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ORIGINAL ARTICLE

Prevalence of menopausal symptoms and severity related factors among mid-aged Paraguayan women as measured with the 10-item Cervantes Scale

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ABSTRACT

Objective: To determine the prevalence of menopausal symptoms and factors related to severity in mid-aged women.

Methods: Cross-sectional study in which 216 urban-living women from Asunción-Paraguay (40–60 years) were surveyed with the 10 item Cervantes Scale (CS-10) and a general questionnaire (personal and partner data).

Results: Median (interquartile range [IQR]) age of the sample was 48 [9] years, 48.1% were postmenopausal, 8.8% used menopausal hormone therapy, 39.4% psychotropic drugs, 43.5% had hypertension, 6.5% diabetes, 51.9% abdominal obesity, and 89.3% had a partner ($n = 193$). A history of sexual abuse was present in 2.8%. Median total CS-10 score was 8.5 [9.75]. Overall, 93.3% (180/193) of women having a partner were sexually active, with a median coital frequency of 8 times per month. According to the CS-10, the three most prevalent menopausal symptoms were: aching in muscles and/or joints (70.8%), anxiety and nervousness (70.8%) and hot flashes/night sweats (54.2%). Factors associated with higher CS-10 scores were: female age and educational level, marital status, menopausal status, and marital sexual aspects. Partner educational level was inversely correlated (rho Spearman coefficient) with CS-10 total scores. However, multiple linear regression analysis found that higher total CS-10 scores (more severe menopausal symptoms) negatively correlated to coital frequency and positively correlated with peri- and postmenopausal status, parity, sedentary lifestyle and a history of sexual abuse.

Conclusion: Menopausal symptoms in this mid-aged urban female Paraguayan sample were related to hormonal, sexual and other female aspects.

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Mid-age; menopausal symptoms; severity; factors; Paraguay; Cervantes Scale

Introduction

During the menopausal transition women present a wide array of symptoms that affect their quality of life [1]. Although this is the clinical expression of the hypoestrogenic status observed during the transition, which is common to all women worldwide, cultural factors and social concepts regarding this period of life may have influences on the daily expression of complaints and symptoms that may differ from one region of the world to another.

Paraguay is a hybrid society including both Spanish and Guarani cultural factors and myths that also may affect women's interpretation or perception of how the climacteric may affect their quality of life. We previously reported data regarding sexuality of mid-aged urban living women from Asuncion, the capital of Paraguay, in which lower sexual function was related to the menopausal status, coital frequency and partner age [2]; moreover, this decreased sexual function was associated to depressed mood [3]. In Paraguay, a relatively early age at menopause onset has been reported [4]. Despite this, there is no formal scientific report concerning how Paraguayan women live the menopausal transition.

Instruments used to measure the severity of menopausal symptoms have evolved from long questionnaires [5] to short, practical and easy to apply tools that can be used during clinical routine. In this sense, there is the 10-item version of the Cervantes Scale (CS-10) which was developed and used to assess menopausal symptoms in a large cohort of Colombian women with a close global correlation with the original long version [6]. Although it has been validated among Ecuadorian mid-aged women [7], we aimed at determining the prevalence of menopausal symptoms and factors related to severity by means of the CS-10 among mid-aged women from Paraguay.

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Methods

Study design and participants

This is a secondary data analysis of a cross-sectional study carried out at the Hospital Central Dr. Emilio Cubas of the Instituto de Prevision Social, Asunción, Paraguay that aimed at evaluating sexuality and depressive/menopausal symptoms, among other aspects in women aged 40–60 years. Data regarding sexuality and the correlation with depressive symptoms have been published previously [2, 3]. The present manuscript analyzes the assessment of menopausal symptoms. For this, urban-living women who were seeking annual gynecological checkup and/or were accompanying those doing so at the Gynecological Outpatient Unit of the mentioned hospital were surveyed (interviewer-administered) with the 10-item Cervantes Scale (CS-10), and a general questionnaire that contained personal and partner data. More details of the recruitment process of Paraguayan women who were part of this analysis within the Multicentric South American OMEGA II study are presented elsewhere [8]. Women who could not understand the survey, did not provide consent to participate, or had psychological or physical incapacity that imposed difficulties during the survey were excluded. The multicenter OMEGA II study protocol was reviewed and approved by the Ethics and Bioethics Committee of the Enrique C. Sotomayor Hospital of Guayaquil, Ecuador (IOR 00004658). In addition, the Paraguayan arm of the study was locally revised and approved by the Ethics Committee of the Dr. Emilio Cubas Hospital, Asunción Paraguay. All women were informed about the research (purposes and used tools) and written consent was obtained, that included the re-analysis of their data for subsequent publications.

Instruments

General questionnaire

Data of women. Female data of the survey included: age (years), parity, educational level (years), marital status, menopausal status (pre-, peri- or postmenopausal), partner status (yes/no), sexual status of the past 4 weeks (active or inactive) and coital frequency (per month). Data related to habits, lifestyle, health aspects and other issues included: current smoking habit, abdominal obesity (yes/no), sedentary lifestyle (yes/no), perceived healthy status (yes/no), hypertension (yes/no), diabetes (yes/no), current psychiatric consultation (yes/no), church attendance (any; yes/no) and a history of sexual abuse (yes/no). The current use of psychotropic drugs, oral contraceptives and hormone therapy (HT) or phytoestrogens for the menopause was also assessed. 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) [9]. Those with bilateral oophorectomy were considered as postmenopausal. Women performing less than 15 min of physical activity (i.e. walking) two times per week were defined as sedentary [10]. Abdominal circumference was measured in centimeters with an anthropometric tape placed directly on the narrowest point between the lower rib margin and the iliac crest on a plane perpendicular to the long axis of the body. Women with a waist circumference greater than 88 cm were defined as abdominally obese [11]. Partner data was provided by surveyed women, including: age (years), educational level (total years), perceived healthy status (yes/no), faithfulness (yes/no), alcohol abuse (yes/no), presence of sexual dysfunction (erectile dysfunction and/or premature ejaculation; yes/no). Definitions for the abuse of alcohol, erectile dysfunction and premature ejaculation have been published [12]. Women or men capable of performing daily routine activities were defined as healthy.

The 10-item Cervantes Scale (CS-10). The 10-item Cervantes Scale was used to assess the prevalence and intensity of

Table 1. Basal characteristics of all surveyed women and their partners.

Female data	*n* = 216
Age (years)	48 [9;44–53]
40–44	66 (30.6)
45–49	59 (27.3)
50–54	49 (22.7)
55–60	42 (19.4)
Parity	3 [1;2–3]
0	15 (6.9)
1 up to 3	153 (70.8)
>3	48 (22.3)
Educational level (years)	12 [5;9–14]
1 up to 6	39 (18.1)
7 up to 12	112 (51.9)
≥13	65 (30.0)
Marital Status	
Married	146 (67.6)
Single	23 (10.7)
Widowed	10 (4.6)
Separated	24 (11.1)
Cohabiting	13 (6.0)
Menopausal Status	
Premenopausal	80 (37.0)
Perimenopausal	32 (14.9)
Postmenopausal	104 (48.1)
Surgical menopause	23/104 (22.1)
Hysterectomy after natural menopause	2/81 (2.5)
Bilateral oophorectomy	3/104 (2.9)
Time since menopause (years)	6 [7;3–10]
CS-10 global score	8.5 [9.75; 3.25–13]
Drug use	
Hormonal therapy	19 (8.8)
Phytoestrogens	50 (23.1)
Psychotropics	85 (39.4)
Oral contraceptive	16 (7.4)
Current smoking	24 (11.1)
Abdominal circumference (cm)	88 [18;80–98]
Abdominal obesity (waist > 88 cm)	112 (51.9)
Sedentary	22 (10.2)
Hypertension	94 (43.5)
Diabetes	14 (6.5)
Perceived normal health status	171 (79.2)
Church attendance	102 (47.2)
Psychiatric consultation	12 (5.6)
History of sexual abuse	6 (2.8)
Currently has partner	193 (89.3)
Sexually active	180/193 (93.3)
Partner	*n* = 193
Age (years)	49 [10;44–54]
Educational level (years)	12 [4;10–14]
Alcohol abuse	96 (49.7)
Normal health status	160 (83.0)
Faithfulness	89 (46.1)
Erectile dysfunction	28 (14.5)
Premature ejaculation	46 (23.8)
Coital frequency (month)	8 [8;4–12]
0	13 (6.7)
1 up to 9	109 (56.5)
10 up to 19	62 (32.1)
20 up to 24	9 (4.7)

Data are presented as medians [interquartile ranges; p25–p75], frequencies *n* (%).

Table 2. Presence and intensity of menopausal symptoms among studied women ($n=216$) as determined with the 10-item Cervantes Scale.

		Presence	Intensity					
			0	1	2	3	4	Severe to very
	The CS-10	Present	Not present	Mild	Moderate	Severe	Very severe	severe
CS-1	I have hot flushes (and/or night sweats)	117 (54.2)	99 (45.8)	50 (23.2)	42 (19.4)	25 (11.6)	0 (0.0)	25 (11.6)
CS-2	I feel my heart beating quickly and out of control	93 (43.1)	123 (56.9)	36 (16.7)	37 (17.1)	20 (9.2)	0 (0.0)	20 (9.2)
CS-3	I cannot get sufficient sleep (difficulty in sleeping)	104 (48.1)	112 (51.9)	38 (17.6)	45 (20.8)	19 (8.8)	2 (0.9)	21 (9.7)
CS-4	Aching in muscles and/or joints	153 (70.8)	63 (29.2)	29 (13.4)	63 (29.2)	59 (27.3)	2 (0.9)	61 (28.2)
CS-5	I feel tired since I get up (feeling a lack of energy)	72 (33.3)	144 (66.7)	31 (14.3)	26 (12.0)	14 (6.5)	1 (0.5)	15 (7.0)
CS-6	I have the perception of being useless	30 (13.9)	186 (86.1)	17 (7.9)	9 (4.1)	4 (1.9)	0 (0.0)	4 (1.9)
CS-7	I feel anxious or nervous	153 (70.8)	63 (29.2)	33 (15.3)	67 (31.0)	49 (22.7)	4 (1.8)	53 (24.5)
CS-8	I am afraid of performing physical efforts because my urine leaks	70 (32.4)	146 (67.6)	11 (5.0)	43 (20.0)	16 (7.4)	0 (0.0)	16 (7.4)
CS-9	I have vaginal discomfort and dryness	91 (42.1)	125 (57.9)	25 (11.6)	53 (24.5)	12 (5.5)	1 (0.5)	13 (6.0)
CS-10	I have noticed skin dryness (changes in skin appearance, texture or tone)	104 (48.1)	112 (51.9)	35 (16.2)	53 (24.5)	15 (6.9)	1 (0.5)	16 (7.4)

menopausal symptoms. This tool evaluates 10 symptoms (Table 1) which are scored in a Likert fashion as zero (not present); one (mild), two (moderate), three (severe) or four (very severe). Scores obtained for each of the 10 items are then summed up to create a total CS-10 score, which can range from 0 to 40, with higher scores indicating more severe menopausal symptoms. This tool is a short version of the 29-item original scale which was developed from a large cohort of Colombian mid-aged women [6] and further applied and validated among Ecuadorian [7] and Portuguese women [13].

Sample size. Sample size calculation was performed using the EPI-INFO 6.04 statistical package. A minimal sample size of 212 women was determined, considering that the center covers an approximate female population of 5,000 between 40 and 60 years and assuming that 50% of surveyed women would present increased menopausal symptoms [7] with a 10% desired precision and a 95% confidence level.

Statistical analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (Version 21.0, IBM, SPSS, Armonk, New York, USA). The data are presented as medians, interquartile ranges (IQR), percentiles (p25 and p75), frequencies, percentages, coefficients, beta coefficients and 95% confidence intervals. Internal consistency of the CS-10 was assessed by computing Cronbach's alpha coefficient values. Overall reliability was high, Cronbach's alpha = 0.85. Moreover, all subscales had high reliability, given that the Cronbach's alpha was between 0.829 and 0.845 even if items were removed. The Kolmogorov–Smirnov test was used to determine the normality of data distribution and according to this non-normal continuous data (non-parametric data) were compared with the Mann–Whitney *U* test (two independent samples) or the Kruskal–Wallis test (various independent samples). Rho Spearman coefficients were calculated to determine correlations between total CS-10 scores and various numeric variables. Multiple linear regression analysis was performed to evaluate factors related to higher total CS-10 scores (higher scores more severe symptoms). For this, independent variables (female and partner), achieving a $p=0.10$ during bivariate analysis, were entered into the model using a backward stepwise procedure. The constructed model considered total CS-10 scores as the dependent variable. For all calculations, a p value of <0.05 was considered as statistically significant.

Results

During the study period, a total of 216 women were invited to complete the survey of which none declined participation. General baseline characteristics of surveyed women and their partners are presented in Table 1. Median [IQR] age of all surveyed women was 48.0 [9.0] years, 48.1% were postmenopausal, 8.8% used HT, 39.4 psychotropic drugs, 43.5% had hypertension, 6.5% diabetes and 51.9% abdominal obesity. A total of 89.3% of the women had a partner ($n=193$) among which sexual activity was high (93.3%, 180/193 or 83.3%, 180/216). Coital frequency ranged from 1 to 24 per month (median 8). Regarding the partner, 14.5% had erectile dysfunction and 23.8% had premature ejaculation.

Symptoms (items) composing the CS-10 are presented in Table 2. According to the CS-10 the three most prevalent menopausal symptoms were: aching in muscles and/or joints (70.8%), anxiety and nervousness (70.8%) and hot flashes/night sweats (54.2%). These were also the most intense (rated as severe to very severe): aching in muscles and/or joints (28.2%), anxiety and nervousness (24.5%) and hot flashes/night sweats (11.6%) (Table 2). Median total CS-10 score was 8.5 [9.75].

Upon bivariate analysis, factors associated with higher median total CS-10 scores were: female age and educational level, marital status, menopausal status, parity, psychotropic drug use, phytoestrogen use, history of sexual abuse, sedentary lifestyle, hypertension, coital frequency and partner age, healthy status, and the presence of sexual dysfunction (erectile dysfunction and premature ejaculation) (Table 3).

Rho Spearman coefficients between total CS-10 scores and various numeric female and partner variables ($n=193$) are presented in Table 4. Significant positive correlations were observed with female age, parity and partner age; whereas this correlation was inverse for female and partner educational level and coital frequency (Table 4).

Multiple linear regression analysis was used to obtain a best-fit model determining factors correlating with higher total CS-10

Table 3. Median total CS-10 scores according to Basal characteristics of all surveyed women and their partners*.

Female data	*n* = 216
Age (years)	
40–44	2.5 [7; 0–7]
45–49	9 [9; 4–13]
50–54	12 [10; 7–17]
55–60	12.5 [7.5; 7.5–15]
	p < 0.001
Educational level (years)	
1 up to 6	10 [8; 6–14]
7 up to 12	9.5 [10; 4–14]
≥13	5 [8.5; 1.5–10]
	p = 0.001
Marital status	
Married	9 [10; 4–14]
Single	7 [14; 3–17]
Widowed	14 [8; 7.75–15.75]
Separated	4.5 [6.75; 0.25–7]
Cohabiting	8 [9; 3.5–12.5]
	p = 0.006
Menopausal status	
Premenopausal	4 [9; 0–9]
Perimenopausal	7.5 [9.75; 4–13.75]
Postmenopausal	11 [8.75; 6.25–15]
	p < 0.001
Parity	
0	4 [6; 2–8]
1 up to 3	7 [10; 3–13]
>3	11.5 [8.75; 7–15.75]
	p = 0.002
Psychotropic drugs	
No	6 [10; 2–12]
Yes	11 [10; 5.5–15.5]
	p < 0.001
Phytoestrogens	
No	6 [10; 3–13]
Yes	13 [9.25; 7–16.25]
	p < 0.001
History of sexual abuse	
No	8 [10; 3–13]
Yes	17 [8.25; 13–21.25]
	p = 0.003
Sedentary	
No	7 [10; 3–13]
Yes	11.5 [10.5; 6.75–17.25]
	p = 0.007
Hypertension	
No	6 [11.25; 1.75–13]
Yes	10 [8; 6–14]
	p = 0.001
Partner	*n* = 193
Age (years)	
<49	5 [9; 1–10]
≥49	10 [9.5; 5.25–14.75]
	p < 0.001
Coital frequency (month)	
0	13 [7.5; 8.5–16]
1 up to 9	9.5 [10; 4–14]
10 up to 19	4 [9; 1–10]
20 up to 24	3 [5; 0.5–5.5]
	p < 0.001
Perceived health status	
No normal	11 [6.5; 8.5–15]
Normal	6.5 [10; 3–13]
	p = 0.007
Erectile dysfunction	
No	7 [10; 3–13]
Yes	14 [10.25; 7–17.25]
	p = 0.002
Premature ejaculation	
No	7 [10; 3–13]
Yes	11.5 [10.25; 4.75–15]
	p = 0.008

Data are presented as medians [interquartile ranges; p25–p75].
*Only significant variables are presented.

Table 4. Rho Spearman Coefficients between total CS-10 scores and various numeric female and partner variables (*n* = 193).

Parameters	Coefficient	*p* value
Female age	0.490	0.000
Female educational level	−0.241	0.001
Parity	0.303	0.000
Coital frequency	−0.453	0.000
Partner age	0.453	0.000
Partner educational level	−0.195	0.006

cores; therefore, more severe menopausal symptoms (Table 5). Regression analysis found that higher total CS-10 scores negatively correlated with coital frequency and positively correlated with peri- and postmenopausal status, parity, sedentary lifestyle and a history a sexual abuse.

Discussion

To date, there is no significant scientific information regarding medical aspects of the menopause among Paraguayan women; except results that are pooled into the reports of various multinational Latin American studies of the research network for the study of the climacteric (REDLINC), assessing age at menopause onset, or sleep disorders, diabetes, HT use during the female menopausal transition [14–17].

The first REDLINC study, that aimed at determining age at menopause onset in urban cities of Latina America, found that median age at menopause was 48.6 years, which is in general lower than that observed among developed countries, where country income and geographical location (high altitude), as well as poverty conditions (low education) were related factors [14]. Interestingly, in this study the lowest age at menopause was observed for Asunción - Paraguay, 43.8 years [14].

Assessment of menopausal symptoms in mid-aged Latin American Ecuadorian women using the CS-10 revealed that the three most prevalent menopausal symptoms were: muscle and joint pains (88.5%), hot flushes (77.6%) and skin dryness (71.4%). Multiple linear regression analysis found that postmenopausal status, parity, unhealthy perceived status, psychotropic drug use, partner erectile dysfunction, lower coital frequency and living at high altitude were related to higher CS-10 global scores [7]. Moreover, in a study of mid-aged Colombian women, multiple linear regression analysis determined that higher global CS-10 scores (worse quality of life) correlated with age, parity, years since menopause, body mass index, ethnics (black) and smoking habit [6]. The present study showed that parity was a significant factor that exerts an effect on the intensity of menopausal symptoms. Previous studies have shown that the risk of moderate and severe menopausal symptoms is increased in nulliparous women or in those having 3 or more births compared with those having 1 or 2 births [18–20]. While a lower risk of urogenital symptoms has been found in women with 1 and 2 births (compared with nulliparous and multiparous women), previous studies have indicated that increased parity correlates with urogenital symptoms. It has been reported that the risk of developing stress incontinence increased with obesity and parity [21]. Multiple pregnancies are a significant risk factor for urinary incontinence [22]. Vaginal delivery has shown to be an independent risk factor for pelvic organ prolapse (odds ratio 2.92, 95% CI = 1.19–7.17) compared with nulliparity [23]. Clinically significant pelvic organ prolapse has been found in 3.6% of nulliparous, 6.5% of primiparous, 22.7% of secondiparous, 32.9% of triparous, and 46.8% of tetraparous women [24]. The association between vaginal delivery and urinary incontinence lies in structural changes in the pelvic floor as well as repeated injury

Table 5. Factors relating to higher CS-10 global scores in mid-aged women: multiple linear regression analysis.

Factors	Beta coefficient (B)	Standard errors (SE B)	Standardized beta coefficients (β)	*t*	*p*-value	95% confidence interval
Perimenopausal status	2.842	1.185	0.154	2.398	0.017	0.504 to 5.181
Postmenopausal status	3.682	0.937	0.274	3.928	0.000	1.833 to 5.531
Coital frequency (month)	−0.396	0.083	−0.306	−4.759	0.000	−0.561 to −0.232
Parity	1.105	0.295	0.221	3.74	0.000	0.522 to 1.688
History of sexual abuse	5.449	2.504	0.129	2.176	0.031	0.509 to 10.388
Sedentary lifestyle	4.253	1.477	0.17	2.88	0.004	1.34 to 7.166

r^2=0.36; adjusted r^2=0.34, p=0.004.

in muscles, nerves, and connective tissue of the pelvic floor during childbirths [25]. Concerning the impact of menopausal status on symptomatology, it has been shown that vasomotor and somatic symptoms are more prevalent during the menopausal transition and postmenopausal years compared to late reproductive stage [26]; fact that is in agreement with our study that found higher global CS-10 scores among peri- and postmenopausal women. Our study found an inverse correlation between monthly coital frequency and menopausal symptoms. In alignment with this, it has been reported that menopausal women with penile-vaginal intercourse display less menopausal symptoms, as assessed with the Menopause Rating Scale, when compared to those who do not report coital sexual activity [27].

Sedentary lifestyle was also associated with more intense menopausal symptoms in our multivariate analysis. Physical activity has shown to decrease the intensity of menopausal symptoms [28–32]. It seems that physical exercise modulates the secretion of norepinephrine, dopamine and serotonin. These neurotransmitters are involved in pleasure and satisfaction, anxiety and sleep quality [33]. Serotonin is involved in most menopausal symptoms, mainly in sleep quality [34]. Serotonin could help promote sleep, probably through inhibiting supraspinal neuronal networks [35]. It is well known that serotonin levels are decreased during the menopausal transition. On the other hand, there is evidence supporting the stimulatory effect of exercise on serotoninergic pathways [28]. Moreover, physical activity facilitates the secretion of opioids and endocannabinoids that exert a well-documented anxiolytic and sedative effect, decreasing pain sensibility, thus improving menopausal symptoms such as mood and muscle/joint problems [36].

In our study a history of sexual abuse was associated with more intense menopausal symptoms. A history of childhood abuse has been associated with menopausal symptoms in the Study of Women's Health Across the Nation Mental Health Study [37]. The link between increased vasomotor symptoms and childhood abuse could be the permanent alterations in the hypothalamic–pituitary–gonadal axis caused by sexual abuse. These neural pathways are under adrenergic and serotonergic neurotransmission, while vasomotor symptoms are similarly manifestations of altered adrenergic and serotonergic pathways [38–40]. Moreover, history of sexual abuse in childhood has been associated with decline in general health, sleep disturbances, urogenital symptoms, fatigue, mental health impairment and sexual dysfunction [37], with these adverse effects persisting for decades in adulthood [41,42]. A history of intimate partner violence reported over a recent 5-year span has been associated with negative mental and sexual health outcomes but not with vasomotor symptoms. It has been shown that these symptoms are more pronounced in women with more recent experience (within the last year) of sexual abuse [43]. This difference in vasomotor symptomatology could be attributed to the lack of the organizational effect that early-life experiences exert on adrenergic and serotonergic neurotransmission, which are implicated in the development of vasomotor symptomatology. Consequently, contrary to childhood sexual abuse, a history of sexual abuse in adulthood does not correlate with menopausal symptoms.

Limitations and strengths

Regarding the limitations of this study, *first*, we can mention its cross sectional design that only allows determining associations and not causality; *second,* surveyed women were urban-living who attend the Social Security health care system, therefore, the sample is not representative of the entire mid-aged Paraguayan female population. Despite these limitations, to the best of our knowledge, the present study is the first to report data related to menopausal symptoms of mid-aged Paraguayan women using a rapid screening tool, the CS-10. This can be considered a potential strength, moreover if we take into account that until now, menopause related information from this population is pooled within reports of various multicentric Latin American studies, which have assessed age at menopause onset, sleep disorders, diabetes, HT use, but not exclusively menopausal symptoms. Important to mention is the fact that we have already reported data from this same cohort related to depressive symptoms (as part of the multicentric study) and sexuality and its correlation to depressive symptoms, but not menopausal symptoms. In this sense, there is a need for further studies to better define correlates of menopausal symptoms (and other aspects) among Paraguayan mid-aged women, taking into account other female (i.e. ethnicity, sociodemographic background and co-morbidity) and partner aspects.

In conclusion, as determined with the CS-10, menopausal symptoms of this mid-aged urban female Paraguayan sample were related to hormonal, sexual and other female aspects.

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Author contributors

F. R. Perez-Lopez, P. Chedraui and A.W.D Gavilanes were involved in study conception and design. S. C. Sanchez carried out the surveys. P. Chedraui and A. Armeni performed the statistical analysis. F. R. Perez-Lopez and P. Chedraui performed drafting of the manuscript. All authors were involved in critically revising the manuscript for its intellectual content, and the final approval of the manuscript was performed by all authors.

Disclosure statement

The authors report no conflicts of interest and are alone responsible for the writing and content of this document. The preliminary data of this study were presented by A. Armeni as an oral presentation at the 12th European Congress on Menopause and Andropause, 15–17 May 2019, Berlin, Germany.

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