

# Accuracy of the Menopause Rating Scale and the Menopause Quality of Life Questionnaire to discriminate menopausal women with anxiety and depression

Carolina Marín Martín, PhD,<sup>1</sup> Cristina Larroy, PhD,<sup>1,2</sup> Amanda López-Picado, PhD,<sup>3</sup>  
and Ignacio Fernández-Arias, PhD<sup>1,2</sup>

---

## Abstract

**Objective:** The aim of the study was to evaluate the accuracy of the Menopause Rating Scale (MRS) and the Menopause Quality of Life Questionnaire (MENQOL) to discriminate women suffering from anxiety (AD) and depression disorder (DD).

**Methods:** A cohort of 416 women aged 45 to 65 years ( $51.7 \pm 3.8$ ) completed the MRS, MENQOL and Hospital Anxiety and Depression Scale, plotting receiver operator curves to assess the diagnostic accuracy of the MRS and MENQOL items related to anxiety and depression.

**Results:** Both the MRS6 (area under the ROC curve [AUC] 0.773, 95% confidence interval [CI] 0.721-0.824) and MENQOL5 (AUC: 0.772, 95% CI 0.723-0.822) proved to be accurate tools to identify individuals with anxiety or with a likelihood to develop AD. Likewise, the items MRS4 (AUC: 0.771, 95% CI 0.625-0.797) and MENQOL8 (AUC: 0.744, 95% CI 0.668-0.821) appeared to be suitable to discriminate individuals with DD. Two cut-off points were established for each item in the different scales to optimize their capacity to detect and discriminate problems of anxiety and depression. Lower cut-off values (MRS  $\geq 1$ ; MENQOL  $\geq 2$ ) were established to detect AD and DD, the sensitivity of which varied between 76.0% and 84.6% and a negative predictive value varying between 86.7% and 95.3%. A more specific cut-off was established for the discrimination of AD and DD (MRS  $\geq 2$ ; MENQOL  $\geq 7$ ), with a specificity ranging from 86.2% to 99.4% and a positive predictive value varying between 68.6% and 92.6%.

**Conclusions:** The MRS and MENQOL display moderate accuracy in discriminating menopausal women with symptoms of anxiety and depression. The intensity of the symptoms appears to be related to the probability of detecting a probable or definitive disorder.

**Key Words:** Anxiety – Climacteric – Depression – Menopause – Menopause Quality of Life Questionnaire – Menopause Rating Scale – Quality of life.

---

Menopause is the natural usually long-lasting cessation of ovarian function, and often producing somatic, urogenital and/or psychological symptoms that affect the overall quality of life (QoL) of the individual.<sup>1-4</sup> The perception and experiences associated with the menopause have been related to many factors, such as cultural differences,<sup>5,6</sup> age and educational level,<sup>7</sup> personality vulnerability/traits,<sup>8,9</sup> physical conditions,<sup>5</sup> life style,<sup>10</sup> attitude towards menopause,<sup>11</sup> and attitude toward menopause

mediated by emotional intelligence.<sup>12</sup> Although some studies suggest muscle and joint problems/discomfort are the most prevalent symptoms,<sup>7</sup> psychological alterations are also experienced by a large number of the women during the climacteric stage.<sup>4,13</sup> Indeed, anxiety and depression are highly prevalent in middle-age women,<sup>14</sup> and they become even more prevalent and intense in the climacteric,<sup>15</sup> affecting their QoL.<sup>16</sup> Both these phenomena have been related to other symptoms of menopause, such as vasomotor changes in peri- and postmenopausal women,<sup>17</sup> which have in turn been proposed as risk factors associated with the intensity of climacteric symptoms.<sup>18</sup>

The relationship between anxiety and/or depression and other symptoms of menopause has generated much interest, and depression has been associated with moderate-severe vasomotor symptoms,<sup>19</sup> cardiovascular disease,<sup>20</sup> and with more severe general consequences of menopause.<sup>13</sup> Indeed, a strong negative association was observed between vasomotor symptoms and psychological general well-being.<sup>19</sup> Some of the variables thought to be associated with depression in

---

Received December 29, 2018; revised and accepted February 26, 2019. From the <sup>1</sup>Department Clinical Psychology, Faculty of Psychology, Universidad Complutense de Madrid, Madrid, Spain; <sup>2</sup>University Clinic of Psychology, Universidad Complutense de Madrid, Madrid, Spain; and <sup>3</sup>Clinical Research and Clinical Trials Unit, Hospital Clínico San Carlos, Instituto de Investigación Sanitaria del Hospital Clínico San Carlos (IdISSC), Madrid, Spain.

Funding/support: None reported.

Financial disclosure/conflicts of interest: None reported.

Address correspondence to: Carolina Marín Martín, PhD, Department of Clinical Psychology, Universidad Complutense de Madrid, Campus Somosaguas, 28223 Madrid, Spain. E-mail: c.marin@psi.ucm.es

menopause, include feeling less attractive<sup>21</sup> or a negative attitude toward menopause.<sup>22,23</sup> In a systematic review, a large proportion of women experienced depression at menopause, although the prevalence of depression differed depending on the climacteric stage. As such, depressive symptoms were more common in perimenopausal women than during premenopause, and the prevalence of those symptoms in postmenopausal women was higher than that in perimenopause.<sup>24</sup> Depression during menopause has been associated with sleep problems and with poorer QoL.<sup>16</sup> Similarly, there appears to be a positive relationship between anxiety personality traits and the symptoms of menopause.<sup>9</sup> Indeed, a strong association has been established between severe somatic symptoms and anxiety in postmenopausal women,<sup>25</sup> and with the occurrence, severity and frequency of hot flushes.<sup>26</sup>

Two of the most commonly used tools to measure menopause symptomatology and QoL are the Menopause Rate Scale (MRS)<sup>27</sup> and the Menopause-Specific Quality of Life (MENQOL) questionnaire,<sup>28</sup> both of which include psychological domains among their items. The assessment of anxiety and depressive symptoms is quite complex due to the different manifestations involved during the climacteric stage. However, given the importance of these symptoms, both alone and in relation to other symptoms, it is necessary to use accurate questionnaires that detect symptoms of anxiety and depression, particularly in those women who present with an anxiety (AD) and/or depression disorder (DD). The Hospital Anxiety and Depression Scale (HADS)<sup>29</sup> is often used in clinical contexts, and it has been shown to have good reliability and consistency in Spanish populations.<sup>30</sup> Although the MRS and MENQOL are used widely to assess several domains in menopause, there are few studies that have evaluated the accuracy of their psychological domains. Thus, this study set out to evaluate the accuracy of the MRS and MENQOL when used to discriminate among women suffering from AD and DD, comparing these two tools to the HADS score as a criterion standard.

## METHODS

### Participants and procedure

This cross-sectional study was carried out on a cohort of women aged 45 to 60 years ( $51.7 \pm 3.8$ ) recruited in Madrid between November 2015 and November 2016. To obtain a representative sample, women were recruited using incidental sampling in three different areas of Madrid: north, central, and south. Most of the women invited (80%) agreed to participate in this study. Women diagnosed with a mental disorder, with medically or surgically induced menopause, and women using hormone therapy were excluded from the study, as were women of other nationalities for linguistic reasons (eg, women from African, other European, or Asian countries: 8%,  $n = 40$ ). Accordingly, 416 women were interviewed by 41 trained psychology students, responding to the MRS, MENQOL, and the HADS (criterion standard) questionnaires after having been informed about the research, the questionnaires content and the objectives of the research, and having

signed an informed consent form. Trained psychology students recruited women among their acquaintances (mothers, aunt, friends, neighbors. . .).

In incidental sampling, individuals are randomly selected to be part of a representative sample. In this study, students asked their female relatives and other women between the ages of 45 to 60 to fill out the questionnaires. They established the inclusion criteria; are not using hormone therapy and have not gone through a surgical or premature menopause.

For the recruitment process and application of the instruments, the authors trained a group of psychology students from Universidad Complutense de Madrid. They observed in person and responded to questions while the research participants filled out the questionnaire. The assessment protocol took 20 to 25 minutes to complete. All participants were volunteers and informed about the aim of the study, anonymity of the data, and the possibility of leaving the study whenever they wanted. Participants' confidentiality was guaranteed by omitting personal information.

The study was carried out in accordance with the tenets of the Declaration of Helsinki regarding research on human and it was approved by the Ethics Committee at the Faculty of Psychology of the "Universidad Complutense de Madrid." As part of a larger study, information regarding sociodemographic variables was also collected from the women, such as marital status, employment status, socioeconomic status, and educational level.

## Instruments

### Menopause Rating Scale

This scale<sup>27</sup> was developed to measure the presence and severity of menopausal symptoms, and it is composed of 11 items that are divided into three subscales: somatic, psychological, and urogenital. Somatic symptoms include hot flushes, heart discomfort, sleep disturbances, and muscle or joint pain (items 1-3 and 11). Urogenital symptoms include sexual or bladder problems, and dryness of the vagina (items 8-10). Psychological symptoms include depressive mood, irritability, anxiety, and physical and mental exhaustion (items 4-7). For this study, the scores obtained from items 4 and 6, related to depression and anxiety, were taken into account.

Participants were asked to answer these items, after receiving the following instructions:

Which of the following symptoms apply to you at this time? Please tick the appropriate box for each symptom, scoring them from 0 (not present) to 4 (1-mild, 2-moderate, 3-severe, 4-very severe). When no symptoms apply, please mark "none."

Item 4: "*Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings).*"

Item 6: "*Anxiety (inner restlessness, feeling panicky).*"

The composite score of each subscale is the sum of the item scores in that subscale and the total severity score is the sum of the three subscales, higher scores representing more severe symptoms. The total severity score ranged from no or few

symptoms (0-4) to mild (4-8), moderate (9-16), and severe (17+). The internal consistency coefficient (alpha) was 0.86, and while the physiological scale also presented a high alpha coefficient of 0.86, the somatic and urogenital scales gave coefficients of 0.61 and 0.67, respectively. The alpha coefficient is 0.85 in the current study. The MRS scale has been translated into more than 27 languages and the Spanish version of the MRS was used in this study.<sup>27</sup>

### *Menopause Quality of Life Questionnaire*

This questionnaire<sup>28</sup> was developed as a tool to assess the health-related QoL in the immediate postmenopausal period. The MENQOL questionnaire consists of 29 items in total, each responded to by using a Likert-like scale. Each item assesses the impact of one of the four domains of menopausal symptoms experienced over the last month: vasomotor (items 1-3), psychosocial (items 4-10), physical (items 11-26), and sexual (items 27-29). The scores obtained from items 5 and 8 (assessing anxiety and depression, respectively) were those taken into account for the statistical analyses.

The following instructions were given to the participants prior to them completing the questionnaire:

For each of the following items, indicate whether you have experienced the problem in the past month and if so, rate to what extent the problems bothered you.

Item 5: “*Feeling anxious and/or nervous*”

Item 8: “*Feeling depressed, down or blue*”

Items were rated as either present or not present and if they were present, the women indicated how bothersome they were on a scale of zero (not bothersome) to six (extremely bothersome). The total score for each subscale is the sum of each item, with nonendorsement of an item scored as “1” and endorsement as “2,” plus the number of the particular rating. As such, the possible score for any item ranges from one to eight. The Cronbach  $\alpha$  score for each scale was  $\geq 0.70$  and the reliability coefficients for the original 4 domains were acceptable: vasomotor, 0.87; psychosocial, 0.85; physical, 0.88; and sexual, 0.77. The alpha value in the current study was 0.91. The Spanish version of the questionnaire was used adapted by Blume et al.<sup>31</sup>

### *Hospital Anxiety and Depression Scale*

The HADS<sup>29</sup> questionnaire is commonly used in health-related studies to determine the degree of anxiety and depressive symptoms exhibited by patients. HADS is a 14-item scale, in which 7 items are related to anxiety and 7 to depression. Each item is scored from 0 to 3 and thus, an individual will score in the range of 0 to 21 for anxiety and 0 to 21 for depression. The cut-off points are 8 and 11 for both anxiety and depression, with a score between 8 and 10 representing probable AD or DD, and a score above 11 definitive AD or DD. The correlation between the two subscales might vary from study to study, ranging from 0.40 to 0.74 (mean 0.56). Cronbach alpha for HADS-A (Anxiety) has been seen to vary from 0.68 to 0.93 (mean 0.83) and that for HADS-D (Depression) from 0.67 to 0.90 (mean 0.82). The

sensitivity and specificity for both HADS-A and HADS-D is 0.80, very similar to the sensitivity and specificity achieved by the General Health Questionnaire (GHQ), and to the overall alpha value in our study of 0.82. As the aim of the study was to assess the psychological symptoms related to menopause, it seemed interesting to include a questionnaire specific to anxiety and depression and thus, the Spanish version of this scale was used.<sup>32</sup>

### **Statistical analysis**

All statistical analyses were performed using the IBM/SPSS 22.0 software (IBM Corp., Armonk, NY). The data are represented as the mean and standard deviation, as the median and interquartile range for the continuous variables, and as frequencies and percentages for categorical variables. A descriptive analysis of the sociodemographic variables was carried out, with the data presented as mean and standard deviation and as percentages. Considering the HADS as the criterion standard, anxiety and depression were converted into a dichotomous variable: those without AD (score  $< 8$ ) and those with probable or definitive AD (score  $\geq 8$ ); and those without DD (score  $< 8$ ) and with probable or definitive DD (score  $\geq 8$ ). The predictive capacity of the selected MRS6 (anxiety) and MRS4 (depression) items, and of MENQOL5 (anxiety) and MENQOL8 (depression), were evaluated using the corresponding receiver operator curve (ROC) curves. Indeed, the area under the ROC curve (AUC) was calculated along with the associated confidence intervals (CIs). To evaluate the association of the items,  $2 \times 2$  tables were constructed to calculate the following measures: sensitivity, specificity, and the positive and negative predictive values (PPV and NPV). The corresponding 95% CIs were also calculated for these values and  $P$  values  $< 0.05$  were considered statistically significant.

## **RESULTS**

Table 1 shows the sociodemographic characteristics of the individuals that participated in this study. The participants in the final cohort studied were aged 45 to 60 years (mean =  $51.7 \pm 3.8$ ) and more than three quarters of the women (77.2%) were married or cohabited with their partners. Again, three quarters of the individuals (75.5%) were employed when interviewed and nearly half of the sample had completed further education or held a university degree. On the basis of income, and given that the average income for a family in Madrid is approximately 36,000 €/year<sup>33</sup> a large proportion of the participants (80.7%) reported having a medium to high income. Households with an income below 12,000 €/year were considered as very low income and each increment in level represented an increase of 8,000 €/year.

In order to study the accuracy of the MRS and MENQOL items that assess the psychological domains, ROC curves were plotted relative to the HADS questionnaire as the criterion standard. From the ROC curves (Fig. 1), the AUC was calculated for MRS6 (AUC = 0.773, 95% CI 0.721-0.824) and MENQOL5 (AUC = 0.772, 95% CI 0.723-0.822), and for

**TABLE 1.** Sociodemographic characteristics of the women included in the study

Socio-demographic characteristics	Mean $\pm$ SD	No (%)
Age	51.7 $\pm$ 3.8	
Marital status, (n = 416)		
Married or cohabiting with her partner		321 (77.2)
Separated or divorced		38 (9.1)
Single		44 (10.6)
Widow		13 (3.1)
Employment status, (n = 408)		
Unemployed		100 (24.5)
Public officer		108 (26.5)
Self-employed		97 (23.8)
Employee		103 (25.2)
Socioeconomic level, (n = 404)		
Very low income		7 (1.7)
Low income		17 (4.1)
Medium-low income		56 (13.5)
Medium income		250 (60.5)
Medium-high income		66 (15.9)
High income		18 (4.3)
Educational level, (n = 412)		
No studies		4 (1.0)
Primary education		52 (12.5)
Secondary education		161 (38.7)
Specialist Training		10 (2.4)
University studies		189 (45.4)

SD, standard deviation.

depression, the AUC of the ROC curves were calculated for MRS4 (AUC = 0.711, 95% CI 0.625-0.797) and MENQOL8 (AUC = 0.744, 95% CI 0.668-0.821) (Fig. 1).

A 2 $\times$ 2 table was created to establish the following measures: sensitivity, specificity, PPV, and NPV. Different cut-off scores for the intensity of the symptoms were found to be associated to the possibility of detecting AD or DD.

In relation to AD, scores  $\geq 1$  in MRS6 were associated (Table 2) with a sensitivity of 78.9% and specificity of 65.6%, and with a PPV of 39.5% and NPV of 89.3%. By contrast, scores  $\geq 2$  increased the specificity (92.8%) and PPV (77.4%) with a sensitivity of 52% and an NPV of 71.5%. In terms of MENQOL5, scores  $\geq 2$  present a sensitivity of 84.6% and a specificity of 60.5% with a PPV of 52.2% and an NPV of 86.7%. By contrast, scores  $\geq 7$  increased the specificity (97.5%) with a PPV of 79.8%, decreasing the sensitivity (18.3%) and an NPV of 77.9%.

For DD (Table 2), scores  $\geq 1$  in MRS4 are associated with a sensitivity of 78.4% and specificity of 44.5%, with a PPV of 25.0% and NPV of 95.3%. By contrast scores  $\geq 2$  increased the specificity (86.2%) and PPV (92.6%) with a sensitivity of 54.2% and an NPV of 67.6%. In terms of MENQOL8, a score  $\geq 2$  presented with a sensitivity of 76.0% and specificity of 68.2%, with a PPV of 16.5% and an NPV of 93.6%. By contrast scores  $\geq 7$  in MENQOL8 increased the specificity by 99.4% and a PPV of 68.6%, a sensitivity of 14.3% and an NPV of 77.2%.

Finally, the lowest MRS and MENQOL cut-off points have proven to have a high sensitivity. In addition, these lower cut-off points have a higher NPV. Scores below this cut-off point make it possible to discard AD or DD with high probability. In contrast, the highest cut-off points show high specificity and

high PPV. This indicates that people scoring above the cut-off points are more likely to present with AD or DD.

According to these cut-off points for the different questionnaires, the data from HADS indicated that 32.3% (n = 134) of the women in the sample surpassed the cut-off scores for probable AD (score  $\geq 8$ ) and 9.4% (n = 39) surpassed the cut-off point for definitive AD (score  $\geq 11$ ). As such, a total of 173 women (41.7%) had probable or definitive AD. By contrast, the HADS questionnaire indicated that 12.3% (n = 51) surpassed the cut-off for probable DD and 3.1% (n = 13) did so for certain DD. The total number of women suffering from probable or definitive DD was n = 64 (15.4%).

MRS6 identified 48.8% (n = 201) of the women said to suffer from anxiety using the cut-off point  $\geq 1$  yet  $\leq 2$  and 23.6% (n = 114) if  $\geq 2$  was used as the cut-off point, with MRS6 identifying 72.4% (n = 315) of the women suffering from anxiety symptoms or probable anxiety disorder. For MENQOL5, 54.2% (n = 221) of the women indicated they suffered from anxiety or nervousness when using the cut-off point  $\geq 1$ , which fell to 10.6% (n = 56) when the cut-off of  $\geq 7$  was used, having screened 64.8% (n = 277) of the cohort. Significant differences were found in the number of participants detected with low-to-moderate anxiety using MRS6 and MENQOL5 ( $P < 0.001$ ) for both the cut-off points employed.

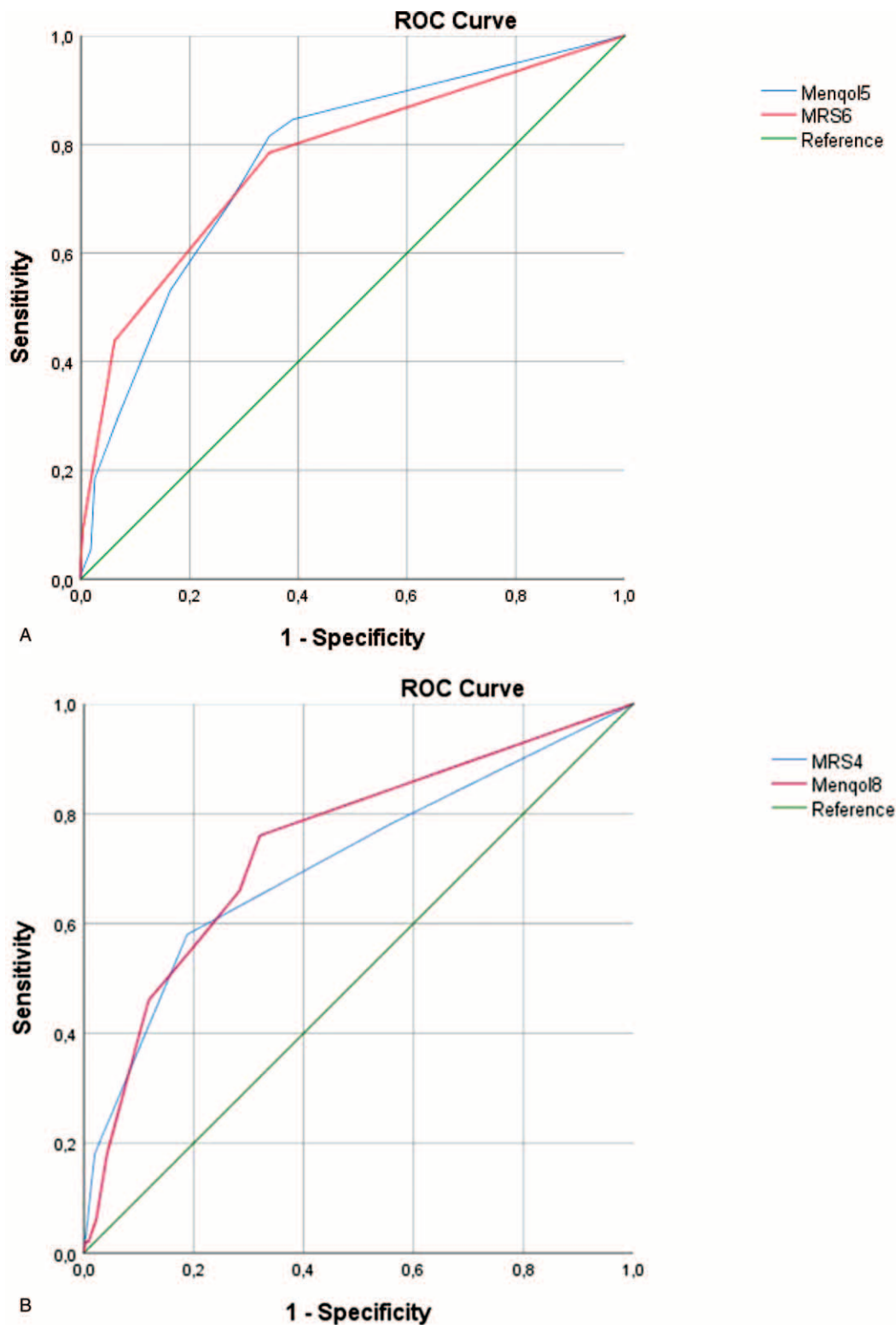
Regarding MRS4, 58.6% (n = 242) of the women indicated they suffered from depression or sadness when using the cut-off of  $\geq 1$  point and this fell to 28.1% (n = 140) when a cut-off of  $\geq 2$  points was applied, such that MRS4 detected 86.7% (n = 380) of women with depression. According to MENQOL8, 43.0% (n = 211) of the women indicated they suffered from depression or sadness when the cut-off  $\geq 2$  points was used, and this fell to 5.4% (n = 27) if  $\geq 7$  points was used as the cut-off point. As such, MENQOL8 detected 48.4% (n = 238) of the women suffering from depression. Significant differences were found in the number of women detected with low-to-moderate depression by MENQOL5 and MRS6 ( $P < 0.001$ ).

## DISCUSSION

Our findings highlighted that a very high percentage of the women evaluated develop anxiety symptoms that might deteriorate into AD. In terms of depression, the HADS, MRS4, and MENQOL8 detected a slightly lower, yet a still important number of women who mentioned this to be a problem for them. Significantly, a similar prevalence of anxiety and depression symptoms have been observed in other studies, which are strongly linked to a deterioration in QoL.<sup>34,35</sup>

The climacteric represents a long period in a woman's life, potentially accounting for a quarter of their life or more. It is a period during which women experience significant hormonal changes<sup>36,37</sup> and these changes can produce different symptoms ranging from very mild to severe, some seriously affecting the individual's QoL.

Although the prevalence and severity of the symptoms might depend on sociodemographic or cultural



**FIG. 1. A,** ROC curves for MENQoL and MRS (anxiety). **B,** ROC curves for MENQoL and MRS (depression). MENQoL, Menopause Quality of Life Questionnaire; MRS, Menopause Rating Scale; ROC, receiver operator curves.

variables,<sup>5,23,38</sup> most studies highlight that climacteric symptoms are experienced by many women, irrespective of age or culture.<sup>20,31,39</sup> Psychological symptoms, related to the climacteric appear in a high proportion of

women ranging from relatively mild symptoms to AD and/or DD.

Several instruments have been designed to assess climacteric symptoms, including depression and anxiety, and QoL.

**TABLE 2.** Sensitivity and specificity of the Menopause Rating Scale and Menopause Quality of Life Questionnaire items

Instrument	Sensitivity	Specificity	PPV	NPV
HADS anxiety				
MRS6 (score $\geq 1$ )	78.9 (71.3-85.0)	65.6 (59.8-70.9)	39.5 (33.9-45.4)	89.3 (84.1-93.0)
MRS6 (score $\geq 2$ )	52.0 (44.6-59.3)	92.8 (89.4-95.1)	77.4 (61.1-93.8)	71.5 (66.8-76.2)
MENQOL5 (score $\geq 2$ )	84.6 (77.6-89.9)	60.5 (54.6-66.1)	52.2 (45.4-59.0)	86.7 (81.5-90.7)
MENQOL5 (score $\geq 7$ )	18.3 (11.3-25.3)	97.5 (95.4-99.5)	79.8 (71.5-86.2)	77.9 (73.5-81.1)
HADS depression				
MRS 4 (score $\geq 1$ )	78.4 (65.4-87.5)	44.5 (39.5-49.6)	25.0 (18.8-32.4)	95.3 (92.0-97.3)
MRS 4 (score $\geq 2$ )	54.2 (46.9-61.6)	86.2 (82.0-89.6)	92.6 (76.6-97.9)	67.6 (63.2-71.7)
MENQOL8 (score $\geq 2$ )	76.0 (62.6-85.7)	68.2 (63.2-72.8)	16.5 (12.4-21.7)	93.6 (89.0-96.4)
MENQOL8 (score $\geq 7$ )	14.3 (9.9-20.2)	99.4 (97.7-99.8)	68.6 (60.5-75.7)	77.2 (72.6-81.3)

HADS, Hospital Anxiety and Depression Scale; MENQOL, Menopause Quality of Life Questionnaire; MRS, Menopause Rating Scale; NPV, negative predictive value; PPV, positive predictive value.

However, there are few studies on depression and anxiety-specific questionnaires, leading to a need to determine the accuracy of those questionnaires most often used to provide appropriate therapies. In addition, women suffering from climacteric symptoms usually visit their GP (general practitioner) and they are not necessarily referred to a psychologist to assess possible psychological disorders in more depth. For this reason, it is necessary to offer GPs a specific and accurate tool to discriminate the individuals whose symptoms may require further assessment and treatment.

In order to study the accuracy of the MRS and MENQOL items that assess psychological domains, ROC curves were plotted relative to the HADS questionnaire as the criterion standard. MRS and MENQOL are the most widely used tools in the assessment of the different dimensions of menopause symptomatology. Although designed to detect anxiety and depression symptoms, two cut-off points related to the intensity of anxiety and depression items in MRS and MENQOL could be used to detect clinically significant symptoms of anxiety and depression. Our findings show that the intensity of the self-referred symptoms is likely to be connected to the possibility of detecting a case of AD or DD. Determining such cut-offs points for different questionnaires will not only enhance the possibility of detecting symptoms but it will also guide professionals when faced with individuals suffering from possible AD or DD. Using the first cut-off point, professionals can be confident of identifying women who do not present with any symptoms of anxiety or depression (high NPV). However, as the intensity of the self-referred symptoms increase, so does the possibility of developing an AD or DD, both of which are indicated with high probability by the second cut-off point.

The most important result emerging from this study reflects the capacity of items in both the MENQOL and MRS questionnaires to be used as elements that can: (a) rule out the existence of anxiety and depression; (b) indicate whether symptoms are present; and above all, (c) establish, with high probability, whether women may be suffering from AD and/or DD. This would enable healthcare professionals not fully versed in psychology (GPs, gynecologists, etc. . .) to make decisions regarding the need for individuals to consult a specialist psychologist in order for them to more precisely

evaluate any possible disorder and where necessary, to recommend appropriate interventions. This is particularly useful since through only two questions (the items from the MRS or from the MENQOL) these healthcare professionals could obtain a better idea as to the psychological status of their patient and thus, make an informed decision as to how to proceed. In turn, this will permit more integrated and specific interventions to be adopted for menopausal women, offering healthcare professionals the opportunity of not only detecting the intensity of the symptoms but also, of identifying possible cases of AD and DD in women. Such an approach will favor the rapid implementation of appropriate treatments to reverse any compromises in the individual's QoL. The results of this study will allow detecting clinically relevant symptoms; however, these cut-off points are not established to diagnose or to screen patients, and the results should be confirmed with specific tools.

One possible limitation of this study might reside in the high educational level of the cohort, above that of the general population. Future analyses will be carried out to study the effect of sociodemographic characteristics in relation to anxiety and depression, symptoms, and disorder. The concept behind this study is quite original and the conclusions drawn are strengthened by the large size of the cohort, and by the relevance and usefulness of the results obtained. In this study, the duration of menopausal symptomatology has not been controlled; however, this information could be relevant for a better understanding and it should be included in future studies.

## CONCLUSIONS

A high percentage of women consulted presented with anxiety and depression symptoms and these might be affecting well-being and QoL. Psychological symptoms are associated with other menopausal symptoms such as urogenital, physical, and sexual. Women in the menopausal stage are usually attended by a gynecologist who applies the most used questionnaires such as MRS and MENQOL to assess menopausal symptoms.

Our findings showed that MRS6,4 and MENQOL5,8 could be considered a useful tool to detect anxiety and depression symptoms and depending on the scores could determine the

severity of symptoms and the probability of suffering from AD or DD.

## REFERENCES

- Kamal NN, Seedhom AE. Quality of life among postmenopausal women in rural Minia, Egypt. *East Mediterr Health J* 2017;23:527-533.
- Waidyasekera H, Wijewardena K, Lindmark G, Naessen T. Menopausal symptoms and quality of life during the menopausal transition in Sri Lankan women. *Menopause* 2009;16:164-170.
- Nisar N, Ahmed Sohoo N. Severity of Menopausal symptoms and the quality of life at different status of menopause: a community based survey from rural Sindh, Pakistan. *Int J Collab Res Intern Med Public Health* 2010;2:118-130.
- Shukla R, Ganjiwale J, Patel R. Prevalence of postmenopausal symptoms, its effect on quality of life and coping in rural couple. *J Midlife Health* 2018;9:14-20.
- Hasan SS, Thiruchelvam K, Ahmed SI, Clavarino AM, Mamun AA, Kairuz T. Psychological health and menopause-specific quality of life of Malaysian women with type 2 diabetes. *Asian J Psychiatr* 2016;23:56-63.
- Zhang JP, Wang YQ, Yan MQ, Li ZA, Du XP, Wu XQ. Menopausal symptoms and sleep quality during menopausal transition and postmenopause. *Chin Med J (Engl)* 2016;129:771-777.
- Chedraui P, Aguirre W, Hidalgo L, Fayad L. Assessing menopausal symptoms among healthy middle aged women with the Menopause Rating Scale. *Maturitas* 2007;57:271-278.
- Rössler W, Ajdacic-Gross V, Riecher-Rössler A, Angst J, Hengartner MP. Does menopausal transition really influence mental health? Findings from the prospective long-term Zurich study. *World Psychiatry* 2016;15:146-154.
- Rahul P, Pritamkumar B. Study of menopause complains in relation with trait anxiety and personality traits. *Indian J Health Wellbeing* 2017;8:1574-1579.
- Dabek A, Adamiec A, Rekowski W, Czyzewski P. The influence of physical activity on climacteric symptoms. *Postępy Rehabilitacji* 2016;30:27-32.
- Ayers B, Forshaw M, Hunter MS. The impact of attitudes towards the menopause on women's symptom experience: a systematic review. *Maturitas* 2010;65:28-36.
- Bauld R, Brown RF. Stress, psychological distress, psychosocial factors, menopause symptoms and physical health in women. *Maturitas* 2009;62:160-165.
- Rindner L, Strömme G, Nordeman L, et al. Prevalence of somatic and urogenital symptoms as well as psychological health in women aged 45 to 55 attending primary health care: a cross-sectional study. *BMC Womens Health* 2017;17:128.
- Bansal P, Chaudhary A, Soni RK, Sharma S, Gupta VK, Kaushal P. Depression and anxiety among middle-aged women: a community-based study. *J Family Med Prim Care* 2015;4:576-581.
- Freeman EW, Sammel MD, Liu L, Gracia CL, Nelson DB, Hollander L. Hormones and menopausal status as predictors of depression in women in transition to menopause. *Arch Gen Psychiatry* 2004;61:62-70.
- Claudatos S, Sason S, Zambotti M, Golsdstone A, Colrain I, Baker F. Quality of life and depressive symptoms in midlife women with and without insomnia. *Sleep* 2018;41(suppl\_1):164-1164.
- Juang KD, Wang SJ, Lu SR, Lee SJ, Fuh JL. Hot flashes are associated with psychological symptoms of anxiety and depression in peri- and post- but no premenopausal women. *Maturitas* 2005;52:119-126.
- Lui-Filho JF, Pedro AO, Baccaro LF, Costa-Paiva L. Risk factors associated with intensity of climacteric symptoms in Brazilian middle-aged women. *Menopause* 2018;25:415-422.
- Worsley R, Bell RJ, Gartoulla P, Robinson PJ, Davis SR. Moderate-severe vasomotor symptoms are associated with moderate-severe depressive symptoms. *J Womens Health (Larchmt)* 2017;26:712-718.
- Im EO, Kim J, Chee E, Chee W. The relationships between psychological symptoms and cardiovascular symptoms experienced during the menopausal transition: racial/ethnic differences. *Menopause* 2016;23:396-402.
- Terauchi M, Hirose A, Akiyoshi M, Kato K, Miyasaka N. Feelings of unattractiveness in peri- and postmenopausal women are associated with depressed mood, poor memory and unsatisfactory sexual relationships. *Climacteric* 2017;20:228-232.
- Marván ML, Espinosa-Hernández G, Martínez-Garduño MD, Jasso K. Attitudes toward menopause, sexual function and depressive symptoms in Mexican women. *J Psychosom Obstet Gynaecol* 2018;39:121-127.
- Quiroga A, Larroy C, González-Castro P. Climacteric symptoms and their relation to feminine self-concept. *Climacteric* 2017;20:274-279.
- Azizi M, Fooladi E, Masoumi M, Geran Orimi T, Elyasi F, Davis SR. Depressive symptoms and their risk factors in midlife women in the Middle East: a systematic review. *Climacteric* 2017;21:13-21.
- Núñez-Pizarro JL, González-Luna A, Mezones-Holguín E, et al. Association between anxiety and severe quality-of-life impairment in postmenopausal women: analysis of a multicenter Latin American cross-sectional study. *Menopause* 2017;24:645-652.
- Freeman EW, Sammel MD, Lin H, Gracia CR, Kapoor S, Ferdousi T. The role of anxiety and hormonal changes in menopausal hot flashes. *Menopause* 2005;12:258-266.
- Heinemann LA, Potthoff P, Schneider HP. International versions of the Menopause Rating Scale (MRS). *Health Qual Life Outcomes* 2003;1:28.
- Hilditch JR, Lewis J, Peter A, et al. A Menopause Specific Quality of Life Questionnaire, development and psychometric properties. *Maturitas* 1996;24:161-175.
- Zigmond AS, Snaith RP. Hospital Anxiety and Depression Scale. *Acta Psychiatr Scand* 1983;67:361-370.
- Terol-Cantero MC, Cabrera-Perona V, Martín-Aragón M. Revisión de estudios de la Escala de Ansiedad y Depresión Hospitalaria (HAD) en muestras españolas. *Anal Psicol* 2015;31:494-503.
- Blumel R, Castelo-Branco C, Binfa L, et al. Quality of life after the menopause: a population study. *Maturitas* 2000;34:17-23.
- De las Cuevas C, García-Estrada A, González JL. Hospital anxiety and depression scale y psicopatología afectiva. *Anal Psiquiatría* 1995;11:126-130.
- Instituto Nacional de Estadística INE. España en cifras. Available at: [http://www.ine.es/prodys/espa\\_cifras/2018/3/](http://www.ine.es/prodys/espa_cifras/2018/3/). Accessed November 19, 2018.
- Hickey M, Bryant C, Judd F. Evaluation and management of depressive and anxiety symptoms in midlife. *Climacteric* 2012;15:3-9.
- Larroy C, Robles JI. Psychological symptoms of menopausal women in the state of Madrid: a study of prevalence. *Int J Psychol* 2016;51:701.
- Al-Azzawi F, Palacios S. Hormonal changes during menopause. *Maturitas* 2009;63:135-137.
- Burger HG, Hale GE, Robertson DM, Dennerstein L. A review of hormonal changes during the menopausal transition: focus on findings from the Melbourne Women's Midlife Health Project. *Hum Reprod Update* 2007;13:559-565.
- Li S, Ho SC, Sham A. Relationship between menopause status, attitude toward menopause, and quality of life in Chinese midlife women in Hong Kong. *Menopause* 2016;23:67-73.
- Islam RM, Bell RJ, Rizvi F, Davis SR. Vasomotor symptoms in women in Asia appear comparable with women in Western countries: a systematic review. *Menopause* 2017;24:1313-1322.