

39 - EVALUATION OF BODY COMPOSITION, QUALITY OF LIFE AND PHYSICAL FITNESS IN CLIMACTERIC WOMEN

L. M. R. MOTTA;
C. M. MARTINS;
C. MNEIVA;
H. S. VASSIMON

University of Franca – UNIFRAN – Franca, São Paulo, Brazil
luciana.raiz@unifran.edu.br

doi:10.16887/86.a1.39

Introduction

Women suffer the transition of menopause at middle age (HARLOW, et.al 2012). The first year without menstruation or regular cycles is defined as perimenopause, which is followed by postmenopausal phase for a period of up to six years. The climacteric syndrome is equivalent to a transitional phase in which a series of symptoms, among which, vary from behavioral changes to morphological and biochemical parameters and would be between 40 and 65 years after menopause (HALE & BURGER, 2009, LOVEJOY, et.al 2008).

During transition, women can experience vasomotor symptoms, such as heat waves and/or night sweats that can go on for five years or more after the last menstruation (LOVEJOY, 2009). Other changes occur during the transition of the menopause are changes in the body composition and raise of the fat in the abdominal area, which are associated to cardio-metabolic risks due to the decreases in the energy expenditure and the fat oxidation (DE LORENZI, et.al 2006). The menopausal phase contributes more significant to the decrease of the energy expenditure than the aging process because of hormonal changes (AUBERTIN-LEHEUDRE, et.al 2008). The waist circumference (WC) is a simple and reliable indicator of the abdominal fat, being predictor of metabolic diseases and obesity independently of the body mass index (BMI) and the total body fat (JANSSEN, et.al 2002; WONG, et.al 2003).

There is a direct correlation between physical fitness determined by the oxygen consumption (VO₂) and the individual capacity of enduring resistance activities for a long period (CHARRO, et.al 2010). With aging, most people present constant decline of VO₂, and so around sixty years old, this decline affects the practice of daily life activities (POWERS, et.al 2010).

The four main groups of clinical symptoms of the menopausal transition are vasomotor, psychological, locomotor and urogenital. The clinical symptomatology is related to 60-80% of women and lasts on average 5,5 years (MACLENANN, 2009). In this context, the aim of the present study was to evaluate the body composition, quality of life and physical fitness in climacterics women.

Methods

This study was descriptive transversal realized with women in menopause between February and October of 2015. This study was approved by the ethics and research committee with Human Beings.

-Population

The participants were menopausal women with or without hormone replacement therapy. All of them were invited from two Basic Health Units and from the clinic of Nutrition of the University. The criteria for exclusion were women who refused to take the pre-intervention exams or presented hypermetabolic diseases and/or took drugs that alter metabolism.

-Anthropometry and body composition

Anthropometric data evaluated were BMI calculus and WC. The body composition was obtained through of bioelectric impedance after 12 hours of fasting using the device RJL System®. The estimated of muscle and fat mass were obtained through predictive equation (LOHMAN, et.al 1988).

-Laboratory tests

All women realized the blood FSH hormone exam to confirm menopause (FSH >15UI/ml) and serum concentration lipids, lipoprotein and glucose analysis. All analysis were made by University's Biomedicin Laboratory.

-Physical Fitness

For the determination of the initial women's physical fitness test was applied, the Ebbeling test of walking on the treadmill. The participant walked in a vigorous, but comfortable pace, for 4 minutes which is categorized as warm-up always keeping her heart rate (HR) between 50 and 70% of her maximum estimated HR. The walking speed can vary from 2,0 to 4,5mph or 3,0 to 6,5km/h until a steady state HR was found in the treadmill, fact that happened between 2 and 4 minutes when the inclination of the treadmill was 0%. After this period, the participant still a uniform walking speed, however the inclination was 5% during the next 4 minutes. Immediately after the eighth minute, the HR was measured. At the end of the test the distance walked was recorded. The rough estimate of VO₂ Max did for FC post-exercise and the speed of the treadmill (EBBELING, et.al 1991).

-Quality of life

The Portuguese version of Cervantes Scale is of easy applicability, comprehension and has already been validated. Its psychometric properties are satisfactory, demonstrating to be a complete tool to evaluate quality of life related to the health of women during the climacteric. This tool contemplates the climacteric symptomatology and other aspects of women's health, which can influence on quality of life, given 10 analyzed items (LIMA, 2009; DA SILVA FILHO, et.al 2005). The symptoms were evaluated by level of discomfort that women felt related to the following domains (somatic, psychological, sexuality and couple relation). Each question was based on a 0-5 point Likert scale, showing from better to worse in negative questions and the relation was opposite for positive questions. Other tool used to evaluate general health was Women's Health Questionnaire (WHQ) (DIAS, 2002). Its items were chosen with the idea of not emphasizing negative aspects, being called Women's General Health Questionnaire, without adding menopause to its name. The questions are divided into groups which them involve the main symptoms and characteristics behaviors of this phase: depression, somatic symptoms, memory/concentration, vasomotor symptoms, anxiety, sexual behavior, sleeping disorders, menstrual symptoms and attractiveness. The WHQ counted with 36 questions, offering four alternatives as possibilities for answers ("Yes, undoubtedly"; "Yes, sometimes"; "Rarely" and "No, no way"). Each answer is codified in a determined score and each score results in a punctuation of either zero or one, being one a

reflection of a maximum number of symptoms or difficulties in the area (HUNTER, 1992).

- Statistics Analysis

This study presents descriptive data, given that the continuous variables were presented in average and standard deviation and the categorical variables in frequency and percentage.

Results and Discussion

Thirty women completely fulfilled the criteria of inclusion and exclusion for this study and compose this sample. The average age of the participants was 53±6 years old. All of them had confirmation of the menopause (FSH 73 ± 33 UI/ml) Forty per cent of these women had college degree, 19% graduated high school and 6% entered university, but did not finish their studies. The others divided themselves between primary and elementary grades, complete or incomplete. Sixty-six per cent of them had a source of income of their own and 33% did not. Also, 73% lived with their partner.

Table 1 shows variables in life style and demonstrates that most participants do no smoke, do not drink, do not use antidepressants and none of them goes to therapy. Regarding the biochemical exams, most participants present normal glycemic and lipidogram profiles.

Table 1: Characteristics related to life style: smoking; alcoholism; use of antidepressants, therapy; biochemical exams.

General characteristics	Number	Percentage (%)
Smoking		
Yes	6	20%
No	24	80%
Alcoholism		
Yes	7	23%
No	23	87%
Use of antidepressants		
Yes	3	10%
No	27	90%
Therapy		
No	30	100%
Total cholesterol (mg/dl)		
great	20/30<200	66%
limitrophe	7/30=200	23%
high	3/30>240	10%
Triglycerides (mg/dl)		
desired	26/30<150	86%
limitrophe	1/30<199	3%
High	3/30>200	10%
Fasting glucose (mg/dl)		
Normal	25/30=99	83%
Altered	5/30=100	16%

The positive results concerning life style in this study are contrary to another study that evaluated biochemical parameters, besides hormonal and inflammatory parameters in post-menopausal woman and found the presence of dyslipidemia despite being normoglycemic (NUNES, 2014).

Table 2 shows results of body composition. Regarding fat mass, the women are above the average referential that are between 22 and 30% and the average percentage for muscle mass is below the referential values, which are between 70 and 78%. The percentage for water is also below the values that vary from 50 to 60%. Results for the BMI classify these women as being overweight and above the WC adequate.

Table 2: Anthropometry and body composition of climacteric women.

Variables	Average	Standard deviation
Weight (kg)	73	12
Height (cm)	1,59	0,08
MCI (kg/m2)	29	4
WC (cm)	86	8
Fat mass (kg)	28	8
Fat mass (%)	38	5
Muscle mass (kg)	45	5
Muscle mass (%)	62	5
Water (%)	45	4

According to the results above, literature reinforces in another study with 120 menopausal women on the Southeast of Brazil, that 77,1% of the participants presented overweight and obesity and of those, 100% possessed a WC above 88 cm and that these anthropometric indicators have strong influence over the cardiovascular and metabolic risk markers to chronic non-communicable diseases in post-menopausal women (ORSATTI, et.al 2008). As bioelectric impedance is being valued as a marker for the nutritional state for its ability in the processing of information (EICKEMBERG, et.al 2011).

Regarding the participant's life quality, the short version of 10 questions of Cervantes Scale, presents results more prevalent to the menopause and health domain (which involve questions about vasomotor symptoms, health and aging) on a maximum score of 50 points, while the WHQ presents prevalence of symptoms to the cognitive impairment domain, vasomotor symptoms, anxiety, sleeping disorder and attractiveness in most of the them (Table 3).

Table 3: Quality of life data by the Cervantes Scale and Women General Health Questionnaire during menopause.

Cervantes Scale	Results
Score (average/DP)	20±8
Menopause and health domain	14±5
Psychic domain	7±4
Women Health Questionnaire (WHQ)	
Presence of depression	20%
Somatic symptoms presence	43%
Cognitive impairment presence	70%
Vasomotor symptoms presence	80%
Anxiety presence	56%
Sexual relation presence	40%
Sleeping disorder presence	63%
Menstrual symptoms presence	30%
Attractiveness presence	56%

Other study using the same instrument (WHQ) evaluated 110 women during early and late post-menopausal (until 5 years and over 5 years) and found an intermediary level of quality life in both groups. Significant differences were observed when analyzed in the cognitive impairment domain, vasomotor and attractiveness symptoms, in accordance with the above findings, even though women during early post-menopausal had better averages in the scores (MELO FILHO, 2012).

Regarding physical fitness, the VO₂ Max in post-menopausal and previously sedentary women in this study, presented an average of 31,5±5,5 mlO₂.Kg⁻¹.min⁻¹, which is equivalent to a low level conditioning for this age group (Table 4).

Table 4: Maximum oxygen consumption values by treadmill test.

Variables	Results
VO₂ max (ml.kg.min)	
Average/DP	31,5±5,5
Classification (number and percentage)	
Above average	6/30(20%)
Average	4/30(13%)
Below average	11/30(36%)
Much below average	9/30(30%)

Values found in this study are higher when compared to other studies that also estimated the VO₂ Max in post-menopausal women of the same age group (TEOMAN, et.al 2004), through similar ergometric test (LIMA, et.al, 2011), presented average values of 13,8±1,8 e 24,9±6,38 mlO₂.Kg⁻¹.min⁻¹, respectively, considered much below the average. In general and according ACSM 2003, we consider that physical fitness is related to health, because low levels of fitness are associated with an extremely greater risk of premature death by all causes, more specifically by cardiovascular diseases, and better fitness is associated with the reduction in mortality by all causes.

In this context, the present study concluded that the evaluated climacteric women, despite being in a relatively healthy life style from the point of view of habits and biochemical exams, were overweight, high percentage of body fat, increased WC and physical fitness below the expected. The life quality of these women was affected mainly by vasomotor symptoms, cognitive impairment and sleeping disorder. The characterization of climacteric women's health suggests future studies of intervention to optimize the inadequate indicators.

References

- AUBERTIN-LEHEUDRE, M.; GOULET, E. D. B.; DIONNE, I. J. Enhanced rate of resting energy expenditure in women using hormone replacement therapy: preliminary results. *J Aging Physiol*. 2008; 16(1):53-60.
- CHARRO, M. A.; BACURAU, R. F. P.; NAVARRO, F.; PONTES JR, F. L. Manual de Avaliação Física, Editora Phorte, 2010.
- DA SILVA FILHO, C. R., BARACAT, E. C., CONTERNO, L. O., HAIDAR, M. A., FERRAZ, M. B., Climacteric symptoms and quality of life: validity of women's health questionnaire. *Rev Saude Pública*, 2005, 39(3), 333-9.
- DE LORENZI, D. R. S.; BARACAT, E. C.; SACILOTO, B.; PADILHA JR, I. Fatores associados a qualidade de vida após a menopausa. *Rev. Assoc. Méd. Bras.*, v. 52, p. 312-317, 2006.
- DIAS, R.S. Adaptação para o português do questionário de auto-avaliação de percepção de saúde física e mental da mulher de meia idade – Questionário da Saúde da Mulher. *Rev. Psiq. Clin.*, v. 29, n.4, p. 181-189, 2002.
- Diretrizes do American College of Sports Medicine para os testes de esforço e sua prescrição. Rio de Janeiro: Guanabara Koogan; 2003.
- EBBELING, C.B.; WARD, A.; PULEO, E.M.; WIDRICK, J.; RIPPE, J.M. Development of a single-stage submaximal treadmill walking test. *Medicine and Science Sports and Exercise*, Madison, v.23, n.8, p.966-73, 1991.
- EICKEMBERG, M.; OLIVEIRA, C. C.; RORIZ, A. K. C.; SAMPAIO, L. R. Bioimpedância elétrica e sua aplicação em avaliação nutricional. *Rev. Nutr.*, Campinas, v.24, n.6, p.883-893, nov./dez., 2011.
- HALE, G. E.; BURGER, H. G. Hormonal Changes and biomarkers in late reproductive age, menopause transition and menopause. *Best Pract Res Clin Obstet Gynaecol* 23(1):7, 2009.
- HARLOW, S. D.; GASS, M.; HALL, J. E. Executive summary of the stages of reproductive aging workshop +10: addressing the unfinished agenda of staging reproductive aging. *Fertility and Sterility*, vol. 97, no. 4, pp. 848–851, 2012.
- HUNTER M. The Women's Health Questionnaire: a measure of mid-aged women's perceptions of their emotional and physical health. *Psychol Health*. 1992;7(1):45-54.
- JANSSEN, I.; HEYMSFIELD, S.B.; ROSS. R. Low relative skeletal muscle mass (sarcopenia) in older persons is associated with functional impairment and physical disability. *J Am Geriatr Soc*. 2002; 50(5): 889-96.
- LIMA, J. E. M. Tradução, adaptação cultural e validação da versão em português Brasileiro da escala de Cervantes de Qualidade de vida relacionada com a Saúde da Mulher na perimenopausa e na pós-menopausa. Universidade Federal do Rio Grande do Sul, 2009.
- LIMA, M. M. O; BRITTO, R. R; BAIÃO, E. A; ALVES, G. S; ABREU, C. D. G; PARREIRA, V. F. Exercício aeróbico no controle da hipertensão arterial na pós-menopausa. *Fisioter Mov*. 2011 jan/mar;24(1):23-31.
- LOHMAN, T.G., ROCHE, A. F., MARTORREL, R. Anthropometric standardizing reference manual. Champaign, Illinois: Human Kinetics Books; 1988. p. 55-80.
- LOVEJOY, J. C.; CHAMPAGNE, C. M.; DE JONGE, L.; XIE, H.; SMITH, S. R. Increased visceral fat and decreased energy expenditure during the menopausal transition. *International Journal of Obesity*, vol. 32, no. 6, pp. 949–958, 2008.
- LOVEJOY, J. C. Weight gain in women at midlife: the influence of menopause. *Obesity Management*, vol. 5, no. 2, pp. 52–56, 2009.
- MACLENANN, A. H. Evidence based-review of therapies at the menopause. *Int J Rev Based Health c* 2009, 7: 112-123.
- MELO FILHO, S. S. A. Cefaleia e qualidade de vida em mulheres em pós-menopausa recente e tardia. Dissertação, Universidade Federal de Pernambuco, 2012.
- NUNES, P. R. P. Efeito do volume de treinamento contra resistência (musculação) sobre a composição corporal, desempenho físico e parâmetro bioquímico, hormonal e inflamatório em mulheres na pós-menopausa pré-sarcopênicas. Dissertação de Mestrado, UFTM, Uberaba, 2014
- ORSATTI, F. L.; NAHAS, E. A. P.; NAHAS-NETO, J.; MAESTÁ, N.; PADOANI, N. P.; ORSATTI, C. L. Indicadores antropométricos e as doenças crônicas não transmissíveis em mulheres na pós-menopausa da região Sudeste do Brasil. *Rev Bras Ginecol Obstet*. 2008; 30(4):182-9.

POWERS, Scott K.; HOWLEY, Edward T. Fisiologia do Exercício, teoria e aplicação ao condicionamento. 3 ed. São Paulo: Manole, 2009.

TEOMAN, N; OZCAN, A; ACAR, B. The effect of exercise on physical fitness and quality of life in postmenopausal women. Maturitas. 2004;47(1):71-7.

WONG, S.L., JANSSEN, L., ROSS, R. Abdominal adipose tissue distribution and metabolic risk. Sports Med. 2003; 33(10): 709-26.

Luciana Moreira Motta Raiz

Rua Hedd Lamar Ribeiro, 2190 – Bairro: Sandiego – CEP: 14403-195 – Franca, Sp – Brasil.

EVALUATION OF BODY COMPOSITION, QUALITY OF LIFE AND PHYSICAL FITNESS IN CLIMACTERIC WOMEN.

ABSTRACT

The transition period between reproductive life and climacteric brings significant alterations in the life of a woman. The objective of this study is to evaluate the body composition, quality of life and physical fitness of post-menopausal women. The body composition was measured by the bioelectric impedance, the quality of life by two questionnaires (Cervantes Scale and Women General Health Questionnaire) and for the physical fitness Ebbeling treadmill test. The results were determined by average and standard deviation for: BMI 29 ± 4 , WC 86 ± 8 , %F 38 ± 5 , %MM 62 ± 5 , VO₂max $31,5 \pm 5,5$ mlO₂.kg⁻¹.min⁻¹. 80% with vasomotor symptomatology, 70% cognitive impairment, 63% with sleeping disorder and 56% with anxiety and attractiveness or self-esteem symptoms. In the CS there was greater symptomatology in the menopause and health domain that evaluate vasomotor symptoms, health and aging, all of them compromising the quality of life. Evaluated women presented physical fitness below average in the treadmill test. In this context, the characterization of climacteric women's health suggests future studies of intervention to optimize the inadequate indicators.

KEYWORDS: post-menopausal women, body composition, quality of life.

ÉVALUATION DE LA COMPOSITION CORPORELLE, GÉNÉRALE SANTÉ ET CONDITIONNEMENT PHYSIQUE DES FEMMES CLIMACTÉRIQUE.

RÉSUMÉ

La période de transition entre la vie reproductive et ménopause apporte des modifications importantes dans la vie d'une femme. Par conséquent, l'objectif de cette étude est d'évaluer la composition corporelle, la qualité de la vie et de conditionnement physique de post- les femmes ménopausées. La composition corporelle a été mesurée par l'impédance bioélectrique, la qualité de vie pour deux questionnaires ont été choisis (l'échelle de Cervantès et questionnaire de santé générale de la femme) et et la condition physique pour le test sur tapis roulant de l'Ebbeling. Les résultats ont été déterminés par moyenne et écart type pour les: IMC 29 ± 4 , TT 86 ± 8 cm, %G 38 ± 5 , % MM 62 ± 5 , VO₂max $31,5 \pm 5,5$ mlO₂.kg⁻¹.min⁻¹. Quarantevingt pour cent avec vasomoteurs symptomatology, 70% avec déficience cognitive, 63% avec des troubles du sommeil et 56% anxiété, faible attractivité et faible estime de soi symptômes. Dans la l'échelle de Cervantès, il était plus symptomatologie dans le domaine de la ménopause et de la santé qui évaluent les symptômes vasomoteurs, la santé et le vieillissement, chacun d'eux compromettre la qualité de vie. Les femmes évaluées présentés conditionné cardiorespiratoire dessous de la moyenne dans le test sur tapis roulant. Dans ce contexte, la caractérisation de la santé des femmes climatériques suggérer de futures études d'intervention pour optimiser les indicateurs inadéquats.

MOTS-CLÉS: femmes post-ménopausées, composition corporelle, qualité de vie

EVALUACIÓN DE LA COMPOSICIÓN CORPORAL, SALUD GENERAL Y LA CONDICIÓN FÍSICA EN MUJERES CLIMATÉRICAS.

RESUMEN

El período de transición entre la vida reproductiva y el climatérico trae cambios significativos em la vida de las mujeres. La meta de este estudio fue evaluar la composición del cuerpo, la calidad de vida y la condición física de las mujeres em la pos menopausia. La composición del cuerpo fue medida por la impedancia bioeléctrica, la calidad de vida por dos cuestionarios fueron elegidos (Escala de Cervantes y Cuestionario de la Salud General de las Mujeres) y la condición física se fue evaluada por el teste de tapis de Ebbeling. Los resultados son presentados por los promedio y desviación estándar: IMC 29 ± 4 , CC 86 ± 8 cm, %G 38 ± 5 , %MM 62 ± 5 , VO₂max $31,5 \pm 5,5$ mlO₂.kg⁻¹.min⁻¹. Ochenta por ciento con síntomas vasomotores, 70% con deterioro cognitivo, 63% con problemas para dormir y 56% con ansiedad y síntomas de baja atraktividad y autoestima. Por la Escala de Cervantes habian más síntomas en el dominio de la menopausia y salud que evalua los síntomas vasomotres, salud y envejecimiento, todos estos arriesgando la calidad de vida. Las mujeres evaluadas presentaran una condicion cardiorrespiratório abajo de la media apropiada en el teste de tapis. En este contexto, la caracterización de la salud en mujeres en menopausia sugere futuros estudios de intervención para optimizar todos los indicadores insuficientes.

PALABRAS CLAVE: mujeres post-menopausia, composición corporal, calidad de vida

AVLIAÇÃO DA COMPOSIÇÃO CORPORAL, QUALIDADE DE VIDA E CONDICIONAMENTO FÍSICO DE MULHERES CLIMATÉRICAS

RESUMO

O período de transição entre a vida reprodutiva e o climatério traz alterações significativas na vida da mulher. Portanto, o objetivo deste trabalho foi avaliar a composição corporal, a qualidade de vida e o condicionamento físico das mulheres na pós-menopausa. A composição corporal foi avaliada por bioimpedância elétrica, a qualidade de vida por 2 questionários (escala de Cervantes e Questionário de saúde da mulher) e para o condicionamento físico o teste de esteira de Ebbeling. Os resultados foram determinados por média e desvio padrão para: IMC 29 ± 4 kg/m², CC 86 ± 8 cm, %G 38 ± 5 , %MM 62 ± 5 , VO₂ max $31,5 \pm 5,5$ mlO₂.kg⁻¹.min⁻¹. 80% das mulheres apresentavam sintomatologia vasomotora, 70% déficit cognitivo, 63% transtorno do sono e 56% ansiedade e problemas relativos à atratividade ou autoestima e na Escala de Cervantes houve maior sintomatologia no domínio menopausa e saúde que avaliou sintomas vasomotores, saúde e envelhecimento, todos comprometendo a qualidade de vida. As mulheres avaliadas apresentaram condicionamento cardiorrespiratório abaixo da média no teste de esteira. Neste contexto, a caracterização de saúde em mulheres climatéricas sugere futuros estudos de intervenção para otimizar todos os indicadores inadequados.

PALAVRAS-CHAVE: mulheres pós-menopausa, composição corporal e qualidade de vida.