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Research Article

Prevalence and Risk Factors of Depression and Anxiety in Postmenopausal Women Attending PHCs, Riyadh, Saudi Arabia

Abdulmalik Almughamis*, Abdulrahman Aljubair, Abdullah Alamro, Shatha Murrad, Mostafa Kofi

Family and Community Medicine Department, Prince Sultan Military Medical City, Riyadh, Saudi Arabia

***Corresponding author:** Abdulmalik Almughamis, Family and Community Medicine Department, Prince Sultan Military Medical City, Riyadh, Saudi Arabia

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Abstract

Introduction: Depression and anxiety disorders are frequent in postmenopausal women and have deleterious effects on their physical and mental health. No studies have so far been conducted to measure the prevalence and risk factors of depression and anxiety in postmenopausal women who attend Primary Healthcare Centers (PHCs) in Saudi Arabia.

Methods: A cross-sectional study was conducted to measure the prevalence and risk factors of depression and anxiety in postmenopausal women attending peripheral health centers of Prince Sultan Military Medical City (PSMMC), Riyadh in the Kingdom of Saudi Arabia (KSA). Arabic translations of the self-administered General Anxiety Disorder (GAD)-7 and Patient Health Questionnaire (PHQ)-9 were used to diagnose and grade the severity of anxiety and depression respectively. **Results:** We included 280 women aged 54.5+/-1.49 years. The estimated prevalence of depression and general anxiety disorder was 31.4% (88). 62 (22.1%) of the participants had both depression and anxiety. Physical activity [0.36(0.19-0.69)], diabetes mellitus [4.97(2.85-8.67)], and previously either depression or anxiety [3.86 (1.66-8.94), 2.48 (1.01-6.12)] were significant predictors of depression using logistic regression. Physical activity [0.20 (0.10-0.40)] and a history of depression or anxiety [3.31 (1.42-7.67), 3.54 (1.46-8.57)] were significant predictors of anxiety. **Conclusion**: There is a high burden of depression and anxiety in postmenopausal Saudi women. We suggest routine screening for mental illnesses and promotion of regular physical activity in postmenopausal women in Saudi Arabia, particularly those with diabetes, low levels of physical activity, and a history of mental illness.

Keywords: Depression; Anxiety; Menopause

Introduction

Depression and anxiety disorders are prevalent mental disorders, which are a major cause of disability and Disability-Adjusted Life Years (DALYs) worldwide [1,2]. Depressive and anxiety disorders have reached 37.12% and 41.42% respectively and increased due to the COVID-19 pandemic [3]. It is estimated that 350 million people suffer from depression worldwide which contributes to a significant burden of disease [4]. Similarly, 264 million adults suffer from anxiety all over the world [5]. Unfortunately, the trend of depression and anxiety disorders is on the rise worldwide. In Saudi Arabia moderate to severe depression and anxiety, affect 19.8% and 22.0% of general population respectively [6].

Depression refers to persistent sadness and lack of interest in previously enjoyable activities [7]. It is a leading cause of global burden of disease with suicidal thoughts [8]. Major Depressive Disorder (MDD) is a complex interplay of neurotransmitters (such as serotonin, norepinephrine, dopamine, glutamate, etc.)

and receptor regulation. Trials have suggested that the activity of 5-Hydroxytryptamine (5-HT) is a major factor in MDD [9]. Symptoms of MDD include disturbed sleep, persistent sadness, feelings of guilt, changes in energy level, impaired concentration, changes in appetite or weight, depressed mood, suicidal thoughts, and reduction in physical movements [10]. The etiology of depression is multifactorial including genetic and environmental factors [10]. Medication and psychotherapy are required to treat depressive illness.

Anxiety refers to apprehension or tension arising from anticipation [11]. Anxiety may present with cognitive, physiological, or behavioral symptoms [12]. Symptoms of anxiety include fear of losing control or going crazy, frightening thoughts, poor concentration, palpitation, dyspnea, chest pain, sweating, tremors, restlessness, and agitation [13]. Causes of anxiety may include drugs, substance abuse, childhood adversity, trauma, stress, and genetic vulnerability [14]. Both pharmacotherapy and psychotherapy are offered to patients with anxiety disorders [15]. Proper evaluation and timely management of depression and anxiety disorders is therefore vital to avoid the resultant adverse impact on human life.

Depression and anxiety disorders significantly impact human life. Depression poses a risk for cardiovascular and neurological disorders, which may lead to risky behaviors such as use of tobacco, alcohol abuse, or life-threatening suicidal behaviors [16]. Depression is also associated with poor quality of life and disabilities [16]. Similarly, anxiety disorders are associated with adverse effects such as the use of substances, alcohol abuse, major depression, cardiac events, and high morbidity [17].

Depression and anxiety disorders are frequent in postmenopausal women. A significant association has been reported between climacteric symptoms and mood changes [18]. It has also been reported that postmenopausal women with anxiety are at higher risk of developing depressive illness [18]. A psychiatric evaluation should therefore be considered for women who have climacteric symptoms.

To the best of our knowledge, no studies have been conducted to measure the prevalence and risk factors of depression and anxiety in postmenopausal women attending Primary Healthcare Centers (PHCs), Riyadh, Saudi Arabia. Hence, this study was carried out to measure the prevalence and determine the risk factors associated with depression and anxiety in postmenopausal women in Saudi Arabia.

Methods

The aims and design of the study

This study aimed to measure the prevalence and associated risk factors of depression and anxiety in postmenopausal women attending peripheral health centres in Riyadh in the Kingdom of Saudi Arabia (KSA). To ascertain the same a cross-sectional study was carried out between 4/1/2020 and 4/1/2021 at all the primary healthcare centres of Prince Sultan Military Medical City (PSMMC), Riyadh, Saudi Arabia.

Study population

Based on previous literature, expecting a 23.9% prevalence of depression and anxiety in postmenopausal women aged between 45-70, a sample size was calculated to achieve 95% confidence and 80% power with a 5% margin of error [19]. A convenience sampling strategy was used to select participants among those attending the outpatient departments of primary health centers of PSMMC. 280 Arabic speaking postmenopausal women aged above 45 years, resident in the Kingdom of Saudi Arabia, attending the outpatient departments of primary health centers for clinical evaluation of any health concern were included in the study after obtaining informed consents. Men, premenopausal women, those physically or mentally incapable of filling in the questionnaire, and those who did not speak Arabic were excluded from the study.

Data collection

All participants were screened for general anxiety disorder and depression using an Arabic translation of the self-administered General Anxiety Disorder (GAD)-7 and Patient Health Questionnaire (PHQ)-9 previously validated in the Arabic population [20]. A physician reviewed the questionnaire with the participant on completion to ensure that no fields were left incomplete. A physician recorded electronic health record information related to age, presence of hypertension and diabetes mellitus, amount of physical exercise, parity status, and previous history of either depression or anxiety.

Data analysis

The data obtained from the study were anonymized, tabulated, and analyzed by using the Statistical Package for Social Services version 20. Descriptive statistics were computed for all study variables. Quantitative variables were summarized with mean and standard deviation. Qualitative variables are presented as frequency and percentages. The PHQ-9 score was used to categorize the severity of depression as follows: [21] 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, and 20-27 severe. The GAD-7 score was used to categorize the severity of anxiety as follows: [22,23] 0-4 minimal anxiety, 5-9 mild anxiety, 10-14 moderate anxiety, and scores higher than 15 categorized as severe anxiety.

Univariable and multivariable binary logistic regressions were carried out to assess the association between patient clinical factors and having depression, anxiety, or both. Participants with a PHQ-9 score ≥10, previously shown to have a sensitivity of

88% and a specificity of 88% for major depression, [21] were coded as having depression for the regression models. Likewise, participants with a GAD-7 score ≥8, previously shown to have a sensitivity of 92% and specificity of 76% for diagnosis generalized anxiety disorder [22,23], were coded as having general anxiety disorder for the regression models. Odd ratios were calculated with 95% confidence interval, for univariate analysis <0.25 and for multivariate analysis <0.05 kept as a significance level.

Ethical considerations

The study was approved by the Medical Ethics Committee of the Medical Services Department for Armed Forces Scientific Research Center in Riyadh (Ethics approval number PSMMC HP-01-R079) and conducted according to its guidelines. Written informed consent was obtained from all participants (or their legal guardians where applicable) before enrolment in the study. All patient identifying information obtained from electronic health records was completely anonymized.

Results

We included 280 women aged 54.5+/-1.49 mean+/SD years. The majority were multiparous, 173 (61.8%), had diabetes mellitus, 131 (46.8%), or no physical activity per week, 130 (46.4). The demographic and clinical characteristics of the study participants are tabulated in Table 1.

Study Variables	Frequency	Percentage (%)
Age groups		
45-55 years	170	60.7
56-65 years	95	33.9
More than 65 years	15	5.4
Parity		
None	15	5.4
1-3	92	32.9
More than 3	173	61.8
Physical Activity		
No	130	46.4
1-3 times a week	77	27.5
More than 3 times a week	73	26.1
Co morbidities		
Hypertension	34	12.1
Diabetes Mellitus	131	46.8
Hypertension & Diabetes Mellitus	16	5.7
Previous history of Depression or Anxiety		
Depression	26	9.3
Anxiety	23	8.2
Depression & Anxiety	26	9.3
Depression Severity Mean±SD(Range)	**7.68±5.31(0-27)**	
No	9	3.2
Minimal	85	30.4
Mild	98	35
Moderate	49	17.5
Moderate severe	29	10.4
Severe	10	3.6
Anxiety Severity Mean±SD(Range)	**5.70±4.31(0-19)**	
Minimal	143	51.1
Mild	76	27.1
Moderate	48	17.1
Severe	13	4.6
Total	280	100

Table 1: Demographic Characteristics and outcome of the post-menopausal women.

Depression and anxiety morbidity in the population

The estimated prevalence of depression and general anxiety disorder in this population of postmenopausal women calculated using the cutoffs of PHQ-9 score ≥10 and GAD-7 score ≥8 respectively were both 88 (31.4%). 62 (22.1%) of the participants had both depression and anxiety. The representation of the different severities of depression and anxiety in the population is provided in Figure 1. When asked how difficult their mental health problems have made their work, taking care of things at home, or getting along with others, 155 (55.4%) of the participants answered somewhat difficult, while 30 (10.7%) answered very difficult, and 8 (2.9%) answered extremely difficult. A complete tabulation of participant responses to the different questions in PHQ-9 and QAD-7 is provided in Table 2.

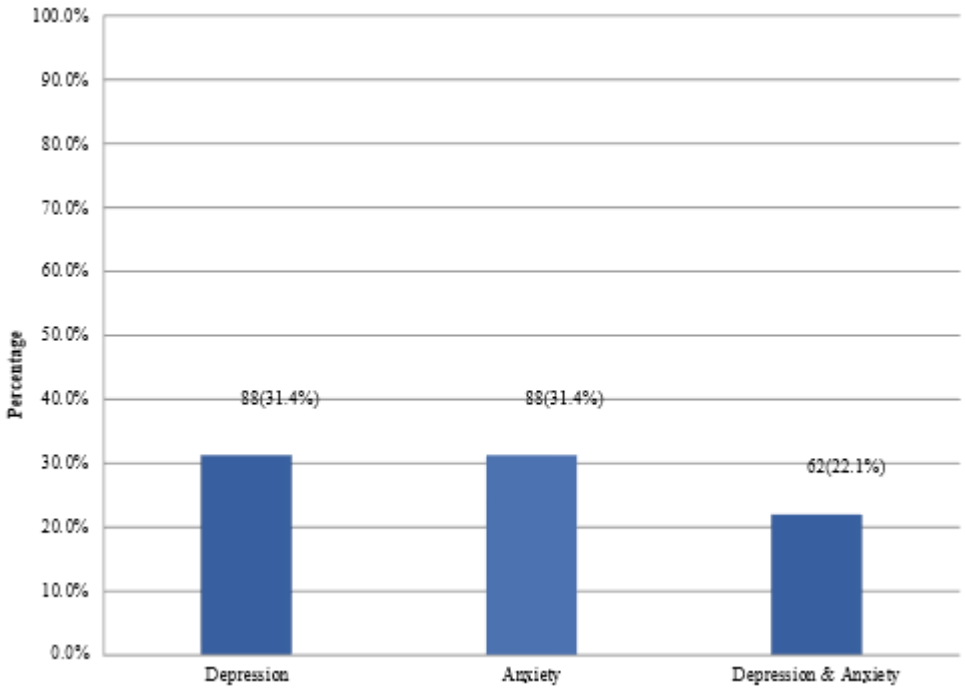

Figure 1: Depression and Anxiety status of Post-menopausal Women.

Patient Health Questionnaire(PHQ-9)	Not at all	Several days	More than half the days	Nearly every day	Mean ±SD
1- Little interest or pleasure in doing things	65(23.2%)	128(45.7%)	77(27.5%)	10(3.6%)	1.11±**0.80**
2- Feeling down, depressed, or hopeless	48(17.1%)	136(48.6%)	81(28.9%)	15(5.4%)	1.22±**0.79**
3- Trouble falling or staying asleep, or sleeping too much	59(21.1%)	134(47.9%)	70(25%)	17(6.1%)	1.16±**0.82**
4- Feeling tired or having little energy	69(24.6%)	126(45%)	64(22.9%)	21(7.5%)	1.13±**0.87**
5- Poor appetite or overeating	98(35%)	118(42.1%)	53(18.9%)	11(3.9%)	0.92±**0.83**
6- Feeling bad about yourself — or that you are a failure or have let yourself or your family down	149(53.2%)	71(25.4%)	43(15.4%)	17(6.1%)	0.74±**0.93**
7- Trouble concentrating on things, such as reading the newspaper or watching television	137(48.9%)	92(32.9%)	40(14.3%)	11(3.9%)	0.73±**0.85**

8- Moving or speaking so slowly that others people could have noticed. Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	198(70.7%)	53(18.9%)	22(7.9%)	7(2.5%)	0.42±**0.74**
9- Thoughts that you would be better off dead or of hurting yourself in some way	228(81.4%)	37(13.2%)	14(5%)	1(0.4%)	0.42±**0.74**
Generalized Anxiety Disorder Assessment(GAD-7)					
1- Feeling nervous , anxious or on edge	85(30.4%)	139(49.6%)	47(16.8%)	9(3.2%)	0.24±**0.55**
2- Not being able to stop or control worrying	101(36.1%)	125(44.6%)	48(17.1%)	6(2.1%)	0.93±**0.77**
3- Worrying too much about different things	100(35.7%)	126(45%)	41(14.6%)	13(4.6%)	0.85±**0.77**
4- Trouble relaxing	105(37.5%)	107(38.2%)	56(20%)	11(3.9%)	0.88±**0.82**
5- Being so restless that it is hard to sit still	181(64.6%)	70(25%)	25(8.9%)	4(1.4%)	0.90±**0.85**
6- Becoming easily annoyed or irritable	130(46.4%)	91(32.5%)	45(16.1%)	14(5%)	0.47±**0.72**
7- Feeling afraid as if something awful might happen	124(44.3%)	91(32.5%)	43(15.4%)	22(7.9%)	0.80±**0.89**
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with others people?	**Not difficult at all**	**Somewhat difficult**	**Very difficult**	**Extremely difficult**	
	155(55.4%)	87(31.1%)	30(10.7%)	8(2.9%)	

Table 2: Assessment of Depression & Anxiety.

Clinical factors associated with depression

Table 3 provides a tabulation of the final multivariable logistic regression model between depression and clinically associated factors. In a model adjusted for age, physical activity, diabetes mellitus, and a history of either depression or anxiety remained statistically significant. Participants with diabetes mellitus were 3.34 times more likely to have depression, adjusted odd's ratio (AOR): 3.34 (1.76-6.32), $p<0.001$. The prevalence of depression in those with diabetes was higher than that in those without diabetes, 64 (48.9%) compared to 24 (16.1%). Participants with a history of depression were 3.2 times more likely to have depression now, AOR: 3.19 (1.27-7.97), $p=0.013$. Similarly, participants with a history of both depression and anxiety were nearly 22 times more likely to have depression now, AOR: 21.5 (5.75-80.5), $p<0.001$.

Associated factors	Depression		Crude OR(95%CI);Sig	Adjusted OR(95%CI);Sig
	Yes	No		
Age groups				
45-55 years	41(24.1%)	129(75.9%)	Ref	Ref
56-65 years	40(42.1%)	55(57.9%)	2.28(1.34---3.92);0.003*	1.49(0.78---2.82);0.224
More than 65 years	7(46.7%)	8(53.3%)	2.75(0.94---8.05);0.064*	1.18(0.33---4.22);0.791
Parity				
None	4(26.7%)	11(73.3%)	Ref	-----
1-3	13(14.1%)	79(85.9%)	0.45(0.12---1.64);0.227	-----
More than 3	71(41%)	102(59%)	1.91(0.58---6.25);0.282	-----
Physical Activity				
No	59(45.4%)	71(54.6%)	Ref	Ref
1-3 times a week	18(23.4%)	59(76.6%)	0.36(0.19---0.69);0.002*	0.72(0.35---1.47);0.362
More than 3 times a week	11(15.1%)	62(84.9%)	0.21(0.10---0.44);0.000*	0.48(0.21---1.09);0.079
Hypertension & Diabetes Mellitus				
No	85(32.2%)	179(67.8%)	Ref	-----
Yes	3(18.8%)	13(81.3%)	0.48(0.13---1.75);0.270	-----
Hypertension				
No	75(30.5%)	171(69.5%)	Ref	-----
Yes	13(38.2%)	21(61.8%)	1.41(0.67---2.96);0.363	-----
Diabetes Mellitus				
No	24(16.1%)	125(83.9%)	Ref	Ref
Yes	64(48.9%)	67(51.1%)	4.97(2.85---8.67);0.000*	3.34(1.76---6.32);0.000*
Previous history of D or A				
No	42(20.6%)	162(79.4%)	Ref	Ref
Depression	13(50%)	13(50%)	3.86(1.66---8.94);0.002*	3.19(1.27---7.97);0.013*
Anxiety	9(39.1%)	14(60.9%	2.48(1.01---6.12);0.049*	2.32(0.88---6.14);0.090
Both	24(88.9%)	3(11.1%)	30.8(8.86---107.4);0.000*	21.5(5.75---80.5);0.000*
Binary logistic regression applied. For Univariate analysis significant set as 0.25 and for multivariate analysis 0.05.				

Table 3: Association between depression and associated factors.

Clinical factors associated with anxiety

Table 4 provides a tabulation of the final multivariable logistic regression model between anxiety and clinically associated factors. In a model adjusted for age, parity, hypertension, and diabetes mellitus only physical activity and history of depression or anxiety remained statistically significant. Participants with physical activity 1-3 times per week were 71% less likely to have anxiety compared to those who were not physically active, AOR: 0.29 (0.13-0.64), p=0.002. Participants with a history of anxiety were 3.7 times more likely to have anxiety now, AOR: 3.69 (1.39-9.78), p=0.009. Similarly, participants with a history of both depression and anxiety were 13 times more likely to have anxiety now, AOR: 13 (3.89-43.6), p<0.001.

Associated factors	Anxiety		Crude OR(95%CI);Sig	Adjusted OR(95%CI);Sig
	Yes	No		
Age groups				
45-55 years	40(23.5%)	130(76.5%)	Ref	Ref
56-65 years	39(41.1%)	56(58.9%)	2.26(1.32---3.89);0.003*	1.31(0.67---2.59);0.430
More than 65 years	9(60%)	6(40%)	4.87(1.63---14.5);0.004*	2.76(0.76---10.05);0.122
Parity				
None	2(13.3%)	13(86.7%)	Ref	Ref
1-3	20(21.7%)	72(78.3%)	1.81(0.37---8.67);0.460	1.96(0.34---11.1);0.449
More than 3	66(38.2%)	107(61.8%)	4.01(0.87---18.3);0.073*	3.57(0.66---19.4);0.140
Physical Activity				
No	65(50%)	65(50%)	Ref	Ref
1-3 times a week	13(16.9%)	64(83.1%)	0.20(0.10---0.40);0.000*	0.29(0.13---0.64);0.002*
More than 3 times a week	10(13.7%)	63(86.3%)	0.16(0.07---0.34);0.000*	0.25(0.11---0.59);0.001*
Hypertension & Diabetes Mellitus				
No	86(32.6%)	178(67.4%)	Ref	Ref
Yes	2(12.5%)	14(87.5%)	0.29(0.07---1.33);0.112*	0.31(0.06---1.64);0.169
Hypertension				
No	79(32.1%)	167(67.9%)	Ref	-----
Yes	9(26.5%)	25(73.5%)	0.76(0.34---1.71);0.507	-----
Diabetes Mellitus				
No	29(19.5%)	120(80.5%)	Ref	Ref
Yes	59(45%)	72(55%)	3.39(1.99---5.77);0.000*	1.44(0.74---2.80);0.281
Previous history of D or A				
No	42(20.6%)	162(79.4%)	Ref	Ref
Depression	12(46.2%)	14(53.8%)	3.31(1.42---7.67);0.005*	2.40(0.92---6.25);0.072

Anxiety	11(47.8%)	12(52.2%)	3.54(1.46---8.57);0.005*	3.69(1.39---9.78);0.009*
Both	23(85.2%)	4(14.8%)	22.2(7.27---67.6);0.000*	13.0(3.89---43.6);0.000*
Binary logistic regression applied. For Univariate analysis significant set as 0.25 and for multivariate analysis 0.05.				

Table 4: Association between anxiety and associated factors.

Clinical factors associated with depression and anxiety

Table 5 tabulates the final multivariable logistic regression model between clinically associated factors and having both anxiety and depression. Physical activity, having diabetes mellitus, and a history of anxiety or depression were statistically significant in the model. Participants with physical activity 1-3 times per week were 73% less likely to have both anxiety and depression compared to those who were not physically active, AOR: 0.27 (0.10-0.69), p=0.006. Participants with diabetes mellitus were nearly 3 times more likely to have both depression and anxiety compared to those without diabetes mellitus, 2.92 (1.39-6.10), p=0.004. Participants with a history of both depression and anxiety were 10 times more likely to have both depression and anxiety now, AOR: 10 (3.64-27.7), p<0.001.

Associated factors	Depression & Anxiety		Crude OR(95%CI);Sig	Adjusted OR(95%CI);Sig
	Yes	No		
Age groups				
45-55 years	28 (16.5%)	142(83.5%)	Ref	Ref
56-65 years	27 (28.4%)	68(71.6%)	2.01(1.10---3.68);0.023*	1.21(0.59---2.47);0.603
More than 65 years	7 (46.7%)	8(53.3%)	4.44(1.49---13.2);0.008*	2.49(0.69---8.95);0.160
Parity				
None	0 (0%)	15(100%)	Not applicable	Not applicable
1-3	10 (10.9%)	82(87.1%)	Not applicable	Not applicable
More than 3	52 (30.1%)	121(69.9%)	Not applicable	Not applicable
Physical Activity				
No	48 (36.9%)	82(63.1%)	Ref	Ref
1-3 times a week	7 (9.1%)	70(90.9%)	0.17(0.07---0.40);0.000*	0.27(0.10---0.69);0.006*
More than 3 times a week	7 (9.6%)	66(90.4%)	0.18(0.08---0.43);0.000*	0.42(0.16---1.06);0.067
Hypertension & Diabetes Mellitus				
No	60 (22.7%)	204(77.3%)	Ref	-----
Yes	2 (12.5%)	14(87.5%)	0.49(0.12---2.19);0.348	-----
Hypertension				
No	55 (22.4%)	191(77.6%)	Ref	-----
Yes	7 (20.6%)	27(79.4%)	0.90(0.37---2.18);0.816	-----
Diabetes Mellitus				

No	15(10.1%)	134(89.9%)	Ref	Ref
Yes	47(35.9%)	84(64.1%)	4.9(2.63---9.49);0.000*	2.92(1.39---6.10);0.004*
Previous history of D or A				
No	28(13.7%)	176(86.3%)	Ref	Ref
Depression	8(30.8%)	18(69.2%)	2.79(1.11---7.03);0.029*	1.74(0.63---4.80);0.285
Anxiety	6(26.1%)	17(73.9%)	2.22(0.81---6.11);0.123*	2.11(0.71---6.32);0.181
Both	20(74.1%)	7(25.9%)	17.9(6.95---46.4);0.000*	10.0(3.64---27.7);0.000*
Binary logistic regression applied. For Univariate analysis significant set as 0.25 and for multivariate analysis 0.05.				

Table 5: Association between depression & anxiety and associated factors.

Discussion

Our study found the prevalence of depression and anxiety to be 31.4% (88 women) and 31.4% (88) respectively in postmenopausal women attending the outpatient departments of primary health centers of PSMMC in the Kingdom of Saudi Arabia. 22.1% (62) of the participants had both anxiety and depression. This alludes the massive burden of these mental health conditions in nearly 1.8 million postmenopausal women in the Saudi population [24]. Though most of the cases of depression and anxiety identified in our study were mild, 3.6% and 4.6% of the population suffered from severe depression and anxiety respectively, running a higher risk for self-harm and suicide [25]. Additionally, depression and anxiety can greatly deteriorate the quality of life. In our study 12.9% of the participants reported that their mental health problems made it very difficult to work, take care of things at home, or get along with others.

Our findings correlate with a similar study conducted by Alanzai, et al. [26] in Riyadh who found the prevalence of depressive symptoms to be 29% in postmenopausal women. Our study found a higher prevalence of depression and anxiety in post-menopausal women compared to that reported in pregnant Saudi women (26.8% and 23.9% respectively) [27]. This could be due to the added physical and emotional stress of menopause along with the physical and sociocultural ramifications of ageing. However, there is a paucity of research on prevalence of mental health conditions and their associated factors in women of other age groups in Saudi Arabia, an area for future research.

Diabetes and mental illness

Through logistic regression, we found diabetes mellitus to be a strong predictor for suffering from depression alone and depression and anxiety simultaneously indicating that postmenopausal women with diabetes are a key segment of population at risk of depression, which requires active screening for depressive symptoms. This concurs with the findings and recommendations of Alzahrani, et al. The physical ailments related to diabetes along with the social stigma related to diabetes may lead to an increased risk of depression in this population.

Physical activity and mental illness

A low level of physical activity was a key predictor of anxiety alone or depression with anxiety, highlighting the protective effect of exercise for mental health illnesses. Interventions aimed at increasing physical activity in this age group would improve mental health and address diabetes, hypertension, and other co-morbidities that are common in this age group [28].

History of mental illness

History of depression and anxiety was an important predictor of current mental illness. It is therefore essential to screen those with a history of mental illnesses in regular intervals.

Limitations of the Study

Our study was conducted in a single center, the primary health care centre of Prince Sultan Military Medical City (PSMMC), Riyadh. Our results may therefore not be generalizable to the entire population of Saudi Arabia. These data were collected between 2020 and 2021. The COVID-19 pandemic and the ensuing health, social, and economic repercussions could have impacted the mental health of the studied women. However, we did not study the impact of the pandemic on their mental health.

Conclusions

Our study found a high prevalence of depression (31.4%) and anxiety (31.4%) in postmenopausal women of Saudi Arabia. Presence of diabetes, low physical activity, and history of mental illness were key predictors of anxiety and depression. We suggest

routine screening for mental illnesses and promotion of regular physical activity for these vulnerable groups.

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