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Perceived stress, insomnia and related factors in women around the menopause

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ABSTRACT

Background: Studies assessing perceived stress and insomnia in mid-aged women are scarce.
Objective: To assess perceived stress, insomnia and related factors in mid-aged Spanish women.
Method: This was a cross sectional study in which 235 women aged 40–65 completed the Menopause Rating Scale (MRS), the Perceived Stress Scale (PSS), the Insomnia Severity Index (ISI), and a general socio-demographic questionnaire containing personal and partner data. Internal consistency of each tool was also computed.
Results: Median [interquartile range] age of the sample was 52 [9.0] years. A 61.3% were postmenopausal, 49.4% had increased body mass index values, 43.8% were abdominally obese, 11.9% had hypertension, and 74.0% had a partner. In addition, 9.8% used hormone therapy and 12.3% psychotropic drugs. Multiple linear regression analysis found that higher PSS scores (more stress) inversely correlated with female age and positively with MRS psychological and urogenital scores (impaired quality of life in these domains), total higher ISI scores (more insomnia) and partner premature ejaculation. Higher ISI scores positively correlated with PSS and MRS somatic scores and partner unfaithfulness, and inversely with female hip circumference.
Conclusion: In this mid-aged Spanish sample perceived stress and insomnia were significantly correlated and related to various female and partner issues.

1. Introduction

Stress is a process related to an environmental demand that exceeds the adaptive capacity of a living being resulting in biological and/or psychological changes that increase the risk of negative health outcomes. Human stress and emotions are closely related; in fact stress and anxiety may overlap [1]. However, stress may be present without anxiety and be a prognostic factor for future diseases and morbid conditions [2–4]. Gender differences have been demonstrated in response to transient emotional states, stress and coping styles [5–8]. Sleep disorders are also influenced by gender differences which are significant during pregnancy and the menopause [9–11]. During the female menopausal transition insomnia and sleepiness have been related to hot flush severity, stressful events, psychotropic drug use, sedentarism and also partner issues [11–14]. Chronic insomnia may predispose to irritability, sleepiness, increased anxiety, depressive disorders, tiredness and impaired work or intellectual performance, cardiovascular risk and other health complications [15–19].

Data regarding the relationship between stress and insomnia during the menopausal transition are scarce or incomplete [11,13,19,20]. Hence, the objective of the present study was to assess perceived stress, insomnia and related factors in mid-aged Spanish women.

2. Method

2.1. Study design and participants

This was a cross-sectional study carried out from May to October 2011 in which women (40–65 years) who were accompanying or visiting patients being attended for at gynecological and obstetrical healthcare facilities of the San Cecilio Hospital, Granada, Spain, were requested to fill out the Menopause Rating Scale (MRS), the

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Perceived Stress Scale (PSS), the Insomnia Severity Index (ISI), and an itemized questionnaire containing female and partner socio-demographic data. Women unable to understand the survey, not consenting participation or with psychological or physical incapacity imposing difficulties during the interview were excluded. Research protocol was reviewed and approved by the San Cecilio Hospital Ethical Committee of Granada, Spain. All participants were informed of the study (objectives and used tools) and requested to voluntarily participate after providing written consent.

2.2. General socio-demographic questionnaire

2.2.1. Female data

Female data included: age, parity, marital status, education, menopausal status, time since menopause, current partner status (yes/no), weight (kg), height (mt), anthropometric measurements (neck, mid-arm, waist, and hip circumference), and systolic/diastolic blood pressure (mmHg) values. Lifestyle and other personal factors included: smoking habit, regular exercise (yes/no), working and/or economical problems (yes/no). Current drug use included: psychotropic drugs, oral contraceptives, and hormone therapy (HT) or phytoestrogens for the menopause.

Menopausal status was defined using criteria of the Stages of Reproductive Aging Workshop: premenopausal (women having regular menses), perimenopausal (irregularities >7 days from their normal cycle) and postmenopausal (no more menses in the last 12 months either natural or induced) [21]. Those with bilateral oophorectomy were also considered as postmenopausal. Women performing less than 15 min of physical activity (i.e., walking) two times per week were defined as sedentary [22] and those on medication or displaying blood pressure readings equal or above 140/90 were defined as hypertense [23,24].

Waist or abdominal, hip, neck, and mid-arm circumferences were measured in centimeters (cm). A waist circumference greater than 88 cm was used to define abdominal obesity [25]. Body mass index (BMI) was calculated as female weight (kg) divided by squared height (m). BMI was categorized as low (<18.5 kg/m^2), normal (18.5–24.99 kg/m^2), or high (≥25 kg/m^2). Women with high BMI values were further categorized as overweight (25.0–29.99 kg/m^2) or obese (≥30.0 kg/m^2) [26].

2.2.2. Partner data

Women provided the information related to their partner including: age, educational level, regular exercising (yes/no), unfaithfulness (yes/no), alcohol abuse (yes/no), and the presence of sexual dysfunction (erectile dysfunction and or premature ejaculation). Definitions for alcoholism, erectile dysfunction, and premature ejaculation have previously been described [25].

2.3. Instruments

2.3.1. The Menopause Rating Scale

The present study used the Spanish language version of the Menopause Rating Scale [27,28] which is a health-related quality-of-life (QoL) instrument composed of 11 items that assess menopausal symptoms. These items are grouped into three subscales: somatic, psychological, and urogenital. Women may grade each item from 0 (not present) to 4 (1 = mild; 2 = moderate; 3 = severe; 4 = very severe). For a particular individual, the total subscale score is the sum of each graded item contained in that subscale. The total MRS score is the sum of scores obtained for each subscale [27,28]. Higher MRS scores are indicative of QoL impairment. Severe impaired menopause-related QoL corresponds to a total MRS score ≥17.

2.3.2. The Perceived Stress Scale

The 10-item Cohen's Perceived Stress Scale (PSS) is a widely used tool to assess psychological status and the perception of stress [20,29]. The 10 items are of general nature (free of specific content to any subpopulation group), which allow use in any circumstance. Women may grade each item from 0 (never) to 4 (1 = almost never; 2 = sometimes; 3 = fairly often; 4 = very often). Total PSS scores may range from 0 to 40, the latter indicating the highest level of stress [29]. Scores for items # 4, 5, 7, and 8 are reversed. Although no specific cut-off value for the PSS is available to define abnormality, higher total scores give a perception of the amount of stress.

2.3.3. The Insomnia Severity Index (ISI)

The ISI is a reliable, validated, self-reporting instrument that yields a quantitative index of perceived insomnia severity over the past month. It consists of 7 items targeting sleep disturbance severity, sleep related satisfaction and the degree of daytime functional impairment, impairment perception and distress and concern related to the sleeping problem. Each item is rated on a 5-point Likert scale (0–4) and summed up to provide a total score ranging from 0 to 28. Higher scores reveal more severe insomnia [11,30]. A cut-off score of 10 has been proposed as optimal for detecting insomnia cases in the general population [31]. In addition scores for the 3 recently described sub-domains of the ISI were also computed [32]: night-time sleep difficulties (sum of items 1, 2, and 3), daytime impact of insomnia (sum of items 5, 6, and 7) and sleep dissatisfaction (sum of items 1, 4, and 7).

2.4. Statistical analysis

Statistical analysis was performed using SPSS software package (Version 19.0 for Windows, SPSS Inc., Chicago, IL, USA). Data are presented as means, medians, interquartile ranges, percentiles (p25–p75), percentages, coefficients, and 95% confidence intervals. The Kolmogorov Smirnov test was used to determine the normality of data distribution. According to this, non parametric data were compared with the Mann Whitney (two independent samples) or the Kruskal Wallis test (various independent samples).

Rho Spearman coefficients were calculated to determine correlations between used tools and various numeric variables. Multiple linear regression analysis was performed to obtain a best model predicting total PSS and ISI scores (dependant variables). For this, two models were constructed one included all studied women and the second only those with a partner. Independent variables (female and partner) displaying p values of 0.10 during bivariate analysis were entered into the model using a forward/backward stepwise procedure. For all calculations a p value of <0.05 was considered as statistically significant.

Internal consistency of used instruments (MRS, ISI, and PSS) was assessed computing Cronbach's coefficient alphas.

2.5. Sample size calculation

A minimal sample size of 169 participants was calculated assuming that 50% of mid-aged women present insomnia [11,15,31] with a 10% desired precision and a 99% confidence interval.

3. Results

During the studied period a total of 275 women were invited to participate, 8.0% (n = 22) denied participation and 6.5% (n = 18) provided incomplete data, leaving 235 complete surveys for statistical analysis. Median [interquartile range] age of the entire sample was 52 [9.0] years. A 61.3% were postmenopausal, 49.4% had increased BMI values, 43.8% were abdominally obese, 11.9% had hypertension