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Increased menopausal symptoms among Afro-Colombian women as assessed with the Menopause Rating Scale

Alvaro Monterrosa [a], Juan E. Blumel [b], Peter Chedraui [c,*]

[a] *Department of Gynecology and Obstetrics, Facultad de Medicina, Universidad de Cartagena, Cartagena, Colombia*
[b] *Departamento Medicina Sur, Facultad de Medicina, Universidad de Chile, Hospital Barros Luco-Trudeau, Santiago, Chile*
[c] *Institute of Biomedicine, Facultad de Ciencias Médicas, Universidad Católica de Santiago de Guayaquil, Av. CJ Arosemena Km 1.5, PO Box 09-01-4671, Guayaquil, Ecuador*

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Abstract

Background: Increased frequency and severity of menopausal symptoms have been associated to black race. However, this situation has not been described in any Latin American population.
Objective: Compare frequency and severity of menopausal symptoms among Afro and non-Afro Hispanic Colombian climacteric women.
Methods: In this cross-sectional study, healthy Afro and non-Afro-Colombian women aged 40–59 years were asked to fill out the Menopause Rating Scale (MRS) questionnaire in order to compare symptom frequency and intensity.
Results: A total of 578 women were surveyed (201 Afro-Colombian and 377 non-Afro-Colombian). Mean age of the whole sample was 47.9 ± 5.9 years (median 47), with no differences among studied groups in terms of age, parity, and hormone therapy (HT) use. Intensity of menopausal symptoms, assessed with the total MRS score, was found to be significantly higher among Afro-Colombian women (10.6 ± 6.7 vs. 7.5 ± 5.7, $p = 0.0001$), which was due to higher somatic and psychological subscale scores. In this group, the frequency of somatic symptoms, heart discomfort and muscle and joint problems, was found to be higher than in non-Afro-Colombian women (38.8% vs. 26.8% and 77.1% vs. 43.5%, respectively, $p < 0.05$); equally, all items of the psychological subscale (depressive mood, irritability, anxiety and physical exhaustion) were also found to be higher among black women. On the other hand, compared to black women non-Afro-Colombian ones presented more bladder problems (24.9% vs. 14.9%, $p = 0.005$). After adjusting for confounding factors, logistic regression analysis determined that black race increased the risk for presenting higher total MRS scorings (OR: 2.31; CI 95%: 1.55–3.45, $p = 0.0001$).

* Corresponding author. Tel.: +593 4 220 6958; fax: +593 4 220 6958.
E-mail address: peterchedraui@yahoo.com (P. Chedraui).

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Conclusion: Despite the limitations of this study, as determined with the MRS Afro-Colombian women exhibited more impaired quality of life (QoL) when compared to non-Afro-Colombian ones, due to a higher rate and severity of menopausal somatic and psychological symptoms.

Keywords: Menopause; Black race; Colombia; Menopausal symptoms; Menopause Rating Scale

1. Introduction

The menopausal transition leading to progressive estrogenic deficiency is associated to a wide array of clinical symptoms [1,2]. It has been determined in several populations of Latin America that the intensity of these symptoms, associated to more impaired quality of life (QoL), is related to bio-psycho and social factors [3–5]. Indeed, age, menopausal status, chronic conditions and the socio-demographic characteristics of a given population (i.e. income, education and race) are factors predicting the frequency and intensity of menopausal symptoms. In regard to the latter, black race has been related to an increased risk for higher intensity of menopausal symptoms, especially vasomotor, when compared to their Caucasian counterparts. This has been identified within premenopausal [6,7] as well as perimenopausal populations [8–10].

Several tools have been designed to measure and assess symptoms during the menopausal transition [11–14]. Some have been re-assessed [15], and others have been constructed after factor analytic studies independently measuring psychological, somatic and vasomotor symptoms [16,17]. The Menopause Rating Scale (MRS) is a menopause-specific health related QoL scale which was initially developed in the early 1990s to measure the severity of age-/menopause-related complaints by rating a profile of symptoms [18,19]. Factorial analysis and statistical methods were applied to finally identify three dimensions of symptoms/complaints: a psychological, a somatic-vegetative, and a urogenital factor that explained 59% of the total variance [20]. This is indicative for a high efficiency of a scale with only 11 items—compared to other international scales. This scale has recently been validated in healthy Latin American climacteric populations, where age, the menopause, sexual inactivity and educational level have been determined to be risk factors predicting more severe menopausal symptoms [21,22].

The objective of the following research was to compare the frequency and severity of menopausal symptoms among Afro and non-Afro-Colombian climacteric women.

2. Methods

2.1. Participants

This cross-sectional study was carried out from November 2006 to February 2007 in the San Cayetano Municipio, a small partially isolated village of the Bolivar Department of Colombia which is populated by approximately 4000 low-middle class black individuals who are direct descendents of African slaves who settled in the area during the colonial days. Therefore, healthy, low-middle class Afro-Colombian women aged 40–59 years living in this village were identified (door to door survey) and asked to fill out the MRS.

Data obtained from non-Afro Hispanic Colombian women living in Cartagena, Colombia who filled out the MRS as part of the III and IV REDLINC (Collaborative Group for Research of the Climacteric in Latin America) study served as the comparison group. The latter project is being carried out at more than 15 countries of Latin America aiming to assess sexuality and QoL among middle-aged women. Methodological aspects as well as the results of studies I and II have recently been published [23,24]. Subjects at Cartagena City were exclusively of the Hispanic or mestizo-type (non-black ethnicity, blend of native Indians with people of European background) whereas subjects of San Cayetano Municipio, were exclusively of black ethnicity (both progenitors black). All participants were informed about the research, its purpose, the MRS and its content. After consenting to participate and upon filling out the questionnaire, if this was the case, they received additional support. Women excluded for the study were those denying participation and/or with any

mental or physical disorder imposing difficulties in filling out the survey.

2.2. The Menopause Rating Scale

The MRS is composed of 11 items assessing menopausal symptoms divided into three subscales —(a) somatic: hot flushes, heart discomfort, sleeping problems and muscle and joint problems (items 1–3 and 11, respectively); (b) psychological: depressive mood, irritability, anxiety and physical and mental exhaustion (items 4–7, respectively); (c) urogenital: sexual problems, bladder problems and dryness of the vagina (items 8–10, respectively). Each item can be graded by the subject from 0 (not present) to 4 (1: mild; 2: moderate; 3: severe; 4:very severe). For a particular individual, the total score per each subscale is the sum of each graded item contained in that subscale. Total MRS scores is the sum of the scores obtained for each subscale. Additionally items of the MRS are also presented as frequencies (present or not) and mean scores. For the purpose of this research the Spanish version of the MRS was used [25], which has been validated in Ecuador by Chedraui et al. [21]. More details of the scale, punctuation and scoring is detailed elsewhere [17].

2.3. Menopausal status definitions and assessed data

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) [26]. Those with bilateral oophorectomy were considered as postmenopausal. Data included in this study were age, parity, educational level, smoking habit and use of hormone therapy (HT).

2.4. Statistical analysis

Analysis was performed using EPI-INFO 2000 statistical software (Centers for Disease Control, Atlanta, GA, USA; WHO, Basel, Switzerland). Data is expressed as mean ± standard deviation (S.D.) and percentages. ANOVA and chi-square calculation was used to compare continuous and categorical data respectively. The Mann–Whitney test was used for non-parametric data. Risk factors for higher total MRS scorings, and thus impaired QoL, were analyzed using unconditional logistic regression. For this, total MRS score, as a continuous variable, was transformed into a categorical one, now considered as cases those exhibiting scores ≥8 (median). Independent variables to be entered in the regression model were race, higher schooling (≥6, median), older age (≥47, median), presence of menopause and HT use. 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.

2.5. Sample size

According to the 2005 census, Cartagena was found to have 890,000 inhabitants, of which 71,300 corresponded to women between 40 and 59 years [27]. This population was used to calculate with the EPI INFO software a sample size of 380 women in order to detect a 50% prevalence of menopausal symptoms with a 95% confidence level and a 5% acceptable error. On the other hand, San Cayetano has a 4000 approximate population with 320 women with an age ranging from 40 to 59 years of which a sample size of 175 was calculated in order to detect the same 50% prevalence of menopausal symptoms with a 95% confidence level and a 5% acceptable error. During the study period, 230 Afro-Colombian women were identified at the San Cayetano Village of which 29 were excluded (incomplete data and/or participation denial), leaving complete data of 201 black women. This data was compared to the data obtained from 377 non-Afro-Colombian women surveyed as part of the REDLINC III and IV project.

3. Results

Mean age of the whole sample ($n = 578$) was 47.9 ± 5.9 years (median 47 years), with no differences observed among studied groups in terms of age, parity and HT use. Although the rate of lower schooling (<12 years) among studied groups was similar, black women had, in average, a significant lower educational level (5.2 ± 4.3 vs. 7.6 ± 3.7, $p = 0.0001$) (Table 1). Median age at menopause was 48 years for both studied groups. The frequency of women determined to

Table 1
Sociodemographics, HT use, cigarette consumption and menopausal status according to ethnicity

Parameter	Non-Afro-Colombian ($n = 377$)	Afro-Colombian ($n = 201$)	p-Value[b]
Age (years)	48.4 ± 6.2[a]	47.2 ± 5.2	NS
Parity	3.4 ± 2	3.3 ± 2	NS
Premenopausal (regular menses)	167 (44.3)	87 (43.3)	NS
Perimenopausal (irregular menses)	39 (10.3)	37 (18.4)	0.006
Postmenopausal (absent menses)	171 (45.4)	77 (38.3)	NS
Time since absent menses (years)	2.9 ± 3.1	3.2 ± 2.7	NS
Natural postmenopausal	74/171 (43.3)	38/77 (49.3)	NS
Hysterectomy alone	92/171 (53.8)	31/77 (40.3)	0.04
Hysterectomy + bilateral ooforectomy	3/171 (1.8)	7/77 (9.1)	0.01
Bilateral ooforectomy alone	2/171 (1.1)	1/77 (1.3)	NS
HT use	21 (5.6)	8 (4.0)	NS
Smoking			
Never	241 (63.9)	135 (67.2)	NS
Sometime	72 (19.1)	47 (23.4)	NS
Currently	64 (17)	19 (9.5)	0.01
Schooling < 12 years	349 (92.6)	186 (92.5)	NS
Average years	7.6 ± 3.7	5.2 ± 4.3	0.0001[c]

NS: non-significant.
[a] Mean ± S.D.
[b] Chi-square calculation or ANOVA.
[c] Mann–Whitney test.

be perimenopausal was significantly higher among the Afro-Colombian group (18.4% vs. 10.3%, $p = 0.006$). Non-Afro-Colombian women were current smokers in a higher rate than black women (17% vs. 9.5%, $p = 0.01$).

Depicted in Table 2 is the distribution of symptoms contained in the MRS presented as mean scores and percentages in relation to ethnicity. Subscale and total mean MRS scores are also presented. Total MRS score was found significantly higher among Afro-Colombian women (10.6 ± 6.7 vs. 7.5 ± 5.7, $p = 0.0001$). This was due to higher somatic and psychological subscale scores. The frequency of heart discomfort and muscle and joint problems (somatic subscale) was found to be higher among black women (38.8% vs. 26.8% and 77.1% vs. 43.5%, respectively, $p < 0.05$). Frequency of all items of the psychological subscale were also found to be higher among black women. Afro-Colombian women were found to be at higher risk for presenting higher total MRS scores (OR: 2.35; CI 95%: 1.62–3.42; $p = 0.0001$), which remained unaltered after adjusting for race, age, years of schooling and HT use with unconditional logistic regression (OR: 2.31; CI 95%: 1.55–3.45, $p = 0.0001$) (Table 3). On the other hand, when compared to black women non-Afro-Colombian women presented more bladder problems (24.9% vs. 14.9%, $p = 0.005$). No differences were found in terms of sexual problems and vaginal dryness among studied groups.

In general and among both studied groups there was a significant increasing trend in total and subscale scores observed from one menopausal stage to the other (Table 4). Total MRS scores between Afro and non-Afro-Colombian perimenopausal women were found to be similar (11.1 ± 5.7 vs. 11.0 ± 5.5, NS). The difference in the total MRS score observed among the studied groups (Table 2) was mainly due to the fact that pre- and postmenopausal black women exhibited higher total, somatic and psychological scores when compared to non-Afro-Colombian women (Table 4). Contrary to this, peri- and postmenopausal non-Afro-Colombian women presented higher urogenital scorings.

4. Discussion

Middle-aged women during the menopausal transition may present a wide spectrum of physical and

Table 2
The MRS: scores and percentages per subscale and symptom according to ethnicity

Subscale and symptoms	Non-Afro-Colombian ($n = 377$)	Afro-Colombian ($n = 201$)	p-Value[b]
Somatic	3.7 ± 3.0[a]	5.0 ± 3.3	0.0001
1. Hot flushes, sweating (%)	54.9, (1.1 ± 1.1)	53.2, (1.2 ± 1.1)	NS, NS
2. Heart discomfort (%)	26.8, (0.5 ± 0.9)	38.8, (0.7 ± 1.0)	0.003, 0.003
3. Sleeping problems (%)	60.5, (1.2 ± 1.2)	54.7, (1.1 ± 1.1)	NS, NS
11. Muscle and joint problems (%)	43.5, (0.9 ± 1.1)	77.1, (1.9 ± 1.2)	0.0001, 0.0001
Psychological	2.8 ± 2.0	4.8 ± 3.3	0.0001
4. Depressive mood (%)	51.2, (1 ± 1.1)	66.2, (1.2 ± 1)	0.0005, 0.008
5. Irritability (%)	29.2, (0.5 ± 0.9)	63.7, (1.2 ± 1.0)	0.0001, 0.0001
6. Anxiety (%)	25.2, (0.4 ± 0.8)	64.2, (1.1 ± 1.0)	0.0001, 0.0001[c]
7. Physical and mental exhaustion (%)	47.2, (0.9 ± 1.1)	64.7, (1.3 ± 1.1)	0.0001, 0.0001
Urogenital	1.0 ± 1.7	0.8 ± 1.7	NS
8. Sexual problems (%)	14.3, (0.2 ± 0.6)	15.9, (0.2 ± 0.4)	NS, NS
9. Bladder problems (%)	24.9, (0.5 ± 0.9)	14.9, (0.3 ± 0.7)	0.005, 0.004[c]
10. Dryness of the vagina (%)	15.4, (0.3 ± 0.8)	18.4, (0.3 ± 0.7)	NS, NS
Total Score	7.5 ± 5.7	10.6 ± 6.7	0.0001

NS: non-significant.
[a] Mean ± S.D.
[b] p-Value determined by chi-square calculation or ANOVA.
[c] Mann–Whitney test.

psychological symptoms. Vasomotor and urogenital complaints have been considered the most frequent and typical presenting ones [2,3]. Additionally, emotional and somatic symptoms such as headaches, insomnia, anxiety, irritability, sexual problems, fatigue and muscles–joint aches are also highly prevalent during the climacteric despite being non-specific for this stage [21,28,29]. Although the expression, magnitude and frequency of these typical and non-specific symptoms may vary from one woman to another and possibly be influenced by factors not clearly defined [30], all together these symptoms have been reported to significantly impair QoL [31].

Table 3
Factors determining higher total MRS scorings (impaired QoL): logistic regression analysis[a]

Factors	Odds ratio (CI 95%)	p-Value
Non-HT use	3.31 (1.37–7.97)	0.007
Black race	2.31 (1.55–3.45)	0.0001
Older age (≥47 years)	1.88 (1.24–2.82)	0.003
Postmenopausal status	1.87 (1.24–2.83)	0.002
Higher schooling (≥6 years)	0.56 (0.39–0.82)	0.002

[a] Adequacy of the regression model was demonstrated with the Hosmer–Lemeshow goodness-of-fit test.

Several reports indicate that the frequency and intensity of menopausal symptoms correlates with ethnicity, black race being an important determinant. In this sense, the present research found that the intensity of menopausal symptoms among Afro-Colombian climacteric women, as measured with the total MRS score, was higher than in non-Afro-Colombian ones. The increased total MRS score was basically influenced by higher somatic and psychological subscale scores. Despite finding an increased somatic score among black women this was not influenced by a higher frequency or intensity of hot flushes-sweating (Item 1 of the MRS), yet to a higher frequency of heart discomfort and muscle and joint problems. Although muscle and joint problems among black women was determined to be the most frequently presenting symptoms of the 11 composing the MRS, correlating with other studies drawn upon white and Afro-American [29] as well as Ecuadorian women [21], interestingly this finding does not correlate with that of several reports found in the literature indicating that black women (pre- and perimenopausal), in comparison to their Caucasian counterparts, present higher frequency of vasomotor symptoms (i.e. hot flushes) [6–10]. In this regard, Miller et al. [8] have observed that perimenopausal Afro-American women, in comparison to

Table 4
Total and subscale MRS mean scores according to ethnicity and the menopausal stage

Subscale	Premenopausal			Perimenopausal			Postmenopausal[b]		
	All ($n=254$)	Non-Afro-Colombian ($n=167$)	Afro-Colombian ($n=87$)	All (n = 76)	Non-Afro-Colombian ($n=39$)	Afro-Colombian ($n=37$)	All ($n=112$)	Non-Afro-Colombian ($n=74$)	Afro- Colombian ($n=38$)
Somatic	2.8 ± 2.6[a]	2.4 ± 2.4	3.5 ± 2.7[*]	5.1 ± 2.8	4.9 ± 2.7	5.4 ± 3.0	5.3 ± 3.1[c]	4.4 ± 2.6	6.8 ± 3.5[*]
Psychological	2.7 ± 2.8	2.2 ± 2.4	3.8 ± 3.2[*]	4.9 ± 3.2	4.7 ± 3.1	5.0 ± 3.4	3.7 ± 3[c]	2.6 ± 2.0	6.0 ± 3.1[*]
Urogenital	0.6 ± 1.4	0.7 ± 1.4	0.5 ± 1.3	1.1 ± 1.7	1.5 ± 2	0.7 ± 1.0[*]	1.1 ± 2[c]	2.7 ± 1.6	1.5 ± 2.7[*]
Total Score	6.2 ± 5.2	5.3 ± 4.8	7.8 ± 5.7[*]	11.1 ± 5.6	11.0 ± 5.5	11.1 ± 5.7	10.0 ± 6.6[c]	8 ± 4.6	14.3 ± 7.8[*]

[a] Mean ± S.D.
[b] Only natural postmenopausal included.
[c] Statistical difference when comparing all menopausal stages.
[*] $p<0.05$ compared to non-Afro-Colombian women of the same menopausal stage as determined by ANOVA.

Caucasian females, present higher rates of hot flashes, with increased intensity and duration beyond 5 years. Freeman et al [9], using a daily symptom report, have also found among black women a higher frequency of menopausal symptoms (46% vs. 30%) particularly those considered physiological ones: hot flushes, dizziness, urine leaks and poor coordination.

In the present series, an increasing trend in relation to total and subscale MRS scores was observed from one menopausal stage to the other. Despite finding a higher rate of perimenopausal classified status women among Afro-Colombian subjects, contrary to what would be predicted pre- and postmenopausal black ones were those exhibiting higher total, somatic and psychological scores. A possible explanation could be having a higher percentage of obese women among pre- and postmenopausal black women. Obesity has been determined as a risk factor for higher vasomotor symptoms and related to impaired QoL [32–34]. Moreover, Freeman et al. [7] have reported that premenopausal black women exhibited higher rates of menopausal symptoms (i.e. hot flushes) and that higher follicle-stimulating hormone (FSH) levels, anxiety, baseline menopausal symptoms, alcohol use, parity and body mass index were predicting factors. Despite this, higher prevalence of obesity among black women in comparison to other ethnicities has not been established [35]. Not determining body mass index among the surveyed population constitutes a potential limitation of this study. We also recognize that the possible effect that different lifestyles could have over the intensity of climacteric symptoms presenting in our black rural women cannot be ruled out. In another study, performed among Latin American women 20–44 years of age, it was found that women living in rural areas perform more physical activity [36]. In this regard, among women 40 years of age, increased physical activity has been associated to higher rates of hot flashes [37].

In Latin America educational level has been used as an indicator of socio-economical status [38]. In the present study, average schooling among black women was determined to be lower (5.2 ± 4.3 vs. 7.6 ± 3.7, $p=0.0001$) reflecting a lower socio-economical background, situation that has been related to more intense menopausal symptoms. Indeed, a large multicentre Italian study determined that women with higher educational level had less intense climacteric symptoms [39]. In this series, despite finding a lower educational

level among black women and after controlling for other confounding factors logistic regression analysis determined that black race was an independent factor for more intense menopausal symptoms and therefore impaired QoL.

Another aspect worth mentioning is the fact that compared to black women, peri- and postmenopausal non-Afro-Colombian women presented higher urogenital scorings, despite having a similar rate of sexual activity (non-black: 71.1% vs. black: 71.4%, NS). This finding is in contradiction with the observations of Gold et al. [40] (Study of Women's Health Across the Nation: SWAN) indicating that Afro-American women compared to white ones reported more vaginal complaints. It has been reported that Afro-American women present significantly decreased levels of estradiol and increased levels of DHEAS with increasing body mass index when compared to Caucasian ones [41]. Neither body size nor hormonal determinations were performed in our series.

The Afro descendent population of America is very heterogeneous in its origins (i.e. various ethnics involved) and is influenced by economical, cultural and religious aspects specific to each country of the American region where they have settled (i.e. Jamaican, Brazilian blacks in comparison to Afro-North Americans). Bearing this in mind, as well as the fact that socio-cultural factors have been determined to influence the severity of menopausal symptoms [42], our results cannot be extrapolated to other Afro-American black populations. To highlight this issue, in a recent systematic review [43], regarding the prevalence of hot flushes around the world, while in Ghana the frequency of hot flushes has been reported to be 57% among postmenopausal women, similar to that found among Afro-American women of the SWAN study [40], in Nigeria only 23% of postmenopausal women present vasomotor symptoms [43]. The latter study concludes that the presence and intensity of menopausal symptoms are influenced by ethnicity, as well as to the geographical zone, the climate, diet, life styles, female attitudes and perceptions toward the menopause and the aging process [43]. In regard to the present series, further research is warranted to overcome the described limitations and elucidate the role of body size, hormonal levels, diet, lifestyles and other factors related to more intense menopausal symptoms among Afro-Latin American climacteric women.

When total and subscale mean scores found in the present series are compared to the standards determined in other populations using the same MRS, important to mention is that Afro-Colombian women presented higher somatic scorings when compared to German [17] and Ecuadorian women (mestizo-type) [21]. Psychological subscale score was found to be similar to German women however higher than mestizo females from Guayaquil, Ecuador [21]. Contrary to this, German women present higher scorings for the urogenital subscale when compared to the Colombian (Afro and non-Afro ones) and the Ecuadorian middle-aged female population. Finally total MRS scorings obtained from Afro-Colombian women are higher than those found from the Ecuadorian mestizo population which correlated to the scorings found among the non-Afro-Colombian one.

In conclusion, as determined with the MRS, Afro-Colombian women exhibited a higher rate and severity of menopausal somatic and psychological symptoms when compared to non-Afro-Colombian ones. Despite the outlined limitations, to the best of our knowledge the present study represents the first to assess menopausal symptoms among a specific middle-aged female black population of Latin America. Additional research in this regard is needed in order to control for more potential confounding factors and confirm the present preliminary data.

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