Depressive symptoms in climacteric women are related to menopausal symptom intensity and partner factors

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Key words: DEPRESSION, AGING WOMEN, MENOPAUSE, SYMPTOMS, HAMILTON DEPRESSION RATING SCALE, MENOPAUSE RATING SCALE

ABSTRACT

Objective To determine the prevalence of depressive symptoms and associated risk factors among climacteric women.

Methods In this cross-sectional study, women aged 40–59 years, visiting inpatients at the Enrique C. Sotomayor Obstetrics and Gynecology Hospital, Guayaquil, Ecuador, were surveyed with the 17-item Hamilton Depression Rating Scale (HDRS), the Menopause Rating Scale (MRS) and a questionnaire seeking personal and partner data.

Results A total of 404 women filled out the HDRS and the MRS. The mean age was 48.2 ± 5.7 years; 85.1% had 12 or less years of schooling and 44.8% were postmenopausal. None were on hormonal therapy for the menopause or on psychotropic drugs. The mean total HDRS score was 13.7 ± 7 (median 13); this was higher among perimenopausal women. Of all the respondents, 78.7% had some degree of depressive symptoms (HDRS total score ≥8), which was mild in 32.2% and ranged from moderate to very severe in 46.5%. Logistic regression analysis determined that the severity of the menopausal symptoms related to the somatic and psychological domains of the MRS and the partner profile (low education and alcohol abuse) were the main determinants for women having higher depressive scores (total HDRS ≥8).

Conclusion In this specific climacteric population, depressive symptoms were very prevalent and were associated with the severity of menopausal symptoms (somatic and psychological) and partner’s problems.

INTRODUCTION

Depression, anxiety and mood disorders are very common and debilitating diseases with significant personal, social and economical consequences. Epidemiological studies demonstrate that women are at higher risk for depression than men, with a higher lifetime prevalence. The peri- and postmenopausal years are times that are subject to many stressors (i.e. family, social, work,
health-related, economic and sexual), and these seem to increase the frequency of mood disorders within this population. The menopausal neurovegetative syndrome with hot flushes, perspiration, sleeping disorders, sexual dysfunction, elevated body mass index and difficult partner relationships may also contribute to worsening female general and mental health status. Reports indicate that the climacteric syndrome (vasomotor symptoms) has a direct relationship with the prevalence of mood symptoms and, vice versa, depressive symptoms may increase hot flushes. Additionally, aches and stiff joints, both frequent menopausal symptoms, are more intense in women with high negative mood. The situation may become worse when co-morbidities are involved. Despite the aforementioned, the exact relationship between depression and the menopause remains controversial.

The detection of emotional disorders during the peri- and postmenopausal years is an important issue within the holistic management of the menopause; however, this is not an easy task. We have previously studied different aspects related to climacteric women’s emotional health using several quality-of-life scales (Greene, Menopause Rating Scale (MRS), Menopause Quality of Life Questionnaire (MENQOL)); these have provided valuable information regarding mood and depression. Indeed, more than 70% of perimenopausal women present with easy crying, irritability and symptoms of unhappiness, while 60% or more of postmenopausal women suffer from anxiety, depression and loss of memory. However, these scales are specific menopausal tools rather than validated mood instruments. Bearing this limitation in mind, the following study was conducted to determine the prevalence and severity of symptoms of depressed mood and associated risk factors among climacteric women, using a specific instrument, the Hamilton Depression Rating Scale (HDRS) and a questionnaire seeking personal and partner data.

**METHODS**

**Participants**

After approval from the Research Committee of the Medical Faculty of the Universidad Católica Santiago de Guayaquil, Ecuador, this cross-sectional study was carried out from April 2007 to June 2007 at one of its associated teaching facilities: the Enrique C. Sotomayor Obstetrics and Gynecology Hospital. Healthy, non-black, Hispanic women aged 40–59 years visiting inpatients in the different wards of the hospital were surveyed with the HDRS and requested to fill out the MRS and a questionnaire seeking personal and partner data. All participants were informed about the research, its purpose and the contents of the HDRS and the MRS. Women excluded from the study were those refusing participation or those who were incapable of understanding the items included in the questionnaire. Surveys were carried out by one of the investigators (B.M.) after receiving a training course on the use of the HDRS at the Department of Psychology of the Universidad Católica de Guayaquil.

**General data questionnaire**

**Female data**

These data included age, parity, menopausal status (pre-, peri- or post-), marital status, educational level (expressed in years), accessed health-care system (free or minimal cost (<25% of private consultation fee), or paid (paying more than the minimal cost)), smoking habit (current, sometime, non-smoker), partner status, church attendance, history of sexual abuse, psychiatric consultation and the use of psychotropic drugs and hormone therapy (HT)/alternative treatments for the menopause.

**Partner data**

Data related to the partner were obtained from women and included: age, educational level (total years), health status, faithfulness, presence of alcoholism and sexual dysfunction (erectile dysfunction or premature ejaculation). Erectile dysfunction was defined as the persistent or recurrent incapacity to achieve or maintain an erection to allow satisfactory sexual intercourse, whereas premature ejaculation was defined as the persistent or recurrent ejaculation after minimal sexual stimulation before, during or shortly after penetration or before the individual’s desire to do so. For surveyed women and their partners, insufficient educational level was considered as 12 years or less of study.

**Instruments**

**The Hamilton Depression Rating Scale**

The HDRS was designed to offer a measurement of the intensity or severity of depressive
symptoms\textsuperscript{16,17}. Ramos-Brieva and Cordero-Villafafila\textsuperscript{21} validated the Spanish version of the short 17-item form used in the present study. It is scored by the observer and its contents basically centered on the somatic and behavioral aspects of depression. Vegetative, cognitive, and anxiety symptoms are the most prominent aspects influencing the final score. Each item can be scored from 0 to 2 in some cases, or from 0 to 4 in others, depending on which best adjusts to the patient symptoms occurring currently or in the past 7 days. Sum of item scorings give a final total score which can range from 0 to 52 points. Depressed mood intensity or severity depends on the total score and for this research was categorized according to the American Psychiatric Association criteria as normal (0–7), mild (8–13), moderate (14–18), severe (19–23) and very severe (>23).\textsuperscript{22}

The scale has good internal consistency (Cronbach $\alpha$ ranging from 0.76 to 0.92), interobserver reliability (0.65–0.9) and validity (0.8–0.9) in relation to other global depression assessing tools, with an 83% sensitivity for diagnosing depressive symptoms in the general population and in the clinical field.\textsuperscript{17}

The Menopause Rating Scale
The MRS is a menopause-specific, health-related, quality-of-life instrument composed of 11 items assessing menopausal symptoms, divided into three subscales: (1) somatic: hot flushes, heart discomfort, sleeping problems and muscle and joint problems (items 1–3 and 11, respectively); (2) psychological: depressive mood, irritability, anxiety and physical and mental exhaustion (items 4–7, respectively); and (3) urogenital: sexual problems, bladder problems and dryness of the vagina (items 8–10, respectively). Each item can be graded by the subject from 0 (not present) to 4 (1 = mild, 2 = moderate, 3 = severe, 4 = very severe). For a particular individual, the total score per each subscale is the sum of each graded item contained in that subscale. The total MRS score is the sum of the scores obtained for each subscale. Values equal to or above 9 (somatic), 7 (psychological), 4 (urogenital) and 17 (total) were used to define severe scorings\textsuperscript{23}. The MRS scale has been translated into more than 27 languages. For the purpose of this research, the Spanish version of the MRS was used\textsuperscript{24}, which has been validated in Ecuador and Chile\textsuperscript{14,25}. More details of the scale, its domains and scoring are reported elsewhere\textsuperscript{26}.

Menopausal status definitions
Concerning the menopausal status, the following definitions were used: premenopausal – women having regular menses; perimenopausal – irregularities >7 days from their normal cycle; and postmenopausal – no menses in the last 12 months\textsuperscript{27}. Those with bilateral oophorectomy were considered as postmenopausal.

Statistical analysis
Analysis was performed using EPI-INFO 2000 statistical software (Centers for Disease Control, Atlanta, USA; WHO, Basel, Switzerland). Data are expressed as mean ± standard deviation (SD), medians and percentages. ANOVA and the $\chi^2$ test were used to compare continuous and categorical data, respectively. Risk factors for depressive symptoms were assessed using logistic regression analysis. For this, the total HDRS score, as a continuous variable, was transformed into a categorical one, where cases exhibiting total HDRS scores of $\geq$8 were classified as having depression and those cases exhibiting scores $\geq$19 were classified as having severe/very severe depression. Independent variables to be entered in the regression model related to surveyed women included: access to free health care, older age ($\geq$48 years, median), higher parity ($\geq$4, median), low schooling (≤12 years), marital status (married or not), postmenopausal status, smoking status, and whether attending a psychiatrist and currently having a partner. Those related to the partner were: age, low schooling (≤12 years), alcoholism, healthiness, faithfulness, premature ejaculation and erectile dysfunction. Additionally, the total MRS and sub-scales scorings were categorized and also entered into the regression model. Entry of variables (female and partner) into the model was considered with a 20% significance level and the back step-wise procedure performed. A $p$ value of $<0.05$ was considered as statistically significant.

Sample size
Using EPI-INFO statistical software, a minimal sample of 382 subjects was calculated, by considering that the hospital covers an estimated population of 50 000 middle-aged women and assuming that 50% of the surveyed population would present some degree of depression\textsuperscript{13,14} with an estimated 5% error and a 95% confidence interval.
RESULTS

During the study period, a total of 420 women fulfilling the inclusion criteria were requested to participate. Sixteen were excluded due to refusal, leaving 404 who completely filled out the HDRS, the MRS and the general data questionnaire. Personal demographic data and those of the partners are given in Table 1. Women had a mean age and educational level of 48.2 ± 5.7 years (median 48 years) and 6.9 ± 3.9 years (median 6 years), respectively, with a median parity of four; 85.1% had 12 or less years of schooling and 44.8% were postmenopausal. At the time of the survey, no participant was on HT/alternative therapy for the menopause or taking psychotropic drugs. A very low percentage of women (3.7%) accessed the private health-care system. Regarding the partner (n = 306), the mean age was 51.3 ± 9 years (median 50 years), with an average schooling of 7.5 ± 4.2 years (median 6 years). Erectile dysfunction was present in 23.8%, premature ejaculation in 21.2% and 43.5% abused alcohol (Table 1).

The mean total HDRS score was 13.7 ± 7 (median 13); 78.7% had some degree of depressed mood (HDRS total score ≥8), which was mild in 32.2% and ranged from moderate to very severe in 46.5%. The MRS (total and sub-scales) scores in relation to the degree of depressive symptoms are given in Table 2. MRS scores significantly increase with severity of HDRS depressive classification (Table 2). When women were stratified according to menopausal status, perimenopausal women presented higher total HDRS scorings and a higher rate of having depressed and severe/very severely depressed mood (p < 0.01) (Table 3). Logistic regression analysis determined that the severity of menopausal symptoms, related to both somatic and psychological domains of the MRS, and partner profile (low education and alcohol abuse) were the main and independent determinants for women presenting higher depression scores (total HDRS ≥8 and ≥19, respectively) (Table 4).

DISCUSSION

Depression is the leading cause of health-related disability and the second leading cause of disease burden in the United States and the European Union28, with an increasing prevalence specially among women. Many studies have detailed the influence of endogenous steroid hormones on feelings and emotions, including depression10,29–32. Gender differences in depression prevalence may be in part due to biological causes, such as hormones and different levels of neurotransmitters. Reproductive events are milestones in women’s lives; pregnancy and delivery, and the menopause are critical times at which depression, anxiety and mood disorders are very prevalent. Other factors that may place women at increased risk include a family history of the disorder, pregnancy and stressful life events. Social difficulties and stress have an essential role in the development, prolongation and exacerbation of emotional problems throughout a woman’s life. There are controversial theories about mood changes during the climacteric that include the influence of endogenous and exogenous hormones, cultural and sociological values and the effect of stress. In a small series, a significant association has been found between depressed mood around the perimenopause and the premenstrual period33.

Using the Greene Climacteric Scale and the MRS instrument among climacteric women, we have previously reported high rates of depressive symptoms (82% and 74.6%, respectively)13,14. Unfortunately, these percentages do not necessarily indicate that there is a clinical diagnosis of depression, but it is interesting to observe that total scores obtained with both instruments were
higher (more severe symptoms) than the standards reported in the literature and that socioeconomic status was inversely correlated. This correlation has also been found in the present study, whose subjects have been drawn from women of low income with total MRS scores higher than the standards reported in the literature23 and for Latin America34. If there is a correlation between poverty and symptom intensity, then its relation-
ship to rate and intensity of depressive symptoms seems plausible, especially if one takes into account the high rate of women presenting some degree of depressive symptoms (HDRS total score ≥8) related to more severe menopausal symptoms (vasomotor and psychological) and partner profile. The female population of this series, as previously reported13,14, represents the low-income group attending the Enrique C. Sotomayor Hospital, managed by the Junta de Beneficencia, an organization devoted to providing health and educational services to a vast population of low-income individuals of Guayaquil, Ecuador35. Indirect indicators correlate with the characteristics of this population: low education, high parity, low access to a private health-care system and having, in 43.5% of cases, a male partner who abused alcohol. It can be suspected that these difficult conditions have an unfavorable impact on women’s lives, together most probably with scarce incentives, increased stress and many frustrations.

### Table 2

Menopause Rating Scale (MRS) scorings (total and sub-scales) according to the degree of depressive symptoms assessed with the Hamilton Depression Rating Scale (HDRS)

<table>
<thead>
<tr>
<th>Menopausal status</th>
<th>Normal</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Very severe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (n = 404)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0–7)*</td>
<td>(8–13)</td>
<td>(14–18)</td>
<td>(19–23)</td>
<td>(&gt; 23)</td>
</tr>
<tr>
<td>Somatic</td>
<td>7.2 ± 4.5</td>
<td>3.8 ± 3.2$^*_{;}$</td>
<td>5.8 ± 3.8</td>
<td>8.9 ± 4.3</td>
<td>10.3 ± 3.7</td>
</tr>
<tr>
<td>Psychological</td>
<td>6.8 ± 4.8</td>
<td>3.6 ± 3.3$^*_{;}$</td>
<td>4.9 ± 3.6</td>
<td>8.4 ± 4.6</td>
<td>10.4 ± 4.0</td>
</tr>
<tr>
<td>Urogenital</td>
<td>3.9 ± 3.4</td>
<td>2.4 ± 2.5$^*_{;}$</td>
<td>2.9 ± 2.9</td>
<td>4.1 ± 3.0</td>
<td>6.0 ± 3.5</td>
</tr>
<tr>
<td>Total score</td>
<td>17.9 ± 10.6</td>
<td>9.7 ± 7.3$^*_{;}$</td>
<td>13.6 ± 7.8</td>
<td>21.4 ± 8.8</td>
<td>26.6 ± 8.6</td>
</tr>
</tbody>
</table>

*, HDRS total score; $^*_{;}$, p < 0.001 when compared with ANOVA to those having some degree of depressive symptoms (mild to very severe)

### Table 3

Mean total Hamilton Depression Rating Scale (HDRS) score and rate of depressed mood according to menopausal status

<table>
<thead>
<tr>
<th>Menopausal status</th>
<th>n</th>
<th>HDRS score (mean ± SD)</th>
<th>Depressed mood (HDRS score ≥8)</th>
<th>Severe/very severely depressed (HDRS score ≥19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premenopausal</td>
<td>96</td>
<td>10.8 ± 5.6</td>
<td>66 (68.8%)</td>
<td>12 (12.5%)</td>
</tr>
<tr>
<td>Perimenopausal</td>
<td>127</td>
<td>15.5 ± 7.0</td>
<td>109 (85.8%)</td>
<td>39 (30.7%)</td>
</tr>
<tr>
<td>Postmenopausal</td>
<td>181</td>
<td>14.0 ± 7.1$^*_{;}$</td>
<td>143 (79.0%)$^*_{;}$</td>
<td>49 (27.1%)$^*_{;}$</td>
</tr>
</tbody>
</table>

*, p < 0.01 when all groups are compared with ANOVA SD, standard deviation

### Table 4

Risk factors related to the degree of depressive symptoms: logistic regression analysis

<table>
<thead>
<tr>
<th>Depressed mood (HDRS ≥8)</th>
<th>Odds ratio (95% confidence interval)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe MRS somatic scoring ≥9</td>
<td>6.58 (2.43–17.78)</td>
<td>0.001</td>
</tr>
<tr>
<td>Severe MRS psychological scoring ≥7</td>
<td>3.2 (1.5–6.6)</td>
<td>0.002</td>
</tr>
<tr>
<td>Partner’s low educational level (≤6 years)</td>
<td>1.75 (1.02–3.00)</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Severe/very severe depressed mood (HDRS ≥19)

| Severe MRS psychological scoring ≥7 | 6.0 (2.85–12.76)                  | 0.0001  |
| Severe MRS somatic scoring ≥9 | 4.15 (2.17–7.96)                   | 0.0001  |
| Partner’s alcohol abuse | 1.97 (1.05–3.70)                   | 0.03    |

HDRS, Hamilton Depression Rating Scale; MRS, Menopause Rating Scale
that increase the rate and risk for depression and hence impaired quality of life. Although all women in this series were of low income, the inclusion of those with higher income would have been interesting in order to determine differences, as others have determined.

In recent years, evidence has linked mood disorders with chronic stress in relation to biological alterations (i.e. cytokines and chemokines). It seems reasonable to think that chronic social distress, high parity and childbearing into older age, frustrations and an alcoholic partner may create enough discomfort to cause biological derangements favoring the high rate of depressive symptoms found in the present series. Chronic stress may also alter the secretion of other neurotransmitters and hormonal systems (i.e. serotonin, melatonin, cortisol, prolactin) in the central nervous system, increasing individual susceptibility to emotional disorders. Hence, negative conditions relating to social circumstances and poverty may play a significant causative role. To support this issue, adverse socioeconomic conditions across the life-span and low educational attainment, present in different regions of the world, including Latin America, have been reported to increase the risk for an earlier onset of the perimenopause. Moreover, women who have good jobs and a higher educational and economical level have reported better overall health and fewer menopausal symptoms.

Follow-up of premenopausal women with no previous history of major depression has shown that, once entering the perimenopausal phase, they displayed twice the risk of developing a depressive syndrome in comparison to women who remained premenopausal and that the use of HT for symptom relief did not impact the rate of depressive symptom initiation. In the present series, as measured with the HDRS, depressed mood was high (78.7%) with a significant increase in MRS scorings (total and subscale) as the severity of depressive symptoms increased. Although peri- and postmenopausal women displayed higher HDRS scores and higher rates of presenting depressed and severe/very severely depressed mood, this was related to symptom intensity (higher MRS somatic and psychological scores) rather than to the menopausal status (confounding factor), as determined by our regression model. It may be possible, although our study did not specifically address this aspect, that women reach the menopause (premenopausal women) in poor mental health, as 68.8% had some degree of depression and 12.5% were severe/very severely depressed, suggesting the existence of unresolved conflicts and pathology during the reproductive years. Alternatively, it may also be likely that the HDRS was simply measuring latent depressive symptoms. In any case, our findings are consistent with previous reports indicating that the climacteric syndrome (vasomotor symptoms) has a direct relationship to the prevalence of mood symptoms.

Using the Hamilton instrument three decades ago, Dennerstein and colleagues reported the effect of HT on affect in women who had previously undergone hysterectomy and bilateral oophorectomy. Data from earlier clinical studies have shown that conventional doses of estrogen enhance mood in non-depressed postmenopausal women but not in severely depressed women. Randomized placebo-controlled trials of estrogen for depression occurring during perimenopause indicate that it is also an effective treatment for affected women. However, Nicol-Smith assessed more than 90 papers concerning the menopause as a cause of depression, selecting 43 epidemiological studies. The author concluded that the available evidence is insufficient to maintain a causal relation. In a recent systematic review, the independent influence of the menopausal transition has been assessed. After evaluation of nine studies, it seems that there is no pattern of an adverse influence of the menopausal transition on mood in mid-life women, although the quality of these studies is limited.

Therefore, to improve health status, recommended interventions include formal psychiatric and psychological intervention, engaging in hobbies, new sports and activities such as walking, tai chi, yoga, spirituality, a career overhaul or self-help among others, certainly not priorities in our population. HT for the treatment of menopausal complaints, anti-depressive treatment and correction of partner abnormal behavior could be considered for interventions in this population. Depression treatment may improve female quality of life and the menopausal transition, preventing other morbid conditions. However, in our population with low socioeconomic and cultural background, there are other more urgent burden priorities. Just as a highlight is the fact that none of our surveyed women used HT.

Finally, regarding the limitations of the present study, one should mention its cross-sectional nature. Although it has been drawn up on a low-income series, generalization to the whole...
Ecuadorian population cannot be made. Second, the HDRS is a tool used for rating depressive symptoms and does not substitute for a clinical assessment of depression. Hence, the prevalence of depression clinically assessed among climacteric women remains uncertain. Obtaining partner data from surveyed women may also be seen as a limitation since information gained at second hand, for certain variables, may bear a certain degree of inaccuracy; however, attempting to survey both partners at the same time may be a difficult and time-consuming task and was not the objective of this research. Despite these limitations, this study, to the best of our knowledge, may be the first to assess depressive symptoms (prevalence and severity) and correlate them to menopausal ones in a low-income climacteric series using two validated instruments, the HDRS and the MRS.

In conclusion, in this specific climacteric population, depressive symptoms were highly prevalent and menopausal symptoms (both somatic and psychological) and partner profile were relevant risk factors. More research is warranted in this regard, especially focusing on the impact of sociodemographic background (personal and partner) during the menopausal years.

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References


17. Williams JB. A structured interview guide for the Hamilton Depression Rating Scale. *Arch Gen Psychiatry* 1989;45:742–7


31. Freeman EW, Sammel MD, Lin H, Nelson DB. Associations of hormones and menopausal status with depressed mood in women with no history of depression. *Arch Gen Psychiatry* 2006;63:375–82


35. www.jbg.org.ec


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