Assessment of sexuality among middle-aged women using the Female Sexual Function Index

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Key words: MENOPAUSE, SEXUALITY, FEMALE SEXUAL FUNCTION INDEX, SEXUAL DYSFUNCTION, CLIMACTERIC

ABSTRACT

Objective  The purpose of the present investigation was to assess sexual function among middle-aged women and determine related risk factors (personal and partner) for sexual dysfunction.

Methods  In this cross-sectional study, women aged 40–59 years were requested to fill out the Female Sexual Function Index (FSFI) and a general demographic questionnaire containing personal and partner data.

Results  A total of 409 women with a mean age of 47 ± 5.3 years were surveyed. Of these, 42.1% were premenopausal, 24.4% perimenopausal and 33.5% postmenopausal. At the time of survey, 10.5% of women were hysterectomized, 1.5% used psychotropic drugs, and 9.8% were on hormone therapy (HT) for the menopause; 28.1% had less than 12 years of schooling and 80.4% had only one partner at the moment of survey. Among their male partners, 7.3% abused alcohol, 10.3% had erectile dysfunction, 11.2% premature ejaculation and 63.8% were faithful partners. Mean (± standard deviation) scores for the FSFI domains were: desire (3.7 ± 1.2), arousal (3.1 ± 2.5), lubrication (3.3 ± 2.6), orgasm (2.6 ± 2.3), satisfaction (4 ± 1.7), and pain/dyspareunia (3.2 ± 2.6). The mean total FSFI score was 20.1 ± 12.4 (median 24.7). In this series, the prevalence of female sexual dysfunction (FSFI score ≤ 26.55) was 55.7%, with women presenting difficulties across all domains of female sexual function but mostly in the dyspareunia and lubrication domains. Logistic regression analysis determined that female age (odds ratio (OR) 3.3, 95% confidence interval (CI) 1.6–6.8, p = 0.001), postmenopausal status (OR 2.8, 95% CI 1.3–6.1, p = 0.007), partner’s age (OR 2.0, 95% CI 1–4, p = 0.03), educational level (OR 2.7, 95% CI 1.5–5, p = 0.001), and the presence of erectile dysfunction (OR 3.8, 95% CI 1.3–10.9, p = 0.01) and premature ejaculation (OR 4.1, 95% CI 1.4–11.7, p = 0.0001) significantly increased the risk for female sexual dysfunction. Partner faithfulness (OR 0.2, 95% CI 0.1–0.4, p = 0.001) and menopausal HT use (OR 0.4, 95% CI 0.1–1, p = 0.04) decreased this risk.

Conclusions  In this series, male sexual health and demographic profile and female HT use were relevant determinants for sexual functioning among middle-aged women.
INTRODUCTION

Female sexual dysfunction includes separate entities with some shared etiology; thus, both organic and psychogenic issues are involved. Although it seems that there is a genetic susceptibility for sexual dysfunctions, many biological, cognitive, emotional and social factors seem to exert a relevant role in sexual response and enjoyment. Several diseases, co-morbid conditions and antipsychotic treatment are also associated with a significant decrease in female sexual function. Partner social behavior habits and community values are also significant factors that influence the presence and degree of female sexual dysfunction. The climacteric is a variable and long, complex period of bio-psycho-social changes that may alter quality of life, including sexual satisfaction. During the peri- and post-menopausal periods, there is a high incidence of sexual problems, sometimes associated with personal distress, sexual partner compatibility, male sexual dysfunction (premature ejaculation and erectile dysfunction), male non-monogamy and drug consumption. Thus, postmenopausal women are 2.3 times more likely to experience sexual dysfunction when compared to premenopausal women. Hence, specific interventions should be offered, considering personal and partner-related pre-existing factors, including hormonal changes present during the menopausal transition.

In clinical practice, open and structured interviews and questionnaires are used to assess the components of sexual functioning. In many cases, the main purpose is to transform subjective variables into quantifiable and objective results using validated specific female sexual response questionnaires. In this sense, one can find several short, daily, self-reported and event-related tools used for a determined period of time. The Female Sexual Function Index (FSFI) is a multidimensional self-report instrument that has the advantage over other instruments – such as diaries or calendars – that it allows a quantitative evaluation and can be used to study sexuality changes after therapeutic interventions.

An excellent discriminate validity and ability to predict the presence or absence of sexual complaints have been reported for this tool. Furthermore, while assessing sexual function, it is most important to determine the interactions between different disorders to reduce bias in their classification. In this sense, the FSFI fulfills many of these requirements and may be applied to climacteric and non-climacteric populations.

Since there are many social and cultural determinants in sexuality and female sexual dysfunction, cross-cultural adaptation of the FSFI has taken place, as it has been validated in English-, German-, Spanish-, Dutch-, Italian- and Portuguese-speaking populations. Although the prevalence and related risk factors for female sexual dysfunction among Ecuadorian middle-aged women have been previously reported using DSM IV criteria, the utility of the FSFI has not yet been documented in this population. Hence, the objective of the present research was to assess sexual function among middle-aged women using the FSFI and to determine associated risk factors (personal and partner) for sexual dysfunction.

MATERIALS AND METHODS

Participants

This cross-sectional study was carried out from November 2006 to February 2007 at the Maternal-Infant Unit of the Teodoro Maldonado Carbo Hospital, Guayaquil, Ecuador. Healthy, non-black Hispanic women aged 40–59 years visiting inpatients of the mentioned Unit were requested to fill out the FSFI and an itemized questionnaire. All women were informed about the research, its purpose, the FSFI and its content. Indigenous populations, pregnant women, and those who did not consent to participate or were incapable of understanding the items included in the questionnaire were excluded. After consenting to participate and upon filling out the questionnaire, they received additional support.

Female data included in the questionnaire were: age, parity, menopausal status (pre-, peri- or post-), marital status, educational level (expressed in years), accessed health-care system (free–minimal cost, paying more than the minimal cost), smoking habit (current, sometime, non-smoker), if currently having performing daily routine activities were defined as healthy. Women were asked regarding male faithfulness. Alcoholism was defined as a chronic conduct disorder manifested by repeated and excessive consumption of alcohol.
alcohol consumption that interferes with health, economic or social relationships. 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.

Data presented in this document are part of a Multicenter Latin American study (REDLINC III), carried out in 22 health-care centers in 18 cities (population > 500,000 inhabitants) of 12 Latin American countries and intended to assess sexuality among middle-aged women. Methodological aspects as well as the results of REDLINs studies I and II have recently been published. The research protocol of this study was reviewed and approved by the Bioethics Committee of the PROSAM Foundation, Santiago de Chile, Chile.

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 more menses in the last 12 months. Those with bilateral oophorectomy were considered as postmenopausal.

The Female Sexual Functioning Index (FSFI)

This instrument is composed of 19 questions grouped in six domains or dimensions: desire (items 1 and 2), arousal (items 3–6), lubrication (items 7–10), orgasm (items 11–13), satisfaction (items 14–16) and pain (items 17–19). Each question has a Likert scale score varying from 0 to 5. Scores obtained in a particular domain are added and multiplied by a respective factor that homogenizes the influence of each dimension. The total FSFI score is the sum of all scores obtained in each domain. The higher the score, the better is the sexuality. Subjects obtaining a total FSFI score of ≤ 26.55 were defined as having sexual dysfunction.

Statistical analysis

Analysis was performed using EPI-INFO 2000 statistical software (Centers for Disease Control, Atlanta, Ga., USA; WHO, Basel, Switzerland). Data are expressed as mean ± standard deviations, medians and percentages. Using EPI-INFO statistical software, a minimal sample of 382 subjects was calculated as necessary, considering that the hospital covers an estimated population of 50,000 middle-aged women and assuming that 50% of the surveyed population would present with sexual dysfunction, with an estimated 5% error and a 95% confidence interval.

Risk factors for sexual dysfunction (FSFI score ≤ 26.55) were analyzed using logistic regression. For this, total FSFI score, as a continuous variable, was transformed into a categorical one, now considered as those cases exhibiting scores ≤ 26.55. Independent variables to be entered in the regression model were (female): access to free health care, older age (≥ 46 years, median), higher parity (≥ 3, median), low schooling (≤ 12 years), marital status (married or not), postmenopausal status, smoking status, medication use (HT/alternatives for the menopause, psychiatric drugs) and if attending a psychiatrist, engages in healthy habits and/or currently has one partner; and (male): partner age, low schooling (≤ 12 years), alcoholism, healthiness, faithfulness, premature ejaculation and erectile dysfunction. Entry of variables into the model was considered with a 20% significance level and the stepwise procedure performed. A p value of < 0.05 was considered as statistically significant.

RESULTS

During the study period, a total of 421 women fulfilled inclusion criteria. Of these, 22 were excluded due to incomplete data, leaving a total of 409 surveys for statistical analysis. The mean age of the entire sample was 47 ± 5.3 years (median 46 years) with an average educational level of 13.2 ± 4.1 years. The mean parity of surveyed women was 2.9. Characteristics of surveyed women and their partners are depicted in Table 1. Of surveyed women, 28.1% had 12 or less years of schooling and 76.8% accessed a private health-care system; 9.8% were on HT for more than 12 months, 2.3% for years 7–12, 0.5% for years 4–6, and 6.7% for ≤ 4 years. The average age of the entire sample was 47 ± 4.2 years (median 46 years), median 13.3 years (11.4 years), and pain (items 17–19). Each question has a Likert scale score varying from 0 to 5. Scores obtained in a particular domain are added and multiplied by a respective factor that homogenizes the influence of each dimension. The total FSFI score is the sum of all scores obtained in each domain. The higher the score, the better is the sexuality. Subjects obtaining a total FSFI score of ≤ 26.55 were defined as having sexual dysfunction.

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55.7%; these were women presenting difficulties across all domains of female sexual function but mostly in the dyspareunia and lubrication domains. After adjusting for confounding factors, logistic regression analysis determined that female sexual dysfunction was related to personal (female age and postmenopausal status) and partner (age, educational level and the presence of sexual dysfunction (erectile and premature ejaculation)) factors. Partner faithfulness and HT use decreased this risk (Table 3).

**DISCUSSION**

World-wide it is now increasingly recognized that sexual health is important for overall good health and well-being. However, sexuality is a complex concept that includes organic, hormonal, emotional, social and cultural inputs. Although sexual desire and activity are widespread among middle-aged men and women and may persist into old age, sexual complaints also increase with age. Hence, sexual functioning has drawn considerable attention from physicians as well as from men and women. The National Health and Social Life Survey reported that 43% of women and 31% of men between 18 and 59 years in the USA have sexual dysfunction, a prevalence that varies according to ethnicity and physical and psychological health status. In climacteric Hispanic populations, these rates have been found to be higher, ranging from 51.3% to 78.4% in Chile, Colombia and Ecuador. The prevalence of female sexual dysfunction is quite high and tends to increase with age due to a decline in sexual interest, reduction of sexual intercourse and lubricating vaginal problems associated with the menopause (low estrogen secretion).

Due to its multidimensional nature, the assessment of sexuality is not an easy task, not to mention methodological issues. However, several instruments have been developed during recent years to assess sexuality and diagnose sexual dysfunction. The present study is the first to assess sexuality with the FSFI in a middle-aged female Ecuadorian population. The FSFI has been used and/or validated in several populations, demonstrating a high degree of precision in the diagnosis of female sexual dysfunction.

As assessed with the FSFI, the prevalence of female sexual dysfunction in the present series was high (55.7%), yet similar to that previously reported using the same tool in other Hispanic and non-Hispanic populations with varying cultural and social backgrounds. Reasons or causes in our series are undeniably multi-factorial and affect several domains of the FSFI (Table 2), lubrication and dyspareunia being the most affected domains. This is contrary to what is found in the literature, indicating that desire is the most affected domain.

**Table 1** Profile of surveyed women (n = 409) and their partners

<table>
<thead>
<tr>
<th>Female</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>228 (55.7)</td>
</tr>
<tr>
<td>Premenopausal</td>
<td>172 (42.1)</td>
</tr>
<tr>
<td>Perimenopausal</td>
<td>100 (24.4)</td>
</tr>
<tr>
<td>Postmenopausal</td>
<td>137 (33.5)</td>
</tr>
<tr>
<td>Bilateral oophorectomy</td>
<td>60 (14.6)</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>132 (32.1)</td>
</tr>
<tr>
<td>Hormone therapy use</td>
<td>40 (9.8)</td>
</tr>
<tr>
<td>Use of alternative treatments for the menopause</td>
<td>5 (1.2)</td>
</tr>
<tr>
<td>Use of psychotropic drugs</td>
<td>6 (1.5)</td>
</tr>
<tr>
<td>≤12 years schooling</td>
<td>115 (28.1)</td>
</tr>
<tr>
<td>Current smoking</td>
<td>26 (1.5)</td>
</tr>
<tr>
<td>Access to private health-care system</td>
<td>314 (76.8)</td>
</tr>
<tr>
<td>Psychiatric consultation</td>
<td>27 (6.6)</td>
</tr>
<tr>
<td>Currently having one partner</td>
<td>329 (80.4)</td>
</tr>
<tr>
<td>Church assistance</td>
<td>167 (40.8)</td>
</tr>
<tr>
<td>History of sexual abuse</td>
<td>9 (2.2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Partner (n = 329)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol abuse</td>
<td>24 (7.3)</td>
</tr>
<tr>
<td>Normal health</td>
<td>302 (91.8)</td>
</tr>
<tr>
<td>Erectile dysfunction</td>
<td>34 (10.3)</td>
</tr>
<tr>
<td>Premature ejaculation</td>
<td>37 (11.2)</td>
</tr>
<tr>
<td>Faithfulness</td>
<td>210 (63.8)</td>
</tr>
</tbody>
</table>

**Table 2** The Female Sexual Function Index (FSFI): total and domain obtained scores

<table>
<thead>
<tr>
<th></th>
<th>Desire</th>
<th>Arousal</th>
<th>Lubrication</th>
<th>Orgasm</th>
<th>Satisfaction</th>
<th>Dyspareunia</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>3.7 ± 1.3</td>
<td>3.2 ± 2.5</td>
<td>3.3 ± 2.6</td>
<td>2.7 ± 2.3</td>
<td>4.1 ± 1.8</td>
<td>3.2 ± 2.6</td>
<td>20.1 ± 12.4</td>
</tr>
<tr>
<td>Median</td>
<td>3.6</td>
<td>4.2</td>
<td>4.8</td>
<td>2.8</td>
<td>4.8</td>
<td>4.4</td>
<td>24.7</td>
</tr>
<tr>
<td>% below median</td>
<td>37.9</td>
<td>48.2</td>
<td>49.4</td>
<td>48.2</td>
<td>47.4</td>
<td>49.6</td>
<td>49.6</td>
</tr>
</tbody>
</table>

SD, standard deviation
### Table 3 Factors associated with sexual dysfunction (FSFI score ≤26.55): logistic regression analysis

<table>
<thead>
<tr>
<th>Factors</th>
<th>Odds ratio (95% CI)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premature ejaculation</td>
<td>4.1 (1.4–11.7)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Erectile dysfunction</td>
<td>3.8 (1.3–10.9)</td>
<td>0.01</td>
</tr>
<tr>
<td>Low partner schooling</td>
<td>2.7 (1.5–5)</td>
<td>0.001</td>
</tr>
<tr>
<td>Older partner age</td>
<td>2.0 (1–4)</td>
<td>0.03</td>
</tr>
<tr>
<td>Personal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female age (≥46 years)</td>
<td>3.3 (1.6–6.8)</td>
<td>0.001</td>
</tr>
<tr>
<td>Postmenopausal status</td>
<td>2.8 (1.3–6.1)</td>
<td>0.007</td>
</tr>
<tr>
<td>Having a faithful partner</td>
<td>0.2 (0.1–0.4)</td>
<td>0.001</td>
</tr>
<tr>
<td>HT use</td>
<td>0.4 (0.1–1)</td>
<td>0.04</td>
</tr>
</tbody>
</table>

FSFI, Female Sexual Function Index; CI, confidence interval; HT, hormonal therapy

Using DSM IV criteria, we have previously reported a 78.4% sexual dysfunction rate among climacteric Ecuadorian women, which is higher than the currently reported 55.7%. Socioeconomic level (lower in our previous series) could in part explain this difference. It has been reported that income and educational level are inversely correlated to sexual dysfunction rates.

Other findings in this series were the very low (1.5%) number of smokers, the history of sexual abuse (2.2%) and the number of women who had one partner (80.4%). A higher rate of women in a stable couple relationship (98%) and higher total FSFI scores have been found among Chilean women. Since age and the tool used (the FSFI) were similar to our series, it can be speculated that cultural and economic reasons could explain these differences.

As has been reported in the literature, female aging and postmenopausal status increase the risk for sexual dysfunction, a fact that correlates with our findings. Some age-related medical conditions have also been associated with female sexual dysfunction, such as hypertension, diabetes or heart disease. Postmenopausal women with vaginal atrophy are very likely to report a decrease in sex frequency due to pain as a consequence of vaginal dryness and narrowing.

In a survey presented at the 2007 North American Menopause Society Congress, nearly 60% of middle-aged women (35 or more years) reported vaginal symptoms (vaginal dryness, pain during sex, vaginal narrowing, or vaginal shrinkage) or increased urinary tract infections. These conditions affected their sex life since they had stopped or avoided sex due to discomfort. The prevalence of vaginal complaints is also high in other latitudes and cultures.

Contrary to male sexual dysfunctions, which in most cases are organically related, female sexual dysfunctions are most likely to be due to psychogenic factors including depression/anxiety, prior physical or sexual abuse, stress, drug or alcohol abuse, interpersonal relationship issues, such as partner performance and technique, or lack of partnership quality. The regression model of the present series implicated not only personal variables but also partner ones as risk factors for female sexual dysfunction. Indeed, male sexual dysfunction (premature ejaculation and erectile dysfunction), low schooling and older age were significant risk factors for female sexual dysfunction, a situation that correlates with the observations of previous studies. Since the classical studies of Masters and Johnson, it is very well known that, in a relationship, the partner is always involved when sexual dysfunction is present. It is not infrequent that sexual dysfunction (male or female) initiates physical and emotional interactions between partners and has a negative effect on the development of the relationship. This situation can progressively increase couple dysfunction, causing a vicious circle. In this situation, women perceive their own sexual dysfunction and suffer the consequences of male disorders. Male sexual dysfunctions have been associated with a number of psychological and social variables. In a previous low-income series, high rates of alcohol abuse have been observed among men with sexual dysfunction, found to be the most important determinant of female sexual dysfunction. This was not the case in the present series, perhaps due to the economic differences, as already mentioned.

Male sexual dysfunctions, alcohol consumption and male infidelity may produce female anxiety, stress, depression and sexual dysfunction. Male unfaithfulness was found to be a risk factor for female sexual dysfunction in the present series. Unfaithful men consider their partners less sexually attractive and rate themselves as less happy than those not having extramarital affairs, although the two groups may have the same degree of sexual difficulty or sexual dissatisfaction. The general consensus is that male sexual dysfunction and behavioral aspects increase distress in many female partners; therefore, treatment should require a complete approach (men and women). Social and cultural issues may also be contributing factors to female sexual dysfunction. Some cultures teach women...
that sex is only for procreation, should not be enjoyed, or that the most important issue in a sexual encounter is pleasing the male partner, at her own expense. These issues are relevant in male-centric cultures.

Female mental health, stress-related factors, lifestyle factors, and drug use induce sexual dysfunction. Indeed, antidepressants, antihypertensives, anticholinergics, and other commonly prescribed drugs have been associated with female sexual dysfunction. Sexual dysfunction is very common among patients treated with selective serotonin re-uptake inhibitors. Antidepressant treatment-associated sexual dysfunction occurs in 30–70% of men and women treated for major depression with first- or second-generation agents, a principal reason for a three-fold increased risk of non-adherence that approaches 70% during the first months of treatment and leads to increased relapse, recurrence, disability and resource utilization by affected patients. In the present series, female antidepressant use was not found as a risk factor for sexual dysfunction, perhaps due to its low prevalence; however, psychotropic drug use has been implicated as a female sexual dysfunction risk factor among low-income Ecuadorian middle-aged women.

Menopausal HT use may be justified to improve quality of life, psychological well-being, vasomotor symptoms, sleeping problems and sexual function. Regarding the latter, HT use in this series was found to be a protective factor for female sexual dysfunction, which correlates to previous observations among climacteric populations. In one study, the FSFI score was found to be negatively affected by age and improved by HT use.

Finally, regarding study limitations, the cross-sectional nature is one to bear in mind and therefore results cannot be extrapolated to the whole Ecuadorian population or any other Latin American one. Despite this, it is the first study to use the FSFI to assess sexuality in a middle-aged Ecuadorian population, taking into account personal and partner data.

In conclusion, as assessed with the FSFI, the prevalence of female sexual dysfunction was determined to be relatively high in the studied population, in which several personal (female) and partner factors were important risk determinants for sexual dysfunction.

ACKNOWLEDGEMENT

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Conflict of interest

Nil.

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