SJIF Impact Factor: 6.711

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 8.
Issue: 9
Page N. 23-31
Year: 2024

Original Article www.wjahr.com

MENTAL DISORDERS AMONG A SAMPLE OF POSTMENOPAUSAL WOMEN IN BAGHDAD, IRAQ, 2023

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Article Received date: 25 June 2024 **Article Revised date:** 15 July 2024 **Article Accepted date:** 05 August 2024

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ABSTRACT

Background: Mental disorders are frequent in postmenopausal women and have deleterious effects on their physical and mental health. No published studies were conducted to measure the prevalence of mental disorders in postmenopausal women in Iraq, which is why this study estimate the prevalence of depression, generalized anxiety disorders, and insomnia among a sample of postmenopausal women in Baghdad, Iraq, 2023, and to explore the association between depression, anxiety, and insomnia with sociodemographic status. **Methodology:** A cross-sectional study was conducted, involving a total of 300 women aged 50–65 years, collected by using a convenience sampling technique to select postmenopausal women participating in sports, present in supermarkets, restaurants, cultural, educational, and religious classes, or members of women's clubs in Baghdad, Iraq. Depression symptoms were assessed using the Patient Health Questionnaire scale (PHQ-9), anxiety symptoms were evaluated using the Generalized Anxiety Disorder Scale (GAD-7), and insomnia was assessed using the Insomnia Severity Index (ISI), the data collection was conducted from 1 February 2023 to 30 June 2023. **Results:** The study included 300 menopausal women with an average age of 57.4 (± 5.1) years, the prevalence of depression was 36.7%, GAD was 39.3%, and insomnia was 18%. Depression was found to increase 7.47 times among women with insomnia, and about 10.98 times among women with anxiety, The odds of depression also increase by 1.08 times for each year women get older, and the odds of depression decrease among women who have been exercising as well as diabetic women. Women with insomnia have about 7.96 times odds of anxiety, while it was lower among depressed women, Single women have 4.5 times for anxiety compared to married. Anxiety increased 2.64 times among women who reported that monthly income was not enough, while less among women who reported more than enough income, women who are doing sports have 5.12 times odds for anxiety. logistic model for women with insomnia showed that; the odds is higher (OR=3.4, OR=5.71) among those who were also diagnosed with depression and GAD, respectively, diabetic women were 3.09 times more prone to suffer from insomnia compared to nondiabetic women. **Conclusion:** This study found a high prevalence of depression, GAD, and insomnia in postmenopausal women in Baghdad, Iraq. The key predictors for depression are GAD, insomnia, age, and low physical activity. The key predictors for GAD are insomnia, single postmenopausal women, and not enough income. The predictors for insomnia are depression, GAD, and diabetes mellitus.

KEYWORDS: The key predictors for depression are GAD, insomnia, age, and low physical activity.

INTRODUCTION

1.1 Background

A mental disorder is characterized by a clinically significant disturbance in an individual's cognition, behavior, or emotional regulation. It is usually associated with distress or impairment in important areas of functioning.[1], [2] In 2019, 1 in every eight people, or 970 million people around the world, were living with a mental disorder, with anxiety and depressive disorders the most common.[3]

A meta-analysis of 34 South Asian studies found the prevalence rate of mental disorders is 12.2% from 34 epidemiological surveys undertaken across seven countries of South Asia. The findings confirm that mental disorders are highly prevalent and increasingly affecting people across all regions of South Asia.[4] The prevalence of mental disorders was 25.9% among

women in Sanliurfa, Southeastern Turkey.[5] In Baghdad, Iraq, in 2017, the prevalence of mental disorders among older adults was 38.7%.[6]

Different types of mental Disorders, depression is one of the most common mood conditions among the elderly, which is linked to severe consequences such as difficulty in concentration and mood disturbances, followed by a lack of interest in social activities, apathy, pessimism, and changes in appetite and sleep.[7] The World Health Organization (WHO) reported that major depression will be the second most frequent cause of illness and also the second largest killer after heart disease by 2020.[8] It is significant to note that studies have shown depression to be twice more prevalent among women than men.[9] Approximately 280 million people in the world have depression (17). In Mosul, Iraq, the prevalence of Depression in the elderly aged (60 years and above) was 65.3%.[10]

Generalized anxiety disorder (GAD) is characterized by at least six months of excessive and uncontrollable worry, as well as at least three of the following symptoms: restlessness or agitation, fatigue, concentration problems, irritability, muscle tension, and sleep disturbance.[11] In 2019, 301 million people in the world had an anxiety disorder (24). In 2023, in Erbil, Iraq, the prevalence of moderate and severe anxiety was 24.7% and 22.7%, respectively, females reported significantly higher anxiety levels.[12]

Insomnia is defined as the difficulty in the initiation and/or maintenance of sleep and/or inadequate or poor quality of sleep despite adequate opportunities and circumstances for sleep that result in impairment of daytime functioning.[13] In 2021, a cross-sectional study of 390 Egyptian medical staff, showed that the prevalence of insomnia was 78.7%.[14] In Iraq, the prevalence of insomnia and anxiety among medical students in the al-kindy College of Medicine was high (67.24%), and there was a significant correlation between gender and both insomnia and anxiety, females are more liable for developing insomnia and anxiety.[15]

Menopause is the time in a woman's life when her period stops. It usually occurs naturally after the age of 45 years. The percentage of females above 45 years old is 7.5 % of the total Iraqi population and 15.1% of the total female population in Iraq, according to the Iraqi annual report in 2022. The menopausal transition may also be a source of psychological distress or instability despite the fact that certain subgroups of women may be more vulnerable to such adverse outcomes than others.[16]

The postmenopausal period is a process that continues from menopause to old age. In this period, ovarian activity stops completely, and fertility ends. With the decrease in ovarian hormone production, physiological and psychological effects occur in women.[17] Women in perimenopausal and postmenopausal periods are at increased risk of depression and anxiety.[18] Increased clinical and subclinical risks of depression are observable in low estrogenic status, such as postmenopausal. However, menopause does not directly cause depression, and neurotransmitters are thought to be most directly associated with depression.[19] Difficulty in initiating sleep has been shown to correlate strongly with anxiety, with nonrestorative sleep also correlating strongly with depression. Difficulty in initiating sleep leads to anxiety, irritability, and non-restorative sleep problems, which in turn may manifest as depression.[20]

In the Department of Obstetrics and Gynecology of a North Indian tertiary care hospital, psychological symptoms were present in 32% of postmenopausal women. In comparison, sleep disturbance and decreased concentration were reported by nearly 34%. Irritability, nervousness, and depression were the presenting complaints in 31.5%, 28.5%, and 23.5% of women respectively.[21]

There are no published studies in Iraq about mental disorders of menopausal women and this was the impetus to conduct this study.

1.2 Objectives

1. To estimate the prevalence of mental disorders (depression, generalized anxiety disorders, and insomnia) among a sample of postmenopausal women in Baghdad, Iraq, 2023.
2. To explore the association between depression, anxiety, and insomnia with sociodemographic status.

SUBJECTS AND METHODS

2.1 Study design: A cross-sectional study.

2.2 Study setting: In Baghdad, Iraq.

2.3 Study population: A convenience sampling technique was used to select postmenopausal women participating in sports, present in supermarkets, restaurants, cultural, educational, and religious classes, or members of women's clubs.

Inclusion criteria: The postmenopausal women included women aged 50-65 years old) with at least one year had passed since their last monthly period and they had not used any hormonal replacement.

Exclusion criteria: Women who became menopausal due to gynecological diseases, surgery, or severe trauma.

2.4 Sampling procedure: A convenience sampling.

2.5 Sample size: the minimum sample size was estimated to be 300, and the sample size was calculated according to the formula ($n = z^2pq/d^2$)[22], where z = 1.96 (Z statistic for a level of confidence), p = 27% (Expected prevalence or proportion), q = 1 − p, d = 0.05 (Precision).

2.6 Time of data collection: From 1 February 2023 to 30 June 2023.

2.7 Data collection: Data was collected by self-administered questionnaire and the researcher was present to explain any unclear questions, the questionnaire consisted of two parts:

A. Demographical Data: (age/ parity/ marital status/ Highest educational level achieved/ income/ Engages in regular exercise (consistent planned physical activity performed with intent to improve O2 maintain evenall healthy fitness "at least 150 minutes of moderate-intensity activity a week or 75 minutes of vigorous-intensity activity a week") / Current smoke (An adult who has smoked 100 cigarettes in her lifetime and who currently smokes cigarettes)/ chronic illness (Hypertension, Diabetes mellitus, Cardiovascular diseases, Rheumatoid arthritis, Other diseases like Thyroid or Renal diseases)/ past surgical history/ Current use of anti-HT/ Current use of psychotropic drugs/Current use of sleep-aiding drugs).

B. 1. Patient Health Questionnaire (PHQ-9): The PHQ-9 is a 9-item self-administered questionnaire designed to evaluate the presence of depressive symptoms during the prior two weeks. The nine items of the PHQ-9 are based directly on the nine diagnostic criteria for major depressive disorder in the Diagnostic and Statistical Manual Fifth Edition (DSM-V).[23] Response options are "not at all," "several days," "more than half the days," and "nearly every day," scored as 0, 1, 2, and 3, respectively. PHQ-9 scores range from 0 to 27, where a cut-off point of 0–4 indicates no or minimal depressive symptoms, 5–9 mild depressive symptoms, 10–14 moderate depressive symptoms, 15–19 moderately-severe depressive symptoms, and 20–27 severe depressive symptoms, positive when PHQ-9 >= 10.[24]

2. The 7-item Generalized Anxiety Disorder Scale (GAD-7) is a brief self-report scale designed to identify probable cases of GAD.[25] It was developed as a screening tool for detecting GAD in primary care patients and has become a widely used measure in many different cultures. The seven items of the GAD-7 ask respondents to indicate how often, over the past two weeks, they have been bothered by each of the seven core symptoms of GAD. The answers are rated on a 4-point scale as 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). Therefore, GAD-7 sum scores range from 0 to 21. A sum score of at least 10 points is the cut-off point most often taken to reflect at least moderate generalized anxiety. A total score of 15 or more on the GAD-7 represents severe anxiety symptoms, positive when GAD-7 >= 10.[26]

3. Insomnia Severity Index (ISI):[27] is a brief self-report instrument measuring the patient's perception of their insomnia. The ISI targets the subjective symptoms and consequences of insomnia and the degree of concern or distress caused by those difficulties. Its content partially corresponds to the diagnostic criteria of insomnia.[28] Each item is rated on a 0±4 scale, and the total score ranges from 0 to 28. The total score is interpreted as follows: absence of insomnia (0–7), sub-threshold insomnia (8–14), moderate insomnia (15–21), and severe insomnia (22–28), positive when ISI >14.[29]

2.8 Statistical analysis

Data were entered and analyzed by SPSS ver. 26. The categorical variables are presented by frequencies and percentages, using Pearson's chi-square test of independence or Fisher's exact test accordingly, to test the association between them and the presence of mental health problems. Women's ages were presented with mean and standard deviation. The correlation of the scores of mental health problems, age, and number of women's children tested by Spearman's nonparametric test. Significantly associated factors with mental health problems were tested using binary logistic models; however, the variables with zero comparative cells were eliminated from the models. The confidence interval of significance was 95%.

RESULTS

The study included 300 menopausal women with an average age of 57.4 (± 5.1) years. About two-thirds of the sample are married and 11.3% are still singles. More than one-half (58%) of the included women reported enough monthly income, while the income was not enough for 35% of them. The education level of 21% of the women was primary or below, 33.3% had a secondary school degree, while 38.7% had a college degree. Regarding women's occupations, 40.7% and 36.7% work as private and governmental employees, while only 4% and 2% are retired and homemakers, respectively. Women who reported doing sports were 29%, and only 5.3% of the sample were smokers. Table 1

Table 1: Distribution of sociodemographic characteristics of the study group.

Variables	No.	Percent
Marital status		
Married	197	65.7
Single	34	11.3
Widow	51	17
Divorced	18	6
Income per month		
Enough	174	58
Not enough	105	35
More than enough	21	7
Education level		
Illiterates	21	7
Read and write	15	5
Primary	27	9
Secondary	100	33.3
College	116	38.7
Higher education	21	7
Occupation		
Housewife	6	2
Governmental employee	110	36.7

Variables	No.	Percent
Private employee	122	40.7
Free Business	50	16.7
Retired	12	4
Doing sport		
Yes	87	29
No	213	71
Smoking		
Yes	16	5.3
No	284	94.7
Total	**300**	**100**

Past medical history of the sampled women revealed that 31% of them were hypertensive, 25.7% had rheumatoid arthritis, 20% were diabetic, 8.1% had cardiovascular disease, and 2.7% had other chronic diseases. Past surgical history was found in 40.3% of the study sample; 9% of the women reported taking narcoleptics, 8.7% were on hormonal therapy, and 1.7% had psychotherapy. The median number of children among the women was three and ranged from zero to eight; 20.3% of the women were nullipara, 7% were primipara, and 72.7% were multipara. Table 2

Table 2: Distribution of past medical and surgical history of the study group.

Variables	No.	Percent
Hypertension		
Yes	93	31
No	207	69
Diabetes mellitus		
Yes	60	20
No	240	80
Cardiovascular disease		
Yes	24	8
No	276	92
Rheumatoid arthritis		
Yes	77	25.7
No	223	74.3
Other diseases		
Yes	8	2.7
No	292	97.3
Surgery		
Yes	121	40.3
No	179	59.7
Hormonal therapy		
Yes	26	8.7
No	274	91.3
Psychotherapy		
Yes	5	1.7
No	295	98.3
Narcoleptics		
Yes	27	9
No	273	91
Parity		
Nulliparous(single or did not have a child)	61	20.3
Primiparous(have one child)	21	7
Multiparous (have two to four children)	113	37.7
Grand multiparous(have five or more children)	105	35
Total	**300**	**100**

Out of 300 women, (36.7%) had depression, 74 (24.7%) had minimal depression, 116 (38.7%) had mild depression, 77 (25.7%) had moderate, 19 (6.3%) had moderately severe, while 14 (4.7%) had severe depression. Figure 1.

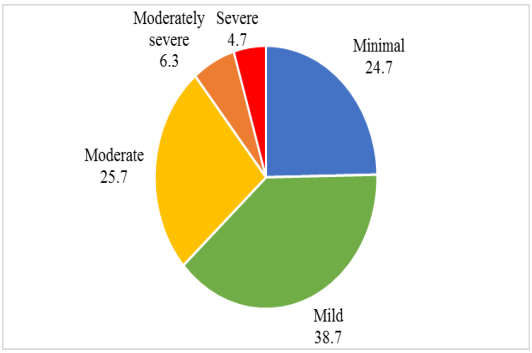

Figure 1: Depression severity among the study sample.

Generalized anxiety disorder was prevalent among (39.3%) of the study sample; 68 (22.7%) had minimal anxiety, 114 (38%) had mild anxiety, 72 (24%) had moderate anxiety and severe anxiety was found in 46 (15.3%) of the women. Figure 2.

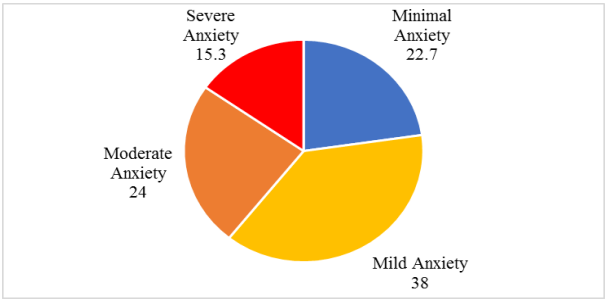

Figure 2: Levels of anxiety among the study sample.

The women were asked about their sleep, and the scores further revealed that 126 (42%) of them do not have insomnia, 120 (40%) of them have sub-threshold insomnia, 46 (15.3%) have moderate insomnia, and only 8 (2.7%) have severe insomnia. The overall insomnia was (18%). Figure 3.

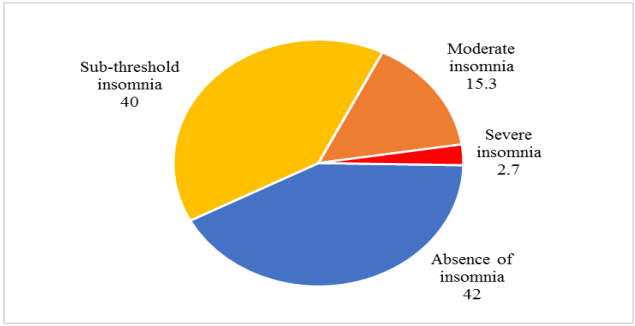

Figure 3: Insomnia severity index among the study sample.

The age of the participants in the current study did not differ significantly in those with insomnia. At the same time, women with depression or generalized anxiety disorder were significantly older than those who did not have [58.3 (±5.8) years vs. 56.9 (±4.7), P=0.033] and [58.2 (±4.7) years vs. 56.8 (±5.3), P=0.016], respectively. Table 3.

Table 3: Comparison of participants' age according to the presence of mental disorder.

Variables	No.	Age (year)		P-value
		Mean	Std. Deviation	
Insomnia				
Positive	54	58.3	4.1	0.138
Negative	246	57.2	5.3	
Depression				
Positive	110	58.3	5.8	0.033*
Negative	190	56.9	4.7	
Generalized Anxiety Disorder				
Positive	118	58.2	4.7	0.016*
Negative	182	56.8	5.3	

*Significant at 0.05 level by independent t-test

Depression was found to increase more than seven times among women with insomnia (OR= 7.47, 95%CI: 2.60 – 21.43) and about 11 times among women with anxiety (OR= 10.98, 95%CI: 4.80 – 25.13). The odds of depression also increase by 1.08 times each year women get older. On the contrary, the odds of depression decrease among women exercising and diabetic women (OR= 0.13, 95%CI: 0.05 – 0.32) and (OR= 0.11, 95%CI: 0.04 – 0.33), respectively. Table 4.

Table 4: Logistic regression of the factors associated with depression.

Variables in the Equation	P-value	Odds ratio	95% Confidence interval for odds ratio	
			Lower	Upper
Insomnia	<0.001*	7.47	2.60	21.43
Generalized Anxiety Disorder	<0.001*	10.98	4.80	25.13
Age (year)	0.029*	1.08	1.01	1.15
Number of children	0.096	0.81	0.63	1.04

Marital status	0.202			
Married		1.00		
Single	0.195	2.44	0.63	9.37
Widow	0.176	0.48	0.17	1.39
Divorced	0.863	1.14	0.26	4.92
Income per month	0.223			
Enough		1.00		
Not enough	0.115	1.87	0.86	4.05
More than enough	0.339	1.83	0.53	6.31
Doing sport	<0.001*	0.13	0.05	0.32
Diabetes mellitus	<0.001*	0.11	0.04	0.33
Taking narcoleptics	0.191	2.24	0.67	7.48
Constant	0.009*	0.01		

*Significant at 0.05 alpha level by logistic regression

Women with insomnia have about eight times the odds of anxiety (OR= 7.96, 95%CI: 3.09 – 20.50), while it was lower among depressed women (OR= 0.11, 95%CI: 0.05 – 0.23). Single women have more than four times the tendency for anxiety compared to married (OR= 4.5, 95%CI: 1.33 – 15.31). Anxiety increased among women who reported that monthly income was not enough compared to those who reported enough income (OR= 2.64, 95%CI: 1.32 – 5.31), while it was less among women who reported more than enough income (OR= 0.12, 95%CI: 0.03 – 0.57). In addition, women who are doing sports have more than five times the odds for anxiety (OR= 5.12, 95%CI: 2.33 – 11.24). Table 5.

Table 5: Logistic regression of the factors associated with generalized anxiety disorder.

Variables in the Equation	P-value	Odds ratio	95% Confidence interval for odds ratio	
			Lower	Upper
Insomnia	<0.001*	7.96	3.09	20.50
Depression	<0.001*	0.11	0.05	0.23
Age (year)	0.179	1.05	0.98	1.11
Number of children	0.669	0.95	0.76	1.19
Marital status	0.026*			
Married		1.00		
Single	0.016*	4.50	1.33	15.31
Widow	0.073	2.34	0.92	5.95
Divorced	0.871	0.89	0.22	3.61
Income per month	<0.001*			
Enough		1.00		
Not enough	0.006*	2.64	1.32	5.31
More than enough	0.008*	0.12	0.03	0.57
Doing sport	<0.001*	5.12	2.33	11.24
Taking narcoleptics	0.852	0.89	0.27	2.97
Constant	0.121	0.05		

*Significant at 0.05 alpha level by logistic regression

The binary logistic model for women with insomnia showed that the odds are higher (OR= 3.4, 95%CI: 1.42 – 8.15) and (OR= 5.71, 95%CI: 2.42 – 13.48) among those who were also diagnosed with depression and generalized anxiety disorders, respectively. Furthermore, diabetic women were three times more prone to suffer from insomnia compared to nondiabetic women (OR= 3.09, 95%CI: 1.15 – 8.29). Taking narcoleptics increases the odds of insomnia among postmenopausal women by five times (OR= 5.1, 95%CI: 1.68 – 15.51). Table 6.

Table 6: Logistic regression of the factors associated with insomnia.

Variables in the Equation	P-value	Odds ratio	95% Confidence interval for odds ratio	
			Lower	Upper
Depression	0.006*	3.40	1.42	8.15
Generalized Anxiety Disorder	<0.001*	5.71	2.42	13.48
Hypertension	0.068	2.05	0.95	4.44
Diabetes mellitus	0.025*	3.09	1.15	8.29
Cardiovascular disease	0.752	1.26	0.31	5.14

Using narcoleptics	0.004*	5.1	1.68	15.51
Constant	<0.001*	0.02		

*Significant at 0.05 alpha level by logistic regression

DISCUSSION

This study is crucial for a developing country like Iraq, where mental health problems have been overlooked most of the time, especially women who were often mocked, neglected, and abused for their mental health problems.[30] Most of studies in Baghdad, regarding postmenopausal women did not present the severity of depression, GAD, and insomnia among this group of population.

This study found that (36.7%) of postmenopausal women are in a state of depression. It is well known that estrogen fluctuations affect serotonin and GABA (Gamma-aminobutyric-acid). Underlying neuroticism and contemporaneous adverse life events are risk factors for menopausal decompensation with depression.[31] This is similar to a study in Saudi showing that depression was 31.4%.[32] Age was a statistically significant affecting factor on depression (the odds of depression increase by 1.08 times each year women get older). Some natural body changes associated with aging may increase a person's risk of experiencing depression, feelings of hopelessness and isolation that often spur thoughts of suicide are more prevalent among the elderly.[33] This is similar to a study in Iran.[34] This study found that physical activity improved depression (the odds of depression decreased among women exercising (OR= 0.13). Practicing exerciser is followed by an increased release of β-endorphins, endorphins are related to a positive mood and an overall enhanced sense of well-being.[35] In parallel to these results, a previous study of the Chinese population also reported a negative association between regular physical activity and depressive symptoms.[36] Diabetes mellitus status was significantly associated with depression status (the odds of depression decrease among diabetic women (OR= 0.11), it could be due to patients with diabetes mellitus having more emotional support from their family which led to improve depressive symptoms. This result was not in conformity with the study conducted in Australia.[37] This study found that the prevalence of GAD was (39.3%) among postmenopausal women. Disturbances in hormone levels, and life changes during postmenopausal period.[38] This is similar to a study in Saudi showed that the GAD was 31.4%.[32] Marital status was statistically significant (Single postmenopausal women had 4.5 times the tendency for GAD compared to married), it could be due to fear of being alone, never having children, and feeling worthless or bad about themselves. This is similar to a study in India.[39] Income was also a significantly affecting factor on GAD status (postmenopausal women who reported that monthly income was not enough had 2.64 times for GAD compared to those who reported enough income), it could be due to poverty being associated with volatile income and expenditures which leads to worry.[40] This is similar to the study in China in 2022.[36] Physical activity was also significantly associated with GAD status (postmenopausal women with physical activity were 5.12 times more likely than those without physical activity to have GAD), which could be due to that postmenopausal women with GAD being considered a reason to do sport or this difference might arise because the duration of practicing exercise was not considered. This is not similar to a study in Saudi Arabia in 2022.[32] The last mental disorder in this study of postmenopausal women is insomnia, this study found that (18%) of postmenopausal women were in a state of insomnia, There are many possible causes of insomnia in postmenopausal women, including vasomotor symptoms, ovarian hormone changes, restless legs syndrome.[41] This study's finding is much lower than in a study of Taiwanese menopausal women found that the insomnia was (59.6%).[42] Diabetes mellitus was significantly associated with insomnia status (postmenopausal women with diabetic mellitus were 3.09 times more likely than those without diabetic mellitus to have insomnia). Diabetes could cause frequent nighttime urination, nocturnal hypoglycemia, peripheral neuropathy, restless leg syndrome, and sleep-disordered breathing, which could cause insomnia.[43] This finding was not in conformity with a study conducted in Poland in 2017.[44] In addition, according to logistics regression analysis: **Depression with other mental disorders:** postmenopausal women with depression were 3.4 times more likely than those without depression to have insomnia. Depression is associated with a functional decrease of serotoninergic neurotransmission and with specific alterations in sleep, notably insomnia.[45] This finding was similar to the finding of a study in Italy.[46] Women with depression were the lowest to have GAD. This finding was not in conformity with a meta-analysis of longitudinal studies in 2017.[47] **Insomnia with other mental disorders:** postmenopausal women with insomnia were 7.47 times more likely than those without insomnia to have depression. Sleep disruptions could affect the body's stress system and increase vulnerability to depression.[48] Women with insomnia were 7.96 times more likely to have GAD. Insomnia and anxiety share a pathogenetic mechanism: hyperarousal caused by dysregulation of neurotransmitter systems including cholinergic and GABA (gamma-aminobutyric acid).[49] This was similar to a study conducted in Tokyo, Japan.[20] **GAD with other mental disorders:** postmenopausal women with GAD were 10.98 times more likely than those without GAD to have depression. Anxiety and depression might originate in the same area of the brain, the amygdala which is part of the brain that generates emotional responses to our environment.[50] Women with GAD were 5.71 times more likely to have insomnia. Symptoms of anxiety could quickly combine to make it harder to sleep, resulting in anxiety-induced insomnia,

key psychological signs like a persistent sense of worry, dread, or apprehension leave sufferers of anxiety-induced insomnia unable to relax, unwind, and ultimately fall asleep.[51] This result was the same result of a study conducted in Italy.[46] **In Conclusion** This study found a high prevalence of depression (36.7%), GAD (39.3%), and insomnia (18%) in postmenopausal women in Baghdad, Iraq. So, depression, GAD, and insomnia are a serious mental health concern for Baghdad postmenopausal women. The severity of depression increased by GAD, insomnia, age, and low physical activity. The severity of GAD increased by insomnia, single postmenopausal women, and not enough income. The severity of insomnia increased by depression, GAD, and diabetes mellitus.

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