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Research Article

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Prevalence of Depression among Postmenopausal Women in National Guard Primary Healthcare Centers, Riyadh, Saudi Arabia

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Abstract

Background: *Reports of prevalence rates of depression in postmenopause show inconsistent results, with some studies demonstrating an increase in depressive symptoms whereas others show a decrease or no difference.*

Objectives: *To estimate the prevalence and define some risk factors of depression in postmenopausal women aged 45-65 years in primary health care settings in Riyadh, Saudi Arabia.*

Subjects and Methods: *This cross-sectional study was conducted throughout the period June-August, 2018 at King Abdul Aziz Medical City-National Guard (KAMC-NG) in Riyadh, Saudi Arabia, in three large primary care centers. It included a sample of postmenopausal women who completed at least 12 months of amenorrhea and aged between 45 and 65 years. The Arabic version of PHQ-9 was utilized to detect depression and Menopausal rating scale (MRS) was used to assess the severity of menopausal symptoms.*

Results: *The study included 300 women. The prevalence of major depressive symptoms among them was 29%. More than half (60.7%) of the respondents had moderate social support, three quarters (75%) scored mild to severe symptoms on the menopausal rating scale while 25% were asymptomatic.Women who were: unmarried (84.2%), housewives (79.2%), illiterate (83.2%), menopaused since≥10 years (87.5%), having more than five children (81.4%), underwent oophorectomy (100%), with poor social support (93.9%) and never exercised (82.4%) were more likely to report mild to severe symptoms. Also, significantly higher percentages of participants who have hypertension (81.9%), diabetes (82.1%), Dyslipedemia (88.1%) and hypothyroidism (81.4 %) experienced mild to severe menopausal symptoms, $p<0.05$. The degree of severity on the PHQ has strong significant ($P<0.001$) correlation with marital status, employment status, educational level and income.*

Conclusion: *Depression is a relatively common disorder among postmenopausal women in Riyadh. Some socio-demographic indicators were identified. Care should be paid to this important group and further larger studies are recommended.*

Keywords: Postmenopausal Women, Menopausal Rating Scale, PHQ-9, Depression

Introduction

According to the World Health Organization (WHO), menopause is defined as the permanent cessation of menstrual cycle resulting from the loss of ovarian follicular activity [1]. Natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea, for which there is no other obvious pathologic or physiologic cause. The age at which a woman reaches natural menopause ranges between 45 years and 50 years. Early menopause is defined as menopause occurring before the age of 45 years, while premature menopause occurs before the age of 40 years. It has been estimated that by 2030, 1.2 billion women will be postmenopausal, compared with 470 million in 1990 [2]. The growing number of aging postmenopausal women and increasing duration of the postmenopausal period make it an important area for targeted research [3].

Reports of prevalence rates of depression in postmenopause show inconsistent results, with some studies demonstrating an increase in depressive symptoms, whereas others show a decrease or no difference [4-8]. Depression has been defined by World Health Organization (WHO) as a common mental disorder that presents with depressed mood, loss of interest or pleasure, feeling of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration. Not only the changes in hormone affect mentality of the women, but other many factors have been reported as important

risk factors for depression. Some of these factors include genetic predisposition, economic status, low educational level, being female, being elderly, being single or widowed, unemployment, cigarette or alcohol habits, drug abuse, the presence of any chronic illness, depressive personality traits, acute and chronic stress, inadequate emotional or physical support [9].

Depression is considered among the most burdensome disorders worldwide. The Global Burden of Disease study ranked depression as the fourth leading cause of burden amongst all diseases, accounting for 4.4% of the total burden [10,11]. Based on the most recent data available, depression in the United States alone costs society $210 billion per year, including direct medical costs (45%), suicide-related mortality costs (5%) and workplace costs (50%) [12]. The prevalence of depressive symptoms varies across different populations. In studies conducted in a variety of countries, the prevalence of depression in postmenopausal women has been reported to vary between 15.8 and 40% [13,14].

In Saudi Arabia, up to our knowledge there is no study assessing the prevalence of depression among postmenopausal women. Therefore, the aim of this study is to estimate the prevalence of depression in postmenopausal women aged 45-65 years in primary health care settings in Riyadh, Saudi Arabia on the basis of screening instrument. Secondary objectives include exploring association of screened depression with some risk factors and assess the severity of menopausal symptoms among postmenopausal women by using the menopausal rating scale.

Subjects and Methods

This cross-sectional study was conducted throughout the period June- August, 2018 at King Abdul Aziz Medical City-National Guard (KAMC-NG) in Riyadh, Saudi Arabia, in three large primary care centers, serving a population of nearly 24 thousand adult females aged between 45 and 65 years. The postmenopausal women who completed at least 12 months of amenorrhea and attended primary care centers for their regular visits and agreed to participate were included in this study.

The sample size was calculated using OpenEpi version 3, an epic calculator based on the 24.7% prevalence of depression among postmenopausal women found in another study [15]. Using a 95% confidence interval and 5% margin of error, the calculated minimum sample size was estimated to be 283 and was adjusted to 300 to compensate for incomplete questionnaires.

This study was approved by King Abdullah International Medical Research Center, Riyadh. Women were randomly selected (using simple random method) and data was collected by using face-to-face interview after standardizing the interview process in a training session. The interviews were conducted by three trained Arabic speaking nursing staff. The time required to interview one subject was about 5-10 minutes.

The questionnaire was prepared with reference to previous studies in the literature. It was initially written in English, then translated into Arabic and then back to English for validation. The completed questionnaire was checked and pretested for clarity and suitability in a small pilot study of ten women and was comprised of three parts. In the first part of the questionnaire, women were asked to give their socio-demographic characteristics and their menopausal status (age, education level, marital status, employment status, income status, type of house, number of years passed since last menstrual period (LMP), type of menopause (natural or surgical), history of chronic disease, number of living children, family history of depression, physical activity, smoking status and social support. The second part of the questionnaire was screening for depression based on DSM-V criteria of Major Depressive Disorder diagnosis by using the Arabic version of PHQ-9, which is valid and reliable in detecting depression. It consists of 9 items that respondents were asked to reply to according to their circumstances in the previous two weeks. The items include "not at all," "several days," "more than half of the days" and "almost every day" responses. The nine items are scored from 0 to 3 points. The lowest score was accepted as "0" and the highest score as "27" with a cut off score 10. Total scores of 10-14 points, 15-19 points and 20-27 points indicate moderate, moderately severe and severe levels of depressive symptoms respectively. The third part of questionnaire entailed assessing the severity of menopausal symptoms by using Menopausal rating scale (MRS), which developed in the early 1990s to measure severity of aging symptoms. There was no Arabic version, of the tool and for the purpose of this research, the English version was used and was translated into Arabic. It consists of eleven items. Each item is graded by subjects from 0 (not present) to 4 depending on the severity of the symptoms (1-mild, 2- moderate, 3- severe and 4- very severe). The total score of the MRS ranges between 0 (asymptomatic) and 44 (highest degree of complaints). Total severity score ranged as follows: no or little symptoms (0-<4), mild (4-8), moderate (9-16) and severe (17 and above).

Statistical Analysis

All data were coded, entered and analyzed using Statistical Package for the Social Sciences software, version 23 (Armonk, NY: IBM Corp.). Continuous variables were reported in terms of means and standard deviation, while categorical variables were described using frequencies and percentages. Analytic statistics were carried out using the Chi-square (x^2) test for associations and/or the difference between 2 categorical variables. A p-value ≤0.05 was considered statistically significant.

Results

The socio-demographic characteristics of the studied participants are shown in Table (1). The study included 300 women, almost two thirds (66.3 %) of them were married, majority of them (81.7 %) were housewives and (61.3 %) were illiterate. More than three quarters (75.9 %) were menopausal for <10 years and 59.0 % have up to five children.

Table 1: Socio-Demographic Characteristics of the Participants

	Frequency (%)
Marital status	
Not married	101 (33.7%)
Married	199 (66.3%)
Employment	
Housewife	245 (81.7%)
Employed	55 (18.3%)
Education	
Illiterate	184 (61.3%)
Educated	116 (38.7%)

Monthly Income	
< 5000 SR	88 (29.3 %)
5000 SR or more	212 (70.7%)
Own House	
Own house	187 (62.3%)
Not owing a house	113 (37.7%)
Menopause (years)	
< 10 years	227 (75.9 %)
10 years or more	72 (24.1 %)
Exercise	
Never	210 (70.0 %)
Yes	90 (30.0 %)
Number of Children	
No children	27 (9.0%)
Up to 5	96 (32.0%)
More than 5	177 (59.0%)

The results revealed that the prevalence of major depressive symptoms among post menopausal women was 29%, and prevalence of other depressive disorders was 9.7 %, while 61.3% had no depressive disorders. Regarding severity of depressive disorders; the largest proportion of the studied cohort (32%) had moderate depression, 17.7% and 7% had moderately severe depression and severe depression respectively. More than half (60.7%) of the respondents had moderate social support, three quarters (75%) scored mild to severe symptoms on the menopausal rating scale while 25% were asymptomatic.

Overall, the total mean score of the PHQ in the current study was 10.58 (±5.92), indicating moderate depressive symptoms. For the MRS, the total mean score was 16.92 (±8.22), which also indicates moderate menopausal symptoms.

For PHQ severity score; there was a moderate positive association between it and the MRS score with r = 0.680, and a p value of<0.0001; on the other hand it was negatively associated with the social support score since r =-0.414, and p<0.0001. Similarly; the results showed a weak but statistically significant (P<0.0001) negative (r =-0.271) correlation between MRS score and social support score. Table (2)

Table 2: Correlation between Age, PHQ Severity Score, MRS Score and Social Support Score

		Age	PHQ Severity Score	MRS Score	Social Support Score
Age	**Pearson Correlation**				
	P -value				
	N				
PHQ Severity Score	**Pearson Correlation**	0.231			
	P -value	P < 0.0001			
	N	300			
MRS Score	**Pearson Correlation**	0.369	0.680		
	P- value	P < 0.0001	P < 0.0001		
	N	300	300		
Social Support Score	**Pearson Correlation**	0.062	- 0.414	- 0.271	
	P -value	0.288	P < 0.0001	P < 0.0001	
	N	300	300	300	

PHQ: Patient Health Questionnaire **MRS:** Menopausal rating scale

Women who were: unmarried (84.2%), housewives (79.2%), illiterate (83.2%), menopaused since≥10 years (87.5%), having more than five children (81.4%), underwent oophorectomy (100%), with poor social support (93.9%) and never exercised (82.4%) were more likely to report mild to severe symptoms. On the other hand; there was no significant (P>0.05) association between the MRS categories and participants income, history of hysterectomy, hormonal replacement therapy use or smoking status. The results of the current study revealed that significantly higher percentages of participants who have hypertension (81.9%), diabetes (82.1%), Dyslipedemia (88.1%), depression (91.5%) and hypothyroidism (81.4 %) experienced mild to severe menopausal symptoms and all p values were <0.05. Table (3)

Table 3: Factors Associated with Menopausal Rating Scale (Categorical Variables)

	Menopausal rating scale		P-value
	A Symptomatic (n = 75) N (%)	Mild to Severe Symptoms (n = 225) N (%)	
Marital Status			
Not Married	16 (15.8)	85 (84.2)	0.009
Married	59 (29.6)	140 (70.4)	
Employment			
Housewife	51 (20.8)	194 (79.2)	<0.0001
Employed	24 (43.6)	31 (56.4)	
Education			
Illiterate	31 (16.8)	153 (83.2)	<0.0001
Educated	44 (37.9)	72 (62.1)	
Income			
<5000 SR	18 (20.5)	70 (79.5)	0.241
≥5000 SR	57 (26.9)	155 (73.1)	
Housing			
Own House	46 (24.6)	141 (75.4)	0.836
Not Owning a House	29 (25.7)	84 (74.3)	
Menopause (Years)			
<10	66 (29.1)	161 (70.9)	0.005
≥10	9 (12.5)	63 (87.5)	
Number of Children			
No Children	8 (29.6)	19 (70.4)	0.008
Up to 5	34 (35.4)	62 (64.6)	
More than 5	33 (18.6)	144 (81.4)	
Did You Under Went for Hysterectomy?			
Yes	3 (16.7)	15 (83.3)	0.298
No	72 (25.5)	210 (74.5)	
Did you Under Went for Phorectomy?			
Yes	0 (0.0)	15 (100)	0.012
No	75 (26.3)	210 (73.7)	
Did you Currently using HRT?			
Yes	11 (26.2)	31 (73.8)	0.848
No	64 (24.8)	194 (75.2)	
Social Support Category			
Poor Social Support	3 (6.1)	46 (93.9)	0.004
Moderate Social Support	51 (28.0)	131 (72.0)	
Good Social Support	21 (30.4)	48 (69.6)	
Do you currently smoke?			
Yes	1 (33.3)	2 (66.7)	0.580
No	74 (24.9)	223 (75.1)	
Exercise			
Never	37 (17.6)	173 (82.4)	< 0.0001
Yes	38 (42.2)	52 (57.8)	
Family History of depression			

Yes	16 (45.7)	19 (54.3)	0.003
No	59 (22.3)	206 (77.7)	
Medical history			
Hypertension	34 (18.1)	154 (81.9)	< 0.0001
Diabetes mellitus	34 (17.9)	156 (82.1)	< 0.0001
Depression	4 (8.5)	43 (91.5)	0.004
Dyslipidemia	5 (11.9)	37 (88.1)	0.035
Asthma	25 (28.4)	63 (71.6)	0.380
Hypothyroidism	29 (18.6)	127 (81.4)	0.008

From Table (4), It was found that the degree of severity on the PHQ has strong significant (P<0.001) correlation with marital status, employment status, educational level and income. The highest percentage of married participants reported mild depression (30.2%) while the unmarried (39.6%) reported moderate depression. Severe form of depression were noticed more among: the employed participants (7.3%) compared to those who were unemployed (6.9%), low income (13.6%) compared to high income (4.2%) and illiterate (8.7%) compared to educated participants (4.3%). On the other hand, there was no correlation with housing, menopause duration years and the number of children.

Table 4: Factors Associated with Depressive Status

	Depression status*			P-value
	No Depression (n = 200) N (%)	Other Depressive Disorder (n = 21) N (%)	Major Depressive Disorder (n = 79) N (%)	
Marital Status				
Not Married	56 (55.4)	9 (8.9)	36 (35.6)	0.013
Married	144 (72.4)	12 (6.0)	43 (21.6)	
Employment				
Housewife	163 (66.5)	16 (6.5 %)	66 (26.9)	0.737
Employed	37 (67.3)	5 (9.1 %)	13 (23.6)	
Education				
Illiterate	114 (62.0)	12 (6.5)	58 (31.5)	0.037
Educated	86 (74.1)	9 (7.8)	21 (18.1)	
Family History of Depression				
Yes	19 (54.3)	1 (2.9)	15 (42.9)	0.05
No	181 (68.3)	20 (7.5)	64 (24.2)	
Income				
<5000 SR	41 (46.6)	7 (8.0)	40 (45.5)	< 0.0001
≥5000 SR	159 (75.0)	14 (6.6)	39 (18.4)	
Housing				
Own House	123 (65.8)	14 (7.5)	50 (26.7)	0.879
Not Owning a House	77 (68.1)	7 (6.2)	29 (25.7)	
Menopause (Years)				
<10	153 (67.4)	17 (7.5)	57 (25.1)	0.714
≥10	47 (65.3)	4 (5.6)	21 (29.2)	
Number of children				
No Children	19 (70.4)	0 (0.0)	8 (29.6)	0.649
Up to 5	62 (64.6)	8 (8.3)	26 (27.1)	
More than 5	119 (67.2)	13 (7.3)	45 (25.4)	
Did You Under Went for Hysterectomy?				
Yes	8 (44.4)	2 (11.1)	8 (44.4)	0.118
No	192 (68.1)	19 (6.7)	71 (25.2)	

Did You Under Went for Oophorectomy?				
Yes	7 (46.7)	4 (26.7)	4 (26.7)	0.008
No	193 (67.7)	21 (6.0)	75 (26.3)	
Did You Currently Using HRT?				
Yes	26 (61.9)	4 (9.5 %)	12 (28.6)	0.703
No	174 (67.4)	17 (6.6 %)	67 (26.0)	
Social Support Category				
Poor Social Support	13 (26.5)	4 (8.2 %)	32 (65.3)	< 0.0001
Moderate Social Support	128 (70.3)	12 (6.6 %)	42 (23.1)	
Good Social Support	59 (85.5)	5 (7.2 %)	5 (7.2)	
Do You Currently Smoke?				
Yes	1(33.3)	1 (33.3)	1 (33.3)	0.168
No	199 (67.0)	20 (6.7)	78 (26.3)	
Exercise				
Never	140 (66.7)	14 (6.7)	56 (26.7)	0.932
Yes	60 (66.7)	7 (7.8)	23 (25.6)	
Family History of Depression				
Yes	19 (54.3)	1 (2.9)	15 (42.9)	0.05
No	181 (68.3)	20 (7.5)	64 (24.2)	
Medical History				
Hypertension	130 (69.1)	12 (6.4)	46 (24.5)	0.495
Diabetes mellitus	130 (68.4)	12 (6.3)	48 (25.3)	0.667
Depression	9 (19.1)	6 (12.8)	32 (68.1)	< 0.0001
Dyslipidemia	29 (69.0)	1 (2.4)	12 (28.6)	0.444
Asthma	52 (59.1)	5 (5.7)	31 (35.2)	0.077
Hypothyroidism	96 (61.5)	13 (8.3)	47 (30.1)	0.143

* Based on patient Health questionnaire

Discussion

The current study revealed that the prevalence of major depressive symptoms among post-menopausal women was relatively high (29%) and prevalence of other depressive disorders was also considerable (9.7%). These findings indicate that depression is common among elderly women in our community. It had an adverse impact on the capacity to work, social relationship and a major risk factor of suicide and self-harm. Depression also affects the psychosocial wellbeing of the affected women and this is commonly associated with the transition period during menopause [16,18].

This result is consistent with findings of another study conducted within Sivrihisar, Eskisehir, a town in western Turkey, the prevalence of depression among postmenopausal women aged 45-65 years was 24.7% [15]. However, it was lower than that reported in another study conducted in Iran by Afshari who found that the prevalence of depression in postmenopausal women was 59.8% [17]. In Delhi, India, prevalence of depression among postmenopausal women was 41.6% [18]. Lower rate was reported in a study carried out in Korea, ranged between 2.7 and7.2% [19]. Comparison of these studies is somewhat difficult as a result of using different tools in diagnosing postmenopausal depression as well as different background characteristics of the participants.

From the study's findings, it is evident that there are other factors that exacerbate depressive symptoms. Taking into account several socio-demographic symptoms such as education, employment and income, it emerged that these factors also contribute to the severity of the condition among women. For instance, the study revealed that the highest percentage of married participants reported mild depression (30.2%) while the unmarried (39.6%) reported moderate depression. Severe form of depression was noticed more among: the employed participants (7.3%) compared to those who were unemployed.

The statistics reveal that besides the natural causes, depression during menopause has been linked to sociodemograophic factors that exacerbate the problems. According to research findings, psychological problems and depression are some of the problems that menopausal women face in the world today [20]. It is a common psychiatric disorder that affects every individuals and classes of people anytime, anywhere in society. Among the menopausal women, depression can be followed by a myriad of side effects and problems that might degenerate into physical and psychological problems and in worst cases lead to suicidal thoughts if untreated.

Llaneza et al believe that the existence of depression among post-menopausal women is a result of a combination of decrease in

gonadal hormone levels that results in fatigue, nightmare, hot flashes and loss of sleep, psychological events that include marital status, education level, employment, changes in relationships with children and husband, and other factors [21]. For instance, there are several unpleasant events that menopausal women are exposed to which instigates depression. In a study conducted by Graziottin and Serafini 2009, the researchers found that menopausal women who are at low social economic level tend to harbor the greatest levels of depression [22]. Some researchers have also reported that stress and anxiety can exacerbate the symptoms of menopause. Unsal et al reported that the significant risk factors for depression were lower education level, single status, having an insufficient level of family income and lacking social support [15]. Quite similar results have been reported by others [17,18].

These studies findings consolidate the findings obtained in this research, which links depression to various factors in life. These findings should not be ignored in the sense that they are devastating and can lead to serious complications among women. Depression symptoms among postmenopausal women should be closely monitored and be encouraged to cope with the situation. The depression is a brain phenomenon, which needs action points based on the findings of this study.

Limitations of the present study include cross-sectional design which doesn't prove causality and its conduction in one setting which impacts the generalizability of results.

In conclusion, depression is a relatively common disorder among postmenopausal women in Riyadh. Some socio-demographic indicators were identified. Care should be paid to this important group and further larger studies are recommended.

References

1. World Health Organization (1996) Research on the menopause in the 1990s: report of a WHO scientific group.
2. Bank TW (1993) World Development Report 1993: Investing in Health. New York, NY: Oxford University Press; 1993.
3. Campbell KE, Dennerstein L, Finch S, Szoeke CE (2017) Impact of menopausal status on negative mood and depressive symptoms in a longitudinal sample spanning 20 years. Menopause 24: 490-496.
4. Bromberger JT, Kravitz HM, Chang YF, Cyranowski JM, Brown C, et al. (2011) Major Depression During and After the Menopausal Transition: Study of Women's Health Across the Nation (SWAN). Psychological medicine 41: 1879-1888.
5. Bromberger JT, Matthews KA, Schott LL, Brockwell S, Avis NE, et al. (2007) Depressive symptoms during the menopausal transition: The Study of Women's Health Across the Nation (SWAN). Journal of affective disorders 103: 267-272.
6. Freeman EW, Sammel MD, Liu L, Gracia CR, Nelson DB, et al. (2004) Hormones and menopausal status as predictors of depression in women in transition to menopause. Archives of General Psychiatry 61: 62-70.
7. Freeman EW, Sammel MD, Boorman DW, Zhang R (2014) The longitudinal pattern of depressive symptoms around natural menopause. JAMA psychiatry 71: 36-43.
8. McKinlay JB, McKinlay SM, Brambilla D (1987) The relative contributions of endocrine changes and social circumstances to depression in mid-aged women. Journal of Health and Social Behavior 7: 345-63.
9. Lee YW (2003) Depression in Post Menopausal Women. J Korean Acad Nurs 33: 471-477.
10. Üstün TB, Ayuso-Mateos JL, Chatterji S, Mathers C, Murray CJL (2004) Global burden of depressive disorders in the year 2000. The British Journal of Psychiatry 184: 386-392.
11. Bruffaerts R, Vilagut G, Demyttenaere K, Alonso J, AlHamzawi A, et al. (2012) Role of common mental and physical disorders in partial disability around the world. The British Journal of Psychiatry 200: 454-461.
12. Greenberg PE, Fournier AA, Sisitsky T, Pike CT, Kessler RC (2015) The economic burden of adults with major depressive disorder in the United States (2005 and 2010). The Journal of clinical psychiatry76:155-162.
13. Wassertheil-Smoller S, Shumaker S, Ockene J, Talavera GA, Greenland P, et al. (2004) Depression and cardiovascular sequelae in postmenopausal women: The women's health initiative (whi). Archives of Internal Medicine 164: 289-298.
14. Pérez JAM, Garcia FC, Palacios S, Pérez M (2009) Epidemiology of risk factors and symptoms associated with menopause in Spanish women. Maturitas 62: 30- 6.
15. Unsal A, Tozun M, Ayranci U. Prevalence of depression among postmenopausal women and related characteristics. Climacteric 14:244-251.
16. Zang H, He L, Chen Y, Ge J, Yao Y (2016) The association of depression status with menopause symptoms among rural midlife women in China. African health sciences, 16: 97-104.
17. Afshari P, Manochehri S, Tadayon M, Kianfar M, Haghighizade M (2015) Prevalence of depression in postmenopausal women, Jundishapur J Chronic Dis Care 4: E27521.
18. Ahlawat P, Singh MM, Garg S, Mala YM (2019) Prevalence of Depression and its Association with Sociodemographic Factors in Postmenopausal Women in an Urban Resettlement Colony of Delhi. J Midlife Health 10: 33-36.
19. Park H, Kim K (2018) Depression and Its Association with Health-Related Quality of Life in Postmenopausal Women in Korea. Int J Environ Res Public Health 15: E2327.
20. Bromberger JT, Harlow S, Avis N, Kravitz HM, Cordal A (2004) Racial/ethnic differences in the prevalence of depressive symptoms among middle-aged women: The Study of Women's Health Across the Nation (SWAN). Am J Public Health 94: 1378-1385.
21. Llaneza P, Garcia-Portilla MP, Llaneza-Suarez D, Armott B, Perez-Lopez FR (2012) Depressive disorders and the menopause transition. Maturitas 71: 120-130
22. Alessandra Graziottin A, Serafini A (2009) Depression and the menopause: why antidepressants are not enough? Menopause International 15: 76-81.