 50 women (15.8%) up to severe depression in 7 women (2.2%) and moderately severe depression in 51 women (16.1%) **[Figure 1]**.

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Table 1:- Demographic characteristics of the study group (n=317).

Characteristics	No.	%
Age:		
18-30 years	67	21.1
31-40 years	120	37.9
41+ years	130	41.0
Marital status:		
Single	72	22.7
Married	116	36.6
Separated	55	17.4
Divorced	52	16.4
Widowed	22	6.9
Education level:		
Illiterate	25	7.9
Read and write	61	19.2
Completed school	128	40.4
Higher education	103	32.5
Occupation (n=288):		
Has a job	89	30.9
Jobless	90	31.3
Students	34	11.8
Housewives	75	26.0

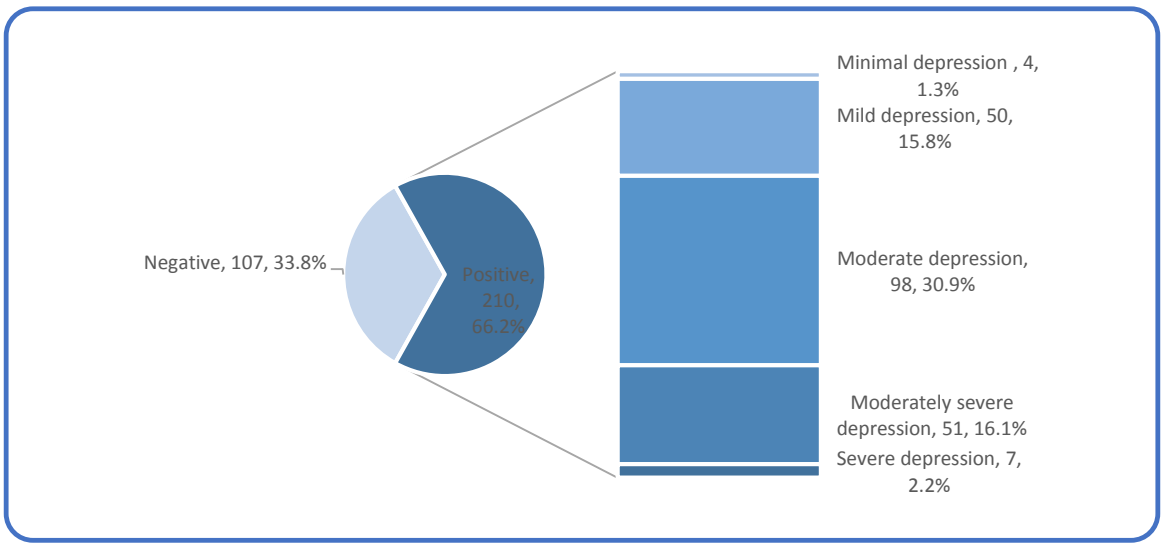

Figure 1: Categorization of the women after responding

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Table 2 shows consistent increase in the prevalence of depressive symptoms in women towards older ages, it ranged between 56.7% in those aged 18-30 years up to 72.3% in those aged 41 years or older, with a border line statistical significance at p=0.085. Meanwhile, depressive symptoms were significantly more frequent in widowed (86.4%), divorced (82.7%) and separated women (85.5%) if compared to married ones p<0.05. Also, the prevalence was much higher among low education than higher education level, it ranged between 76% among illiterate and 82% in those who just can read and at write to as low as 58.3% in those who had higher education level; this difference is statistically significant p<0.05. On the same context, the prevalence of depressive symptoms was much higher in jobless women (88.9%) than those who have jobs (57.3%), those who are still students (67.6%) and those who described their status as being housewives (45.3%).

Table 2:- Presence of depressive symptoms in women according to their characteristics.

	Depressive symptoms				X^2	p
	Positive		Negative			
characteristics	No	%	No	%		
Age:						
18-30 years	38	56.7%	29	43.3%	4.941	0.085
31-40 years	78	65.0%	42	35.0%		
41+ years	94	72.3%	36	27.7%		
Marital status:						
Single	50	69.4%	22	30.6%	45.430	<0.001**
Married	51	44.0%	65	56.0%		
Separated	47	85.5%	8	14.5%		
Divorced	43	82.7%	9	17.3%		
Widowed	19	86.4%	3	13.6%		
Education level:						
Illiterate	19	76.0%	6	24.0%	11.253	0.010
Read and write	50	82.0%	11	18.0%		
Completed school	81	63.3%	47	36.7%		
Higher education	60	58.3%	43	41.7%		
Occupation:						
Has a job	51	57.3%	38	42.7%	37.880	<0.001**
Jobless	80	88.9%	10	11.1%		
Students	23	67.6%	11	32.4%		
Housewives	34	45.3%	41	54.7%		

On the same line, **Table 3** demonstrates that all displayed major familial changes except "spouse beginning or ending work" were associated with a significantly increased likelihood of depressive symptoms p<0.05. Also, the lowest percentage of depressive symptoms (53.2%) was recorded in women who rated their financial status as being "good" p<0.01. Meanwhile, the highest prevalence of depressive symptoms was recorded among those who had history of psychological illness (93.5%) followed by those who had injury or disability (83.3%) and those

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who had chronic illness (72.9%). Meanwhile, no statistically significant difference was observed in beginning, ending or changing the school or college p>0.05.

Table 3:- Presence of depressive symptoms in women according to the familial, financial changes reported.

Characteristics	Depressive symptoms				X^2	P
	Positive		Negative			
	No	%	No	%		
Major familial changes:						
Separation from spouse	71	84.5%	13	15.5%	17.074	<0.001*
Death of a family member	61	84.7%	11	15.3%	14.222	<0.001*
Aging parent and-or child needs special care	57	85.1%	10	14.9%	13.469	<0.001*
Marriage or divorce of a family member	54	91.5%	5	8.5%	20.718	<0.001*
Arguments with spouse	49	87.5%	7	12.5%	13.740	<0.001*
A child leaving home	46	86.8%	7	13.2%	12.015	<0.001*
Get-together	49	100%	0	0.0%	29.531	<0.001*
Change in residence	38	80.9%	9	19.1%	5.264	0.022*
Spouse beginning or ending work	29	63.0%	17	37.0%	0.247	0.619
Family history of psychological illness	44	100%	0	0.0%	26.032	<0.001*
Change of health or behavior of a family member	39	90.7%	4	9.3%	13.302	<0.001*
Birth of a grandchild	36	87.8%	5	12.2%	9.788	<0.001*
Financial status:						
Good	118	53.2%	104	46.8%		
Poor economic status	13	92.9%	1	7.1%	56.970	<0.001*
Major change in financial situation	61	96.8%	2	3.2%		
No identified financial problem	18	100.0%	0	0.0%		
Health status (n=300):						
Good	28	39.4%	43	60.6%		
Chronic illness	140	72.9%	52	27.1%	NA	NA
History of psychological illness	29	93.5%	2	6.5%		
Injury or disability	5	83.3%	1	16.7%		
Personal and social condition						
Beginning or ending school or college	42	75.0%	14	25.0%	2.311	0.127
Change of school or college	168	64.4%	93	35.6%		

Based on Chi square **Statistically significant* *NA Not Applicable*

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The binary logistic regression for predictors of depressive symptoms among women showed significant association with marital status and education level; which indicate that women who are divorced widowed or separated who have low education level have the highest likelihood to experience depressive symptoms, when exposed to major familial changes described in **[Table 4]**.

Table 4:- Backwards binary logistic regression for demographic characteristics predicting depressive symptoms in participating women.

Predictors	B	S.E.	Wald	df	P	Exp(B)
Marital status	.341	.122	7.870	1	.005	.711
Education level	.272	.154	3.116	1	.078	1.313
Constant	.640	.626	1.046	1	.306	.527

Variables included in first model: Occupation, monthly income, marital status and education level.
Variables excluded from final model: Occupation and monthly income.

Discussion

Depression is a chronic illness with a high prevalence worldwide and is considered as a major public health problem when considering disability-adjusted life years (DALYs).[9] Moreover, when considering depression-related mortalities due to suicide, depression is ranked as the third highest global burden of a disease.[3] The prevalence and predisposing factors of depression vary between different communities; the current study aimed at bridging the gap in the knowledge about the prevalence of depression and its determinant factors in females attending primary health care clinics at King Khalid University Hospital in Riyadh. The reason behind selecting females as a target population for the study is the documented relative high prevalence of depression in females than males,[12] this study showed that an overall 66.2% of the respondents had some degree of depression which ranged between minimal depression in 4 women (1.3%) up to severe depression in 7 women (2.2%). Although the prevalence was higher than what had been reported in other studies in Saudi Arabia. for example Al-Gelban et al., (2009) who reported prevalence of 41.5% among female secondary school students in Abha,[6] while Alsharif et al., (2018) showed prevalence of depression among adult women at 12.4%.[8] This difference could be attributed to the difference in the composition of the study population and study settings. Our study showed that the prevalence of depression tends to increase with aging of the women, in this regards Margot et al., (2001) attributed this phenomenon to several factors, such as the increased likelihood of elderly individuals for developing or progression of comorbidities, loss of spouse, loss of beloved friends or family members; in addition to disintegration of the family composition with detaching of the sons and/or daughters for marriage or travelling for work or study; these factors could play important role in increasing susceptibility to depression.[13] These assumed explanations support also the findings of the current study, where it was found that depression was significantly higher in widowed, divorced and separated women. The prevalence of depression was found to be significantly lower among women who had higher education level. In this regards, Bauldy (2015) hypothesized that high education is potentially more protective from depression in people originated in disadvantaged backgrounds than those from advantaged people,[14] that was later explained by Ross and Mirowsky (2013) who stated that "people from disadvantaged backgrounds

are more likely to lack a sense of mastery and self-efficacy".[15] In the same context, Bauldy assumed that the relationship between high education level and depression could be mediated by the job; for example, the likelihood of depression increases in people with high education level when they are assigned to jobs which underestimate their qualifications; or even who fail to have a job.[14] In this regard, the results showed that the prevalence of depressive symptoms was much higher in jobless women than those who have jobs.

The current study showed that there were significant association between depression and several major familial changes for example separation of spouse, death of family member and aging of close a family member who needs special care. In this respect, Kendler et al., (2003) expressed that although the correlation between stressful life events and depression had been replicated in many researches, and even provided evidence for being causal relation, the attributes of many events are uncertain.[16] However, the concept of loss as a strong predictor for depressive symptoms and depression could be traced to Freud theories,[17] that had been operationalized later as "exit event". On the other hand, our study showed that even positive events such as marriage of a family member, spouse beginning work and birth of a grandchild were also associated significantly with increased prevalence of depressive symptoms. In this regard, Wagner et al., postulated that stressful life events, either negative such as death of a close family member or positive as owning new car or finding a job, are sudden changes in one's life could have a "severe impact on one's mental health with a risk of depressive symptoms".[18] On the same line, it was found that women with positive family history of psychological illness are significantly more susceptible to depressive symptoms; in this regard Sokratous et al., (2013) through their study pointed that depressive symptoms might be the result of "the multifactorial etiology of mental disorders, including genetically determined predisposing factors";[19] that could explain the association revealed in our study. Also, the study showed that depressive symptoms were significantly much prevalent among women who described their financial status as being "poor" or had major financial changes, while it was lower in women who rated their financial status as being "good"; these findings accord several previous researches, for example Lue et al., (2010), in a nationwide study in Taiwan found that women who had financial stress had greater life dissatisfaction and more likely to suffer from depression.[20] The explanation for the relationship between financial stress and depression was suggested in many researches; they agreed that financial stress decreases self-esteem, increases worry and fears about ability to cope with essential self needs as well as needs of the dependent individuals, with negative impact on familial relationships. These impressions and perceptions are responsible for triggering depressive symptoms.[20-22] Finally, the logistic regression for predictors of depressive symptoms among women emphasized the role of marital status and education level; which indicate that women who are divorced widowed or separated who have low education level have the highest risk to experience depressive symptoms, when exposed to major familial changes; which support previous researches in the Kingdom of Saudi Arabia as well as other regions in the world.

From the findings of the study, it is recommended that special attention should be provided in the primary care settings to women who are exposed to marital relation problems, they should be screened for early signs of depression; those who are found positive to be referred for further psychological counseling and care.

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