

## Quality of life in a large cohort of mid-aged Colombian women assessed using the Cervantes Scale

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### Abstract

**Objective:** The aim of this study was to assess quality of life (QoL) in a cohort of mid-aged Colombian women using the Cervantes Scale (CS).

**Methods:** In this cross-sectional study, 1,739 healthy women aged 40 to 59 years were asked to simultaneously fill out the CS and a questionnaire containing general female demographic data. The CS includes four domains: menopause and health (15 items), psychological (9 items), sexuality (4 items), and couple relationship (3 items). In addition, the menopause and health domain includes three subdomains: vasomotor symptoms, health, and aging. The global CS score may range from 0 to 155 (from better to worse QoL).

**Results:** Multiple linear regression determined that CS scores (global and domains) significantly increased (therefore, worse QoL) with age, menopause status, body mass index, parity, race, and marital and working status. The CS displayed a high internal consistency as Cronbach  $\alpha$  values for the global and domain scores were above 0.80.

**Conclusions:** This is the first study to report QoL assessment using the CS among mid-aged Latin American women from Colombia in whom age, menopause status, body mass index, and other personal factors influenced QoL.

**Key Words:** Quality of life – Menopause – Cervantes Scale – Climacteric symptoms – Colombian women – Aging – Body mass index.

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Quality of life (QoL) is a multidimensional concept that has been used in different fields of knowledge: sociology, occupational functioning, politics, marketing, climate, and health care. Health-related QoL scales are tools aimed to assess factors and circumstances that affect comfort

and subjective status in relation to disease or a given condition.<sup>1</sup> These tools may assess symptoms or complaints and psychological and environmental aspects that are subjective well-being indicators related to happiness and expectations or even mortality.<sup>2,3</sup> The heterogeneity of a given instrument may relate to diverse medical views regarding health care, cultural and anthropological influences, and media attitudes, among others.<sup>4-7</sup>

Because the menopausal transition is associated with symptoms and complaints that may be reported for many years, specific menopause-related QoL scales have been designed to appropriately study women's well-being during this specific life phase. Several QoL tools specifically related to menopause have been proposed, which assess psychological, emotional, and relationship factors.<sup>8-10</sup> Most of these instruments have been initially developed in English and were then translated and validated to other languages.

The Cervantes Scale (CS) is a QoL instrument initially developed in Spanish that assesses the health status of mid-aged women (premenopausal and postmenopausal). It consists of 31 Likert-type scored items grouped into four domains: menopause and health, psychological, sexuality, and couple relationship.<sup>11-15</sup> These items were selected from a longer list previously tested in Spanish women during the validation phase. The final questionnaire was applied to women aged 45 to 64 years, divided into four educational levels. To date, the

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CS has been used either completely, such as among the original female cohort<sup>11,13</sup> and small postmenopausal series,<sup>12,14</sup> or partially, using only specific items or domains.<sup>15</sup> Results from mid-aged female QoL studies may vary and depend on local life conditions and cultural influences. Using a tool designed in the Spanish language may aid in obtaining vital information from populations speaking this language and avoid the limitations of translating an instrument originally designed for Anglo populations. Therefore, the aim of the present study was to assess QoL in a large cohort of mid-aged Colombian women using the CS.

## METHODS

### Design and participants

A cross-sectional study was carried out from February 2009 to March 2011 with the aim of assessing QoL among otherwise healthy mid-aged Mestizo and Afro-descendent Colombian women aged 40 to 59 years using the CS and a questionnaire containing personal data. Mestizos (also called Hispanic) are not pure indigenous Amerindians, Afro-descendent, or white yet have multiethnic components of the major ethnicities blended in Colombia in the last 500 years as a consequence of numerous and diverse migrations. Afro-descendents of this study were direct descendants of African slaves who settled in Colombia during the colonial days who were not blended with other ethnic groups. Women were recruited from urban and surrounding peripheral areas (Barranquilla and Cartagena in the Atlantic coast and Cali in the Pacific coast), as well as from rural regions of the Bolivar (North) and Valle (South) Colombian departments. Despite being of various sites, they share a common language and Hispanic cultural background. Therefore, the use of a validated tool designed in the Spanish language is important to compare obtained data with those of other Latin American Spanish-speaking populations.

Door-to-door visits were carried out by trained personnel in the cited communities, seeking women fitting the inclusion criteria. Once participants were identified, they were informed about the research, its purpose, and the CS and its content and were requested to give written consent of participation. Exclusion criteria included women who did not consent to participate, had surgery in the last 6 months, had cancer or any other serious illness, were under chronic treatments, were incapable of understanding the items included in the study, or did not complete the sociodemographic questionnaire.

The study protocol of this research was approved by the institutional review board of the Cartagena University, Cartagena, Colombia and was carried out in accordance with the principles of the Declaration of Helsinki.

### Survey

Personal data of the questionnaire included age, parity, menopause status, current use of hormone therapy (HT), educational level (in years), marital status, and current smoking habit. Menopause status was defined using criteria of the Stages of Reproductive Aging Workshop: premenopausal (women

having regular menses), perimenopausal (irregularities >7 d from their normal cycle), and postmenopausal (no menses in the last 12 months).<sup>16</sup> Those with bilateral oophorectomy were considered postmenopausal.

In accordance with the National Center for Health Statistics, women capable of performing daily routine activities were defined as healthy.<sup>17</sup> Body mass index (BMI) was calculated as weight in kilograms divided by squared height in meters. BMI values were categorized as low (<18.50 kg/m<sup>2</sup>), normal (18.50-24.99 kg/m<sup>2</sup>), or increased (≥25.00 kg/m<sup>2</sup>). Increased BMI values were used to define women as being overweight (≥25.00-29.99 kg/m<sup>2</sup>) or obese (≥30.00).<sup>18</sup>

### The CS

The CS is a questionnaire that measures menopausal health-related QoL among mid-aged women during the previous 4 weeks. It contains 31 items or questions (positive and negative ones) grouped into four categories or domains: "Menopause and Health" (15 items including vasomotor symptoms, health, and aging), "Psychological" (9 items), "Sexuality" (4 items), and "Couple Relationship" (3 items). Each item is scored in a Likert fashion from 0 to 5; the degree is from better to worse for "negative questions" (items 1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 14, 16, 17, 18, 19, 21, 23, 24, 25, 27, 28, 29, and 31). Scores are inverted for "positive questions" (items 4, 8, 13, 15, 20, 22, 26, and 30). The items are then summed up to create a global score and four different domain scores. In addition, the menopause and health domain includes three subdomains: vasomotor symptoms, health, and aging. More details on the scoring system of the scale may be found elsewhere.<sup>11</sup>

Higher global and domain CS scores denote worse QoL.<sup>11,14</sup> Global CS scores can range from 0 to 155 points (from better to worse QoL). Internal consistency of the instrument (global CS and its domains) was assessed, computing Cronbach coefficient  $\alpha$  values.

### Statistical analysis

Statistical analysis was performed using the SPSS statistical package (version 19.0 for Windows; SPSS, Chicago, IL). Data are presented as medians and interquartile ranges (IQR), percentages, odds ratios, and CIs. The Kolmogorov-Smirnov test was used to determine the normality of data distribution. According to this, nonparametric continuous data were compared using the Mann-Whitney *U* test (two independent samples) or the Kruskal-Wallis test (various independent samples). The  $\chi^2$  test was used to compare percentages. Spearman  $\rho$  coefficients were calculated to determine correlations between CS scores (total and domains) and various numeric variables (bivariate analysis).

Multiple linear regression analysis was performed to assess variables related to higher CS scores (global and domains) and, therefore, worse QoL. Dependent variables were the global and domain scores of the CS. One model was generated for each score of the CS and was constructed from significant variables provided from bivariate analysis. Independent variables included in the regression model were age, parity, menopause

status, race/ethnicity, BMI, smoking habit, educational level, HT use, and marital and employment status. Entry of variables into the model was performed using a stepwise procedure. A *P* value less than 0.05 was considered statistically significant.

**RESULTS**

During the study period, a total of 1,844 women were asked to participate. Of these, 3% denied participation, and data for 2.7% of the women were incomplete, leaving 1,739 surveys for final analysis. The median (IQR) age and educational level

was 48 (10) and 10 (8) years, respectively. Surveyed women had a median parity of 3 (2). Of the participants, 53.5% were housewives, 69.1% were of Mestizo ethnicity, 6.7% were current smokers, and only 6.6% were receiving HT for menopause. In relation to menopause, 38.9% were postmenopausal. For the entire sample, median (IQR) CS scores were as follows: global, 48.0 (22.0); menopause and health domain, 20.0 (18.0); psychological domain, 5.0 (10.0); sexuality domain, 10.0 (11.0); and couple relationship domain, 11.0 (9.0) (Table 1). Median global CS scores significantly increased with age, parity, menopause status, and BMI index values, being lower among those

**TABLE 1.** Basal characteristics and CS scores (global and domains) of the studied population (N = 1,739)

	n (%)	Age	Global	Menopause and health domain	Vasomotor symptom	Health	Aging	Psychological domain	Sexuality domain	Couple relationship domain
All	1,739	48.0 (10.0)	48.0 (22.0)	20.0 (18.0)	4.0 (8.0)	5.0 (7.0)	10.0 (9.0)	5.0 (10.0)	10.0 (11.0)	11.0 (9.0)
Age, y										
<45	526 (30.2)	42.0 (3.0)	44.0 (17.0)	13.5 (14.0)	1.0 (5.0)	3.0 (7.0)	7.5 (6.0)	2.0 (7.0)	15.0 (11.0)	13.0 (7.0)
45-54	852 (49.0)	48.0 (5.0)	50.0 (22.0)	22.0 (17.0)	5.0 (7.0)	5.0 (6.0)	11.0 (8.0)	6.0 (10.0)	10.5 (11.0)	11.0 (9.0)
55-59	361 (20.8)	57.0 (2.0)	50.0 (25.0)	26.0 (20.0)	6.0 (7.0)	7.0 (8.0)	13.0 (9.0)	7.0 (11.0)	6.0 (10.0)	9.0 (10.0)
<i>P</i> <sup>a</sup>		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Parity										
Nulliparous	104 (6.0)	45.0 (9.0)	46.5 (28.0)	15.5 (18.0)	3.0 (6.0)	4.0 (8.0)	9.0 (7.0)	6.0 (11.0)	8.0 (12.0)	8.0 (9.0)
1-2	722 (41.5)	47.0 (10.0)	47.0 (22.0)	18.0 (17.0)	4.0 (8.0)	5.0 (8.0)	9.0 (9.0)	4.0 (10.0)	10.0 (12.0)	11.0 (8.0)
≥3	913 (52.5)	49.0 (10.0)	50.0 (22.0)	21.0 (17.0)	4.0 (8.0)	5.0 (7.0)	11.0 (8.0)	5.0 (9.0)	11.0 (11.0)	12.0 (8.0)
<i>P</i>		<0.0001	<0.0001	<0.0001	<0.0001	0.07	0.002	0.26	0.003	<0.0001
Mestizo										
Yes	1,202 (69.1)	48.0 (10.0)	48.0 (23.0)	20.0 (18.0)	3.0 (7.0)	5.0 (7.0)	11.0 (9.0)	6.0 (10.0)	10.0 (12.0)	11.0 (9.0)
No	537 (30.9)	48.0 (10.0)	49.0 (21.0)	20.0 (16.0)	6.0 (8.0)	4.0 (7.0)	9.0 (7.0)	3.0 (8.0)	13.0 (12.0)	13.0 (7.0)
<i>P</i>		0.13	0.14	0.63	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Menopause status										
Premenopausal	614 (35.3)	45.0 (6.0)	47.0 (23.0)	15.0 (15.0)	3.0 (7.0)	4.0 (7.0)	8.0 (8.0)	3.0 (8.0)	14.0 (10.0)	13.0 (7.0)
Perimenopausal	448 (25.8)	45.0 (6.0)	47.0 (21.0)	18.0 (13.0)	2.0 (6.0)	5.0 (6.0)	10.0 (7.0)	3.0 (8.0)	12.0 (10.0)	13.0 (7.0)
Postmenopausal	677 (38.9)	54.0 (7.0)	51.0 (23.0)	25.0 (19.0)	6.0 (7.0)	7.0 (8.0)	13.0 (8.0)	8.0 (11.0)	8.0 (11.0)	10.0 (10.0)
<i>P</i>		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Hormone therapy										
Yes	115 (6.6)	50.0 (12.0)	51.0 (22.0)	21.0 (16.0)	6.0 (6.0)	4.0 (7.0)	11.0 (9.0)	5.0 (9.0)	9.0 (12.0)	11.0 (8.0)
No	1,624 (93.4)	48.0 (10.0)	48.0 (22.0)	20.0 (18.0)	4.0 (8.0)	5.0 (7.0)	10.0 (9.0)	5.0 (10.0)	10.0 (11.0)	11.0 (9.0)
<i>P</i>		<0.0001	0.28	0.14	0.003	0.77	0.26	0.52	0.37	0.20
BMI, kg/m <sup>2</sup>										
<18.50	58 (3.3)	45.5 (13.0)	42.0 (22.0)	20.0 (21.0)	1.0 (4.0)	6.0 (10.0)	11.0 (10.0)	5.0 (12.0)	8.0 (8.0)	8.0 (7.0)
18.50-24.99	749 (43.1)	46.0 (9.0)	46.0 (21.0)	17.0 (17.0)	2.0 (6.0)	5.0 (7.0)	9.0 (8.0)	4.0 (8.0)	11.0 (12.0)	11.0 (8.0)
25-29.99	684 (39.3)	49.0 (10.0)	51.0 (21.0)	23.0 (16.0)	5.5 (8.0)	5.0 (7.0)	10.0 (8.0)	5.5 (11.0)	10.0 (12.0)	11.0 (8.0)
≥30	248 (14.3)	50.0 (11.0)	51.0 (25.0)	23.0 (20.0)	6.0 (9.0)	7.0 (8.0)	11.0 (8.0)	5.0 (11.0)	11.0 (11.0)	12.0 (8.0)
<i>P</i>		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.003	0.04	0.03
Smoking habit										
Yes	117 (6.7)	49.0 (12.0)	47.0 (29.0)	21.0 (21.0)	4.0 (8.0)	6.0 (7.0)	11.0 (10.0)	6.0 (13.0)	6.0 (11.0)	8.0 (11.0)
No	1,622 (93.3)	48.0 (10.0)	48.0 (22.0)	20.0 (17.0)	4.0 (8.0)	5.0 (7.0)	10.0 (9.0)	5.0 (9.0)	11.0 (12.0)	12.0 (8.0)
<i>P</i>		0.003	0.26	0.22	0.62	0.03	0.34	<0.0001	<0.0001	<0.0001
Education, y										
<5	271 (15.6)	50.0 (11.0)	49.0 (24.0)	23.0 (18.0)	5.0 (9.0)	6.0 (6.0)	11.0 (8.0)	5.0 (9.0)	9.0 (9.0)	10.0 (10.0)
5-10	621 (35.7)	49.0 (10.0)	50.0 (22.0)	23.0 (17.0)	5.0 (8.0)	6.0 (8.0)	11.0 (9.0)	6.0 (10.0)	10.0 (12.0)	11.0 (8.0)
>10	847 (48.7)	46.0 (49.0)	47.0 (20.0)	17.0 (15.0)	3.0 (7.0)	4.0 (7.0)	9.0 (8.0)	4.0 (9.0)	12.0 (12.0)	12.0 (8.0)
<i>P</i>		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.14
Married/cohabiting										
Yes	1,206 (69.4)	47.0 (8.0)	51.0 (20.0)	20.0 (17.0)	4.0 (7.0)	5.0 (7.0)	10.0 (8.0)	5.0 (9.0)	13.0 (10.0)	13.0 (5.0)
No	533 (30.6)	48.0 (12.0)	40.0 (27.0)	18.0 (19.0)	4.0 (8.0)	5.0 (8.0)	9.0 (10.0)	5.0 (12.0)	5.0 (10.0)	5.0 (8.0)
<i>P</i>		0.01	<0.0001	0.01	0.39	0.15	0.002	0.15	<0.0001	<0.0001
Employed										
Yes	768 (44.2)	47.0 (10.0)	48.0 (21.0)	19.0 (15.0)	4.0 (7.0)	5.0 (6.0)	9.0 (8.0)	4.0 (9.0)	12.0 (12.0)	12.0 (8.0)
No	971 (55.8)	48.0 (10.0)	49.0 (23.0)	21.0 (18.0)	4.0 (8.0)	6.0 (7.0)	11.0 (8.0)	5.0 (11.0)	10.0 (12.0)	11.0 (9.0)
<i>P</i>		<0.0001	0.16	0.003	0.17	<0.0001	<0.0001	<0.0001	<0.0001	0.002

Data are presented as median (interquartile range) or n (%).  
 BMI, body mass index.  
<sup>a</sup>*P* values as determined with the Kruskal-Wallis or the Mann-Whitney *U* test.

**TABLE 2.** Spearman correlation coefficient matrix and Cronbach  $\alpha$  for the CS scores: global and domains

	Global	Menopause and health domain	Psychological domain	Sexuality domain	Couple relationship domain	Cronbach $\alpha$
Global	1					0.896
Menopause and health domain	0.837 <sup>a</sup>	1				0.838
Psychological domain	0.625 <sup>a</sup>	0.684 <sup>a</sup>	1			0.804
Sexuality domain	0.258 <sup>a</sup>	-0.174 <sup>a</sup>	-0.333 <sup>a</sup>	1		0.845
Couple relationship domain	0.351 <sup>a</sup>	-0.042	-0.265 <sup>a</sup>	0.787 <sup>a</sup>	1	0.838

CS, Cervantes Scale.

<sup>a</sup> $P < 0.0001$ .

employed and with higher education. Additional information about median domain scores and studied variables are included in Table 1.

Table 2 presents calculated coefficient correlations between global and domain scores of the CS. There was a positive and significant correlation between the global CS score and all domain scores. Menopausal and health and the psychological domain scores displayed a significant inverse correlation with the sexuality and couple relationship domain scores. Sexuality and couple relationship domain scores were positively correlated. Computed Cronbach  $\alpha$  for the global CS and its domains ranged from 0.804 to 0.896. These figures reflect the general consistency of the tool (Table 2).

Multiple linear regression analysis was used to obtain best-fit models determining the factors correlating with global and domain scores of the CS and QoL (Table 3). Marital status, menopause status, and BMI values positively related to higher global CS scores. As observed in Table 3, age, marital and

employment status, BMI values, smoking habit, and race related to higher scores in several of the domains of the CS.

### DISCUSSION

From a health perspective, QoL has been defined as the individual's perception of the impact that a health condition, disease, or its treatment may have over daily life.<sup>19,20</sup> Because of the fact that general health-related QoL-assessing tools lack specificity, several instruments have been proposed to assess QoL among mid-aged women. Most of these have been designed in English and subsequently translated and validated in other languages. Contrary to this, the CS was developed and validated among Spanish-speaking mid-aged women. During its development, an initial working questionnaire was elaborated that considered items of a wide range of previous scales and indexes addressing menopause-related symptoms, prevalent general disorders or conditions found among mid-aged

**TABLE 3.** Factors relating to CS scores: multiple linear regression analysis

CS	Regression coefficients	SE	95% CI	P value
Global score				
Married <sup>a</sup>	12.94	0.95	11.09-14.80	<0.001
Postmenopause stage <sup>a</sup>	2.72	0.50	1.73-3.72	<0.001
Body mass index	0.68	0.10	0.49-0.88	<0.001
Menopause and health domain				
Postmenopause stage <sup>a</sup>	2.46	0.40	1.67-3.25	<0.001
Married <sup>a</sup>	1.60	0.62	0.38-2.81	<0.001
Parity	0.41	0.17	0.08-0.75	0.01
Age	0.37	0.06	0.25-0.49	<0.001
Body mass index	0.33	0.07	0.20-0.46	<0.001
Psychological domain				
Smoking habit <sup>a</sup>	2.74	0.66	1.44-4.03	<0.001
Ethnics (Mestizo) <sup>a</sup>	2.34	0.37	1.60-3.07	<0.001
Postmenopause stage <sup>a</sup>	1.18	0.23	0.72-1.65	<0.001
Body mass index	0.13	0.04	0.05-0.21	0.001
Age	0.13	0.03	0.06-0.20	<0.001
Sexuality domain				
Married <sup>a</sup>	5.97	0.27	5.42-6.51	<0.001
Employed status <sup>a</sup>	0.72	0.28	0.16-1.28	0.01
Ethnics (Mestizo) <sup>a</sup>	-2.15	0.29	-2.73 to -1.56	<0.001
Postmenopause stage <sup>a</sup>	-0.73	0.18	-1.09 to -0.36	<0.001
Couple relationship domain				
Married <sup>a</sup>	6.34	0.21	5.92-6.75	<0.001
Employed status <sup>a</sup>	0.56	0.19	0.17-0.95	0.01
Ethnics (Mestizo) <sup>a</sup>	-1.83	0.22	-1.83 to -0.95	<0.001
Body mass index	0.07	0.02	0.02-0.11	0.002

HT, hormone therapy; CS, Cervantes Scale.

<sup>a</sup>Reference group is the group without the depicted condition: in case of ethnics, it is compared with black, and for postmenopausal it is compared with premenopausal and perimenopausal.

women. The final CS questionnaire includes 31 items (graded from 0 to 5) that would be more representative for studying the menopausal transition.<sup>11</sup>

The CS was originally applied to a heterogeneous group of mid-aged Spanish women (age, 45-64 y), divided into four educational levels. Of the women, 40% were recruited from gynecological and other medical consultations.<sup>11</sup> Mean CS scores found during the tool validation process were as follows:  $50.7 \pm 23.9$  (global CS),  $25.1 \pm 12.8$  (menopause and health domain),  $10.8 \pm 8.3$  (psychological domain),  $10.5 \pm 5.0$  (sexuality domain), and  $3.9 \pm 4.2$  (couple relationship domain).<sup>11</sup> In this same study,<sup>11</sup> mean global CS scores were 35.2 (95% CI, 32.4-38.0), 44.6 (95% CI, 42.0-47.3), and 51.7 (95% CI, 50.5-53.0) for fertile, perimenopausal, and postmenopausal women, respectively. In the present Colombian study, computed CS scores (global and per domains) were quite similar to those reported during the original validation study. Moreover, calculated Cronbach  $\alpha$  for the CS and its domains was consistently good, and global and domain scores significantly correlated. Despite this, one should bear in mind that the Colombian data were obtained from the general population and not from any medical consultation and that although potential cultural differences can be delineated between Spanish<sup>11</sup> and Colombian women, the CS seemed to be useful in detecting in both populations the various common biopsychological and social features related to menopause, a universal phenomenon.

Social variables may influence menopause-related QoL, although continuities and divergences have been reported throughout the midlife transition.<sup>21-24</sup> Menopause-related symptoms among Hispanic women living in the United States differ by country of origin, educational level, culture, and acculturation.<sup>25-27</sup> However, there is limited information regarding mid-aged Hispanic women living in their natural environment (country). Multivariate analysis in the present Colombian study failed to demonstrate a significant correlation between educational level and QoL. This is in disagreement with the findings of other Latin American series correlating lower educational levels with worse QoL as assessed using other tools (ie, the Menopause Rating Scale).<sup>24,28,29</sup> These differences highlight the fact that social, cultural, and educational issues differ from one Latin American population to another.

Married women of the present series displayed higher CS scores and, therefore, worse QoL than did nonmarried women. This was observed for the global score and for the menopause and health, sexuality, and couple relationship domain scores. Using other tools, we have previously described a link between marital status and either more severe menopausal symptoms or less intense hot flashes.<sup>28,30</sup> The findings of the present Colombian series suggest that the partner imposes a negative influence on studied women. Previous studies using other tools have reported that male medical and social factors (erectile dysfunction, premature ejaculation, infidelity, alcoholism, drug consumption, etc) impair menopause-related QoL of mid-aged women, either through female sexual dysfunction or more severe menopausal symptoms.<sup>30-32</sup>

The present study found an inverse correlation between psychological domain scores and either the sexuality or couple relationship domain scores, suggesting the existence of some degree of female depression or couple adjustment failure.<sup>31,33,34</sup> Nevertheless, because this investigation was not carried out to explore the impact of couple or male psychosocial and medical factors, new studies are warranted in this regard to gain more insights on the potential negative influence of the male factor over the menopausal transition.

Higher parity significantly correlated with higher menopause and health domain scores on the CS. This correlates with our previous findings<sup>35,36</sup> and may be explained by the fact that women with higher parity may indeed still be taking care of young ones by the time the menopausal transition starts.<sup>31,33</sup>

Worse QoL in postmenopausal women compared with that in premenopausal and perimenopausal women has previously been reported using other QoL tools (ie, Menopause Rating Scale or Greene Scale).<sup>28,30,35</sup> Despite this, data obtained from the CS in this regard are still scarce. Postmenopausal women of the present series displayed higher CS scores (global and menopause/health, psychological, and sexual domains). Age was also significantly related to higher scores for the menopause and health and psychological domains in our series. This suggests that estradiol deficiency related per se to menopause, together with aging and related changes, negatively affects intrinsic female aspects.

Previous publications have reported that obese women display higher vasomotor symptom scores and lower health-related QoL scores than do women with normal BMI values.<sup>37-40</sup> In addition, increases of more than 5 kg were associated with a significant increase in somatic symptoms.<sup>41</sup> Among postmenopausal women screened for the metabolic syndrome, increased BMI was related to severe menopausal symptoms.<sup>42</sup> The CS has been used to assess the effect of BMI on menopause-related QoL in two short series of postmenopausal Spanish women with discordant results, one finding higher scores (less QoL) among overweight and obese women and the other not having such findings.<sup>12,13</sup> In the present research, women with higher BMI scores displayed higher CS scores (global and menopause/health, psychological couple relationship domain) and, therefore, worse QoL. Our results are in accordance with previous studies using other QoL instruments.<sup>37-40</sup>

As assessed using various instruments, quotidian stress, anxiety, and mood changes increase during the menopausal transition and may significantly impair QoL.<sup>43-45</sup> Depression may affect up to 45% of postmenopausal women.<sup>34,45</sup> In the multiethnic Study of Women's Health Across the Nation, premenopausal women who were less educated; were Hispanic; and had vasomotor symptoms, stressful events, and low social support independently displayed depressive symptoms.<sup>26</sup> In our series, higher CS psychological domain scores were related to older age, postmenopause status, Mestizo ethnicity, higher BMI values, and smoking habit. To date, a hormonal relationship explaining depression during the menopausal transition

still lacks consistent evidence.<sup>34,43</sup> In accordance with this, our results highlight the importance of nonhormonal factors associated with impaired QoL through the psychological sphere.

Two previous reports<sup>46,47</sup> support the fact that black race is related to more severe menopausal symptoms (somatic and psychological) and impaired QoL. This was not the case in the present study because Mestizo women presented higher psychological domain scores compared with black ones and black women displayed higher sexuality and couple relationship scores, which is contrary to our previous observations.<sup>46</sup>

Sexuality and couple relationship are usually related or overlap. During the menopausal transition female sexual function is influenced by menopause-related symptoms (vasomotor and psychological symptoms, genital atrophy and discomfort, sleep disorders, anxiety and depression), partner factors, general health, and other social aspects.<sup>24,30,31,36</sup> The present study found that married status, ethnicity (Afro-descendants), and employed status (working women) were associated with higher scores for the sexuality and couple domains (worse QoL). Female social roles and lifestyle aspects as well as partner issues have all been previously reported as of higher relevance than menopause per se in maintaining sexual well-being during the menopausal transition.<sup>31,33,36,48,49</sup>

Finally, as for the limitations of the present research, one can mention its cross-sectional design. Despite the large size of the sample, the present study only included women from certain Colombian regions without any specific sampling procedure; data therefore cannot be extrapolated to the rest of the Colombian or any other Latin American population. This may also be seen as a potential limitation.

Despite these limitations, two strengths can be mentioned: (1) this is the first and largest QoL assessment study ever performed using the CS among Latin American mid-aged women and (2) compared with the primary CS validation study, the present sample was obtained from the general population and did not include women attending medical consultations.

## CONCLUSIONS

In conclusion, this is the first and largest study reporting QoL assessment among mid-aged Latin American women living in Colombia using the CS, in which age, menopause status, BMI, and other personal factors influenced QoL.

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