



REVISTA BRASILEIRA DE REUMATOLOGIA

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Original article

Kinesiotherapy effect on quality of life, sexual function and climacteric symptoms in women with fibromyalgia[☆]



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ARTICLE INFO

Article history:

Received 15 May 2014

Accepted 26 August 2014

Available online 13 May 2015

Keywords:

Fibromyalgia

Quality of life

Sexuality

Sexual approach

Climacteric

ABSTRACT

Objective: To evaluate the effect of the kinesiotherapy in the quality of life, sexual function and menopause-related symptoms and compare in climacteric women with and without fibromyalgia (FM).

Methodology: The group was composed of 90 climacteric women divided in 2 groups: FM (47) and control (43). The patients were analyzed on their quality of life (Utian Quality of Life [UQoL]), sexual function (Sexual Quotient-Female Version [SQ-F] questionnaire) and intensity of the climacteric symptoms (Blatt-Kupperman menopausal index [BKMI]). Both groups performed pelvic floor kinesiotherapy, composed of 20 sessions, twice a week. Statistical analysis was performed using Student's t-test, mixed-design analysis of variance (ANOVA) and Cohen's Kappa.

Results: In the quality of life, an improvement was noticed in both groups for all domains analyzed. In the comparison between groups it was noticed a difference in the emotional ($p=0.01$), health ($p=0.03$) and sexual ($p=0.001$) domains with considerable gains verified in the control group. Improvement was also noticed in the sexual function. In the analysis between groups, FM group showed a lower score compared to the control group ($p<0.001$). With respect to the climacteric symptoms, there was no difference in the analysis between groups after the intervention ($p<0.001$).

Conclusions: The pelvic floor kinesiotherapy promotes a positive effect in the domains of quality of life, sexual function and climacteric symptoms in women with and without

[☆] Work conducted at the Postgraduate Program in Health Sciences, Universidade Federal do Rio Grande do Norte, and at Universidade Potiguar (Laureate International Universities), Natal, RN, Brazil.

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<http://dx.doi.org/10.1016/j.rbre.2014.08.018>

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fibromyalgia in the climacteric period; however, fibromyalgia seems to be a limiting factor to achieve better results in some of the aspects evaluated.

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Efeito da cinesioterapia na qualidade de vida, função sexual e sintomas climatéricos em mulheres com fibromialgia

R E S U M O

Palavras-chave:

Fibromialgia
Qualidade de vida
Sexualidade
Abordagem sexual
Climatério

Objetivo: Avaliar e comparar o efeito da cinesioterapia na qualidade de vida, função sexual e sintomas climatéricos em mulheres climatéricas com e sem fibromialgia.

Métodos: Participaram 90 mulheres climatéricas, divididas em dois grupos: fibromialgia (47) e controle (43). As pacientes foram avaliadas nas variáveis: qualidade de vida (Utian Quality of Life [UQOL]), função sexual (questionário do quociente sexual/versão feminina [QS-F]) e intensidade dos sintomas climatéricos (Índice Menopausal de Blatt-Kupperman [IMBK]). Os grupos fizeram cinesioterapia para o assoalho pélvico, composto de 20 sessões, duas vezes por semana. Análise estatística foi feita por meio dos testes t de Student pareado, análise de variância de delineamento misto e Kappa de Cohen.

Resultados: Na qualidade de vida, foi observada melhoria em ambos os grupos para todos os domínios avaliados. Na análise intergrupo foi evidenciada diferença nos domínios emocional ($p=0,01$), saúde (0,03) e sexual ($p=0,001$) com ganhos mais expressivos para o grupo controle. Na função sexual, foi verificada melhoria nos grupos, após a intervenção; na análise intergrupo as fibromiálgicas apresentaram escores inferiores ao grupo controle ($p<0,001$). Em relação aos sintomas climatéricos não houve diferença na análise intergrupo pós-intervenção ($p=0,73$). Entretanto, ambos os grupos apresentaram redução significativa da sintomatologia após a intervenção ($p<0,001$).

Conclusões: A cinesioterapia do assoalho pélvico exerce efeito benéfico sobre os domínios da qualidade de vida, função sexual e sintomatologia climatérica em mulheres com e sem fibromialgia na fase do climatério. Entretanto, a fibromialgia parece ser fator limitante para melhores resultados em alguns aspectos avaliados.

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Introduction

Fibromyalgia is one of the most common rheumatic diseases, whose main characteristic is a diffuse and chronic musculoskeletal pain.^{1,2} In addition to the painful condition, patients often complain of fatigue, sleep disturbances, morning stiffness, paresthesias of the extremities, a subjective feeling of edema, cognitive disorders, urogynecology disorders and decreased libido. Although the etiology and pathogenesis of fibromyalgia is not fully understood, it is recognized as a complex and heterogeneous clinical entity, depending not only of biological mechanisms but also of influences of the psychosocial context.^{3,4} The diagnosis remains a complex challenge for clinicians, by covering a variety of aspects, including the fact that it is based solely on the perception of symptoms by the patient, absence of an objective test to confirm or deny the diagnosis and the unpredictable response to various existing treatments. What is known is that, in most patients, the pain and symptoms associated determine a negative impact on quality of life.³

Studies have reported that about 80–0% of cases of fibromyalgia occur in the female population^{4,5} and that women exhibit significantly more symptoms than men.⁶

Considering that the highest prevalence of the disease occurs between 50 and 65 years of age,^{7,8} which coincides with the climacteric period, some signs and symptoms of fibromyalgia can often be confused with menopause-related symptoms. Therefore, it is common that many patients initially seek medical care with generalist physicians and gynecologists, which reinforces the importance of investigating the association between menopause and fibromyalgia.^{9,10}

Studies examining this association have suggested that those hormonal disturbances of the menopause may be directly involved in the genesis of symptoms associated with fibromyalgia in middle-aged women.¹⁰ However, considering that there are women with fibromyalgia outside the climacteric phase, it is clear that the hormonal deficit is not the only pathophysiological mechanism involved in the genesis of this disease.^{10,11}

Despite the frequent association between climacteric syndrome and fibromyalgia, the literature is still scarce in terms of evidence from studies involved in the analysis and comparison of some related aspects, such as is the case of climacteric signs and symptoms, quality of life and sexual function. This scientific gap becomes even more evident in terms of the impact of complementary therapeutic approaches such as kinesiotherapy. Given the above, the present study

aimed to analyze the effect of pelvic floor kinesiotherapy in menopause related symptoms, quality of life and sexual function in women with fibromyalgia in the climacteric period.

Methods

A clinical trial involving 90 climacteric women aged between 45 and 65 years, regardless of race, ethnicity and religion, was conducted. The women were referred from outpatient clinics for menopause care (Centro de Saúde Reprodutiva Leide Morais and Maternidade Escola Januário Cicco; Natal, RN) and rheumatology (Hospital Universitário Onofre Lopes, Universidade Federal do Rio Grande do Norte and Clínica Integrada da Saúde, Universidade Potiguar; Natal, RN) after an initial screening. The study was reviewed and approved by the Research Ethics Committee of the Universidade Potiguar under the protocol number 250/2010, CAAE 0252.0.052.000-10. All participants signed an Informed Consent Form, according to the norms of the Conselho Nacional de Saúde, Resolution 196/1996. The research was conducted in accordance with the Declaration of Helsinki, as revised in 2008.

Considering that the study design involves estimates of frequencies and mean scores, sampling techniques with statistical procedures were used, adopting an alpha of 5% and a statistical power of 80%. Taking into consideration also the design effect and the occurrence of refusals and losses, it was decided to increase the sample size to build in a margin of safety for possible sample losses.

The volunteers were divided into two groups: fibromyalgia (FM) ($n=47$) and control ($n=43$) groups. The following inclusion criteria were considered for FM group: (a) a diagnosis of FM established by a rheumatologist, according to the American College of Rheumatology (ACR) 1990 criteria²; (b) cognitive ability to understand the purpose of the survey and to answer the questionnaires; (c) not to be performing, at least during one month, any type of physical therapy. For the control group, all inclusion criteria above mentioned were obeyed, with the exclusion of diagnosis of FM. Exclusion criteria for both groups included: (a) presence of physical limitations; (b) previous history of oophorectomy; (c) presence of diffuse connective tissue diseases, chronic pelvic pain and irritable bowel syndrome.

The volunteers were subjected to pre- and post-intervention assessments through questionnaires applied by evaluators trained in applying the research tools, individually and in a reserved place. All assessments were blinded, being carried out by evaluators different of those who underwent the physical therapy intervention. As for data collection, the authors used a semistructured questionnaire to assess the demographic characteristics (age, years of education, occupation, household income and marital status), besides validated instruments to measure quality of life specifically during menopause, climacteric signs and symptoms' severity and sexual function.

The quality of life was assessed by the Utian Quality of Life (UQoL) questionnaire, translated and validated in Brazil by Galvão et al. (2007),¹² which proved to be a useful instrument to

quantify quality-of-life and well-being subjective assessments in pre- and post-menopausal women. The instrument contains 23 questions that comprise four distinct quality-of-life domains, namely: occupational, health, sexual and emotional domain. Each question of UQoL is answered by means of a 5 point scale, wherein the maximum and minimum values vary in each domain. The higher the awarded score, the better the quality of life.

The severity of climacteric symptoms was measured by Blatt-Kupperman Menopausal Index (BKMI),¹³ an instrument widely used both in clinical practice and in research settings to monitor the effects of those various treatments used in the climacteric phase, demonstrating high test-retest reliability power. BKMI consists of 11 items, for which the patient attributes scores according to the intensity of each symptom (0 – none, 1 – mild, 2 – moderate, 3 – severe). The final score is determined by the sum of the respective scores of the above symptoms, after their multiplication by conversion factors, in order to measure quantitatively the intensity of climacteric symptoms.

The participants' sexual function was assessed by the Sexual Quotient female version questionnaire (SQ-F), developed and validated for the Portuguese idiom by Abdo (2006).¹⁴ This tool contains questions about various domains of sexual activity for women (sexual desire, arousal, orgasm, and their psychophysical correlates) scored from 0 to 100, where the closer to 100, the better the sexual function.

After the pre-intervention assessment, all participants initiated the proposed treatment, which was performed in 10 consecutive weeks, involving 20 sessions of pelvic floor kinesiotherapy held twice a week, with 1-h/day duration, conducted by one of the researchers. The proposed conduct obeyed the sequence of perception, abdominoperineal dissociation, voluntary contraction and automation of the pelvic floor associated with facilitating postures, pelvis mobilization and breathing training at the time of pelvic floor contractions. Each exercise was performed with a series of ten repetitions; each contraction was sustained for 5 s, with 10 s of rest between contractions, progressing to a 10-s support with 20 s of rest after 10 sessions.

After finishing the intervention period, the patients were reassessed, using the same survey instruments applied in the pre-intervention period.

The obtained data were analyzed descriptively as the mean and standard deviation for continuous and interval variables and as percentages for dichotomous or ordinal categorical variables. To meet the study objectives, an analysis of normality was performed using the Shapiro-Wilk test. To check the influence of the intervention protocol in FM and menopause groups, paired Student's *t*-test was used; thus, the difference before and after intervention was estimated. In order to estimate the size effect and the clinical impact of the intervention, Cohen's Kappa (*d*) was used. Values above 0.8 were considered as representing a strong effect size; between 0.5 and 0.8, a moderate effect; and below 0.5, a weak effect. For detection of the influence of "group" variable, a mixed-design analysis of variance (ANOVA) between the participants was performed. These factors and their interactions were entered into the prediction model for the following dependent variables: BKMI, SQ-F and UQoL. All data were analyzed

with the statistical software Statistical Package for Social Science (SPSS) version 20.0, and a significance level of 5% was adopted.

Results

Of the 90 women selected for the study, seven dropped out during the intervention or did not perform 80% of the sessions (three in the control group and four in FM group). The alleged reasons for withdrawal were related to personal reasons and to incompatibility of time; thus, no adverse event was indicated as the cause of the interruption.

A total of 83 participants completed the study, of which 43 were part of FM group and 40 were in the control group. With regard to demographics, there was no statistically significant difference between groups at baseline. Regarding the variables marital status, occupation and income, no difference was observed between groups ($p > 0.05$) and in this sample, in general, 62 (74.7%) participants had a steady partner, 43 (51.8%) exerted some off-home work and 43 (51.8%) had a family income between 2 and 4 minimum wages. In Table 1 it can be seen that the groups were homogeneous in all continuous variables investigated previously to the treatment proposed in the study. After the study period, no adverse events were reported, and most patients showed satisfaction with the proposed exercises.

Regarding the domains of quality of life analyzed by UQoL, it was observed that the kinesiotherapy protocol allowed a statistically significant improvement for both FM and control groups in all domains, when comparing pre- and post-intervention intragroup results. Regarding the effect or clinical impact of the intervention on the domains of quality of life, it can be observed that, for the climacteric group, all domains of UQoL showed a strong effect: physical ($d = 0.72$), emotional ($d = 1.02$), health ($d = 1.49$) and sexual ($d = 1.69$), and this also occurred with the FM group: occupational ($d = 0.62$), emotional ($d = 0.62$), health ($d = 0.97$) and sexual ($d = 1.00$). In the post-intervention intergroup evaluation, a statistically significant difference was observed in three of the four UQoL domains: occupational ($p = 0.01$), health ($p = 0.03$) and sexual ($p \leq 0.00$), and kinesiotherapy provided better results in women in the control group (Table 2).

In the evaluation of sexual function, it can be observed in Table 3 that, after the intervention, both FM (37.48 vs. 43.34, $p < 0.001$, $d = 0.36$) and control (38.80 vs. 50.67, $p < 0.001$, $d = 0.67$) groups had their scores increased, with statistically significant differences. A weak clinical impact of the intervention for FM group and a strong impact for the control group were identified. In intergroup comparison, a statistically significant difference ($p = 0.01$) was detected, evidencing a more clear improvement in the control group.

By analyzing the intensity of menopause-related symptoms by BKMI, it is observed in Table 3 that the protocol for pelvic floor kinesiotherapy resulted in a significant score reduction for both FM (34.06 vs. 23.23; pre- vs. post-intervention, respectively, $p < 0.001$, $d = 1.09$) and control (30.15 vs. 19.20, $p < 0.001$, $d = 1.08$) groups, with a strong clinical impact of the intervention for both groups. As for the

intergroup analysis, there was no statistically significant difference between groups ($p = 0.73$).

Discussion

Our findings demonstrate that pelvic floor kinesiotherapy in climacteric women can improve their quality of life, sexual function and climacteric symptoms. Despite the very frequent complaints of sexual dysfunction, menopause related signs and symptoms and a negative impact on the quality of life in women with fibromyalgia,¹⁵⁻²⁰ and despite previous studies showing positive effects of pelvic floor kinesiotherapy for these complaints,^{21,22} to date there were no reports in the literature on the use of this intervention as part of the treatment of such disorders considering this particular group of climacteric women. Thus, this is the first report in the literature pointing out that the clinical impact of pelvic floor kinesiotherapy is different in women with an associated diagnosis of fibromyalgia, which may have important implications for the clinical management of these patients.

Regarding the domains of quality of life, a significant improvement in both groups was demonstrated after the pelvic floor kinesiotherapy sessions, which corroborates the results of previous studies demonstrating that such physical therapy intervention provides significant improvement in quality of life of women with dysfunctional pelvic floor.²¹⁻²³ A recent study in Nigerian women in the climacteric phase, which aimed to investigate the effect of a twelve-week program of physical exercises and pelvic floor muscle strengthening, showed that the intervention led to a significant improvement on quality of life in general.²⁴

Although fibromyalgia is directly linked to emotional and psychological disorders,²⁵ the climacteric period, by itself, is a difficult transition phase, which involves a complex process of emotional and bodily changes, being under the influence of multiple factors such as personal and family life history, environment, culture, customs and personal peculiarities. Such aspects resonate differently in each woman, with direct interference in their feelings and quality of life,²⁶ a fact that resembles and often defines the symptoms of menopause as being part of fibromyalgia.¹⁰

In the analyzed sample, FM group showed limitations in the kinesiotherapeutic results in relation to "occupational" and "health" domains of quality of life. Such limitations were evidenced in another study²⁷ which proposed to analyze the difficulty of a continuous work for women with fibromyalgia; the authors observed that limitations in physical capacity and the increased need for rest, due to the chronicity of the pain process, were the main reasons associated with the difficulty to manage physical, psychosocial and organizational work demands. It is also known that fibromyalgia is characterized by being a persistent and debilitating disorder, causing a negative effect on people's lives and affecting their ability to work and engage in daily activities.^{28,29} These effects arise mainly from the picture of a chronic and widespread musculoskeletal pain, which is presented as a determining factor in the worsening of health problems and in limitations in daily life.³⁰⁻³²

Table 1 – Demographic and clinical characteristics of fibromyalgia and control groups at baseline.

Variables	Control Mean (\pm SD)	Fibromyalgia Mean (\pm SD)	p
Age, years	53.27 (5.99)	52.83 (6.27)	0.76
Years of study	10.55 (4.47)	10.74 (4.66)	0.84
Quality of life, UQoL			
Occupation	23.90 (6.70)	22.04 (6.29)	0.19
Health	15.87 (5.35)	15.44 (4.71)	0.69
Emotional	16.45 (4.82)	16.18 (4.42)	0.79
Sexual	7.77 (2.49)	7.62 (2.58)	0.79
Total	64.25 (13.65)	61.30 (10.83)	0.27
Climacteric symptoms, BKMI	30.15 (10.93)	34.06 (10.45)	0.09
Sexual function, SQ-F	38.80 (18.97)	37.48 (16.65)	0.73

$p \leq 0.05$, non-paired Student's t-test.

Table 2 – Analysis of intragroup and intergroup quality of life, considering pre- and post-intervention periods.

Variables	Control			Fibromyalgia			Intergroup difference, P
	Pre	Post	Intragroup difference, p	Pre	Post	Intragroup difference, p	
	Mean (\pm SD)	Mean (\pm SD)		Mean (\pm SD)	Mean (\pm SD)		
UQoL emotional	16.45 (\pm 4.82)	21.02 (\pm 4.12)	<0.00 ^{a,b}	16.18 (\pm 4.42)	18.79 (\pm 3.98)	<0.00 ^{a,b}	0.09
UQoL occupational	23.90 (\pm 6.70)	28.37 (\pm 5.56)	<0.00 ^{a,b}	22.04 (\pm 6.29)	25.97 (\pm 6.68)	<0.00 ^{a,b}	0.01 ^c
UQoL health	15.87 (\pm 5.35)	23.55 (\pm 4.94)	<0.00 ^{a,b}	15.44 (\pm 4.71)	20.58 (\pm 5.81)	<0.00 ^{a,b}	0.03 ^c
UQoL sexual	7.77 (\pm 2.49)	11.72 (\pm 2.18)	<0.00 ^{a,b}	7.62 (\pm 2.58)	10.00 (\pm 2.14)	<0.00 ^{a,b}	0.00 ^c

Pre-treatment and post-treatment values expressed as mean and standard deviation.

^a $p < 0.001$ (paired Student's t-test for intragroup analysis).

^b Strong to moderate clinical impact of the intervention (Cohen's Kappa test).

^c $p < 0.05$ (mixed-design analysis of variance (ANOVA) between participants in intergroup analysis).

Sexual function is currently regarded as a key element for the general well-being and quality of life in middle-aged women, and this factor is influenced by socio-demographic, biological and behavioral variables relevant to the stage of life where these women are.^{33,34} In previous studies on the investigation of sexual dysfunctions, it was possible to observe that this complaint is quite common in climacteric women,^{35,36} and when investigated in women with rheumatic diseases, it was observed that women with fibromyalgia exhibit a higher frequency, compared to other diseases.²⁰

Pelvic floor muscle training provides stability, resistance and strength of these muscles, increased vaginal tone and consequently an improvement in sexual function, by allowing a better awareness and possibly a positive impact, both on orgasm and in sexual arousal.³⁷⁻³⁹ In our study, the effects observed in the FM group were less important than those observed in climacteric women without fibromyalgia. This finding can be attributed to the fact that psychiatric symptoms, such as depression, are quite common in women with fibromyalgia, which could exert a direct and detrimental

Table 3 – Analysis of intra- and intergroup of sexual function through SQ-F questionnaire and severity of climacteric symptoms, considering pre- and post-intervention.

Variables	Control			Fibromyalgia			Intergroup difference, P
	Pre	Post	Intragroup difference, p	Pre	Post	Intragroup difference, p	
	Mean (\pm SD)	Mean (\pm SD)		Mean (\pm SD)	Mean (\pm SD)		
Sexual function, SQ-F	38.80 (\pm 18.97)	50.67 (\pm 16.46)	<0.00 ^{a,b}	37.48 (\pm 16.65)	43.34 (\pm 15.55)	<0.00 ^a	0.01 ^c
Climacteric symptoms, BKMI	30.15 (\pm 10.93)	19.20 (\pm 9.34)	<0.00 ^{a,b}	34.06 (\pm 10.45)	23.23 (\pm 9.29)	<0.00 ^{a,b}	0.73

Pre-treatment and post-treatment values expressed as mean and standard deviation.

^a $p < 0.001$ (paired Student's t-test for intragroup analysis).

^b Strong to moderate clinical impact of the intervention (Cohen's Kappa test).

^c $p < 0.05$ (mixed-design analysis of variance (ANOVA) between participants in intergroup analysis).

influence on the sexual function of these women, thus complicating the attainment of more significant therapeutic responses.⁴⁰

The climacteric symptoms, due to hormonal changes as hypoestrogenism, negatively influence the quality of life and functionality of women who are experiencing this phase.⁴¹ The treatment with kinesiotherapy exercises for pelvic floor, although not related in previous studies as a therapeutic way to ease the intensity of climacteric symptoms, allowed a homogeneous reduction in the scores of BKMI for both groups, showing that the diagnosis of fibromyalgia does not interfere directly in the impact of an exercise program for climacteric symptoms. Based on these results, it is plausible to suggest that even patients with fibromyalgia would benefit with pelvic floor kinesiotherapy, for improvement of their climacteric symptoms. Despite this, a recent study emphasizes that women with fibromyalgia exhibit hypersensitivity to pain and worsening of signs and symptoms related to menopause, when compared to healthy women, in consequence of the early onset of menopause and, thus, a reduced exposure time of these women to estrogen.⁴²

Given the findings highlighted in this study, we may suggest that pelvic floor kinesiotherapy provides significant improvement in quality of life in occupation, emotional, health and sexual domains, as well as in climacteric symptoms and also in sexual function. However, when the improvement in the group diagnosed with fibromyalgia was compared with that in the control group, it was observed that fibromyalgia exerts a limiting effect on the improvement in health, occupational and sexual domains of quality of life and also in sexual functioning in climacteric women.

Conflicts of interest

The authors declare no conflicts of interest.

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