



# Assessment of menopause-related symptoms in mid-aged women with the 10-item Cervantes Scale



Faustino R. Pérez-López\*, Ana M. Fernández-Alonso, Gonzalo Pérez-Roncero, Peter Chedraui, Álvaro Monterrosa-Castro, Plácido Llaneza

Red de Investigación de Ginecología, Obstetricia y Reproducción (RIGOR), Instituto Aragonés de Ciencia de la Salud, Zaragoza, Spain

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## ABSTRACT

**Objective:** To develop a short 10 item version of the original menopause Cervantes Scale (CS) in order to assess menopausal symptoms in a large cohort of mid-aged Colombian women.

**Methods:** Reliability of the new short tool was assessed through internal consistency determination (Cronbach's alpha values) and intra-class correlation coefficient (ICC) analysis. Ten items out of the 31 composing the original CS were selected according to their clinical relation with menopausal symptoms. Subsequently the short tool was used to assess menopausal symptoms and related factors among 1739 mid-aged women.

**Results:** The CS-10 displayed a mean ( $\pm$ SD) ICC value of 0.45 ( $\pm$ 0.06) and a Cronbach's alpha of 0.778 suggesting good internal reliability. For the entire sample median [interquartile range] CS-10 global scores were 10.0 [12.0], and for pre-, peri- and postmenopausal women: 8.0 [9.2], 9.0 [9.0] and 14.0 [14.0], respectively. Median global CS-10 scores significantly increased with menopausal status, marital status and ethnicity. 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.

**Conclusion:** The CS-10 seems to be a simple instrument that may aid everyday clinical consultation and help at performing an accurate diagnosis of menopause-related symptoms. Further studies are needed to confirm our preliminary findings.

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## 1. Introduction

The menopause produces bio, psycho and social changes. Cultural and ethnic differences relating to these changes have been noted; however with no net alteration of the general menopausal transitional process [1–3]. The majority of mid-aged women experience menopausal symptoms some time during the menopausal transition, from the premenopausal to the late postmenopausal phase. Dennerstein et al. [2] have described the health experience of women aged 20–70 and detailed seven symptoms related to menopausal hormonal changes, gathered into two groups: hot flashes and night sweats (first group), and sleep difficulties,

vaginal dryness, sexual arousal problems, poor memory and aches in the head, neck, and shoulders (second group). All symptoms were influenced by physical and mental morbidity, and certain increase with age and body mass index (BMI). The authors suggested that these symptoms should be included in menopause-related quality of life instruments.

Several specific tools have been designed to assess menopause-related quality of life. One of these instruments is the 31-item Cervantes Scale (CS) which was originally proposed as a tool designed specifically for Spanish women [4]. Despite this, it contains a list of symptoms and subjective aspects, without any cultural or anthropologic specificity. In fact, it has also been used among Latin American women who display cultural differences [5–7]. Sophisticated or comprehensive questionnaires are useful for research purposes [8–10]; nevertheless, their utility is challenged when it comes to the everyday clinical practice. Therefore, simple instruments are required to aid clinical consultation and increase the early screening of menopausal symptoms. Since the CS is time consuming for the clinical setting, we decided to develop a short

\* Corresponding author at: Department of Obstetrics and Gynecology, University of Zaragoza, Domingo Miral s/n, Zaragoza 50009, Spain. Tel.: +34 976 76 1734; fax: +34 976 76 1735.

E-mail addresses: [faustino.perez@unizar.es](mailto:faustino.perez@unizar.es), [gineblog@hotmail.com](mailto:gineblog@hotmail.com) (F.R. Pérez-López).

10 item tool constructed from the original version that can provide quick menopausal symptom assessment.

## 2. Methods

### 2.1. Participants

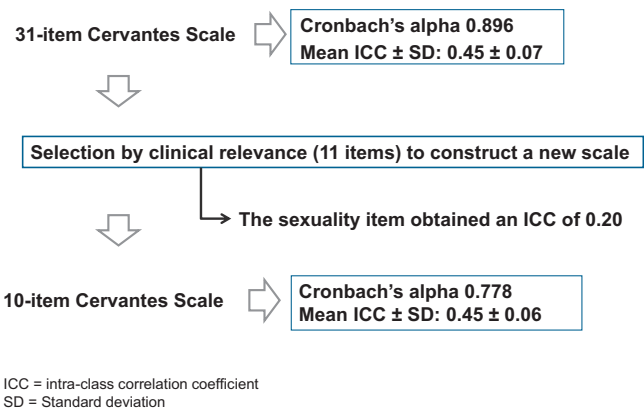
The present research constitutes a re-analysis of the database of 1739 mid-aged Colombian women (40–59 years) who were previously surveyed with the original CS and a socio-demographic questionnaire [6]. Participants were from urban and surrounding peripheral Colombian areas (Barranquilla, Cartagena, and Cali) as well as from rural regions (Bolívar and Valle Departments). Despite being of various sites, they all share a common language and a Hispanic cultural background. They were either Mestizos (69.4%) or Afro descendants (30.9%). The majority of surveyed women were married (69.4%) and had at least one child (94.0%). A 25.8% were perimenopausal and 38.9% postmenopausal and only 6.6% were receiving hormone therapy (HT) for the menopause. Menopausal status was assessed based on self-reported bleeding patterns and categorized according to criteria of the Stages of Reproductive Aging Workshop (STRAW) as premenopausal, perimenopausal, and postmenopausal [11]. More than half of women (53.7%) had an increased body mass index ( $\text{BMI} \geq 25 \text{ kg/m}^2$ ) [6].

### 2.2. The Cervantes Scale

Menopausal symptoms were measured by the 31-item CS which assesses the degree to which women are bothered with symptoms contained in various domains: somatic (15 items), psychological (9 items), sexuality (4 items), and couple relationships (3 items). Each item is scored in a Likert fashion from 0 to 5, indicating better to worse for “negative questions”; scores are inversed for “positive questions”. Scores obtained for each item are then summed up to create a global score and four different domain scores [4,6]. Data analysis using the 31 item CS upon the original Colombian cohort has been published [6]. For this secondary analysis intra-class correlations (ICC) were calculated for each item composing the original 31-item CS and then for selected items relating to menopausal symptoms (Fig. 1). Mean ICC values ( $\pm$ standard deviation) were also determined.

### 2.3. The abridged 10-item Cervantes Scale

Each item of the full CS was assessed whether to be or not included in the new scale. Eleven items were selected in accordance to their clinical relation with menopausal symptoms, taking into consideration information of three important studies [12–14], and if ICC values were above 0.30 [15,16]. After this process was



**Fig. 1.** Flowchart for the development of the CS-10: Cronbach's alpha calculation and ICC analysis of the original 31-item CS; then selection of 10 items with clinical relevance to the menopause (the sexuality item was deleted due to its low ICC). Then internal reliability of the CS-10 was determined as measured by calculated Cronbach's alpha and ICC analysis.

performed their ICC values were re-calculated. The item related to sexuality obtained an ICC of 0.20 and hence was not taken into consideration. Therefore the final abridged CS contained 10 items (Table 1). The sum of scores obtained with each of the 10 graded items provides a global CS-10 score which can range from 0 to 50. This global score was correlated to the several studied variables.

### 2.4. Statistics

Statistical analysis was performed using SPSS version 19.0 (IBM, Armonk, NY, USA). Internal consistency of the 31-item CS was assessed calculating Cronbach's alpha coefficients and ICC analysis. Items achieving an ICC value  $<0.30$  were not taken into account since they were not measuring the same construct as the rest of items in the scale [15,16].

Data are presented as means, standard deviations, medians, interquartile ranges [IQR], frequencies and percentages. The Kolmogorov–Smirnov test was used to determine the normality of data distribution. According to this, non-parametric continuous data were compared with the Mann–Whitney test (two independent samples) or the Kruskal–Wallis test (various independent samples). Rho Spearman coefficients were calculated to determine correlations between CS-10 global scores and various numeric variables (age, parity, years of menopause, years of education, BMI), and bivariate analysis between CS-10 scores and categorical variables (menopausal status, employment status, partner status [yes/no], HT use [yes/no], ethnicity, tobacco use).

Multiple linear regression analysis was performed to assess variables related to higher CS-10 global scores (dependant variable) and

**Table 1**

Scores obtained for each item included in the 10-item Cervantes Scale (0 = no symptom to 5 = very severe) expressed as percentages.

Item number according to the original CS-31	Scorings for the CS-10: n (%)					
	0	1	2	3	4	5
29. I have hot flushes (and/or night sweats)	662(38.1)	266(15.3)	246(14.1)	206(11.8)	171(9.8)	188(10.8)
23. I feel my heart beating quickly and out of control	1176(67.6)	205(11.8)	166(9.5)	139(8.0)	28(1.6)	25(1.4)
5. I cannot get sufficient sleep (difficulty in sleeping)	632(36.3)	283(16.3)	279(16.0)	250(14.4)	180(10.4)	115(6.6)
16. Aching in muscles and/or joints	500(28.8)	232(13.3)	304(17.5)	325(18.7)	252(14.5)	126(7.2)
19. I feel tired since I get up (feeling a lack of energy)	806(46.3)	299(17.2)	244(14.0)	173(9.9)	107(6.2)	110(6.3)
21. I have the perception of being useless	1365(78.5)	155(8.9)	77(4.4)	76(4.4)	29(1.7)	37(2.1)
2. I feel anxious or nervous	1142(65.7)	286(16.4)	165(9.5)	95(5.5)	34(2.0)	17(1.0)
18. I am afraid of performing physical efforts because my urine leaks	1287(74.0)	167(9.6)	130(7.5)	64(3.7)	41(2.4)	50(2.9)
27. I have vaginal discomfort and dryness	1113(64.0)	150(8.6)	158(9.1)	113(6.5)	126(7.2)	79(4.5)
31. I have noticed skin dryness (changes in skin appearance, texture or tone)	665(38.2)	243(14.0)	260(15.0)	218(12.5)	134(7.7)	219(12.6)

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