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Effect of progressive muscle relaxation in adults with anxiety symptoms

Efeito do relaxamento muscular progressivo em adultos com sintomas de ansiedade

Efecto de la relajación muscular progresiva en adultos con síntomas de ansiedad

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ABSTRACT

Objective: to evaluate the effectiveness of applying Jacobson's progressive muscle relaxation technique in reducing mild and moderate anxiety symptoms in adults. **Method:** quasi-experimental study, with a sample of 108 adult users of the Family Health Strategy, carried out from March to August 2019. For descriptive and inferential statistical analysis, the following were used: measures of central tendency, Pearson's Chi-Square Test, Exact Fisher, Mann-Whitney and Wilcoxon (5% significance level). **Results:** at first, the groups were homogeneous in terms of characteristics (p=0.707) and anxiety levels scores (p=0.463). In the second moment, they showed heterogeneity and independence related to characteristics (p=0.001) and scores (p=0.001). **Conclusion:** the application of the technique showed an improvement in anxiety symptoms in the experimental group (p=0.001), with greater effectiveness in participants with mild symptoms (p=0.010), female, young adult, history of recent stressful situation and with problems with sleep (p<0.001).
Descriptors: Primary Health Care; Nursing; Adult; Anxiety; Muscle Relaxation.

RESUMO

Objetivo: avaliar a efetividade da aplicação da técnica de relaxamento muscular progressivo de Jacobson na redução de sintomas de ansiedade leves e moderados em adultos. **Método**: estudo quase-experimental, com amostra de 108 adultos usuários da Estratégia Saúde da Família, realizado entre março e agosto de 2019. Para análise estatística descritiva e inferencial, foram utilizados: medidas de tendência central, Teste Qui-Quadrado de Pearson, Exato de Fisher, Mann-Whitney e Wilcoxon (nível de significância de 5%). **Resultados**: no primeiro momento, os grupos apresentaram homogeneidade em relação às características (p= 0,707) e aos escores dos níveis de ansiedade (p=0,463). No segundo momento, mostraram heterogeneidade e independência relacionados às características (p=0,001) e aos escores (p=0,001). **Conclusão**: a aplicação da técnica demonstrou melhoria dos sintomas ansiosos do grupo experimental (p=0,001), com maior efetividade nos participantes com sintomas leves (p 0,010), sexo feminino, adulto jovem, histórico de situação estressora recente e com problemas com o sono (p<0,001).
Descritores: Atenção Primária à Saúde; Enfermagem; Adulto; Ansiedade; Relaxamento Muscular.

RESUMEN

Objetivo: evaluar la efectividad de la aplicación de la técnica de relajación muscular progresiva de Jacobson en la reducción de los síntomas de ansiedad leve y moderada en adultos. Método: estudio cuasiexperimental, con una muestra de 108 adultos usuarios de la Estrategia Salud de la Familia, realizado de marzo a agosto de 2019. Para el análisis estadístico descriptivo e inferencial se utilizaron: medidas de tendencia central, test Chi-Cuadrado de Pearson, Exacto de Fisher, Mann-Whitney y Wilcoxon (nivel de significancia del 5%). **Resultados**: en un principio, los grupos fueron homogéneos en cuanto a las características (p=0,707) y a los puntajes de niveles de ansiedad (p=0,463). En el segundo momento, mostraron heterogeneidad e independencia respecto a las características (p=0,001) y puntajes (p=0,001). **Conclusión**: la aplicación de la técnica mostró una mejoría en los síntomas de ansiedad en el grupo experimental (p=0,001), con mayor efectividad en los participantes con síntomas leves (p=0,010), sexo femenino, adulto joven, antecedente de situación estresante reciente y con tratornos de sueño (p<0,001).
Descriptores: Atención Primaria de Salud; Enfermería; Adulto; Ansiedad; Relajación Muscular.

INTRODUCTION

Anxiety symptoms can be mentioned among the mental health problems deserving emphasis in Primary Health Care[1]. The World Health Organization (WHO) points out that the number of people with anxiety symptoms has increased in all age groups. They vary in terms of severity (mild, moderate and severe) and duration (from months to years), characterized by frequent manifestations of emotions in the face of a triggering or precipitating situation, leading to signs of palpitations in the chest, dizziness, tachycardia, pallor, increased perspiration, muscle tension, tremor and intestinal disorders, among others[2].

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Anxiety ranks sixth among the common mental disorders and affects 264 million people, which corresponds to 3.6% of the world population. Between 2005 and 2015 there was a 14.9% increase in the number of cases identified, resulting from population growth and from the increase in life expectancy. Specifically in Brazil, it reached 9.3% of the general population, turning the country into a record-holder in this type of disorder[2].

The statistical panorama is worrying, and mental health prevention and promotion actions are becoming increasingly urgent in services, with the involvement of primary care and articulation across sectors[1]. It becomes necessary to reorganize these services, in order to adopt adequate actions targeted at people with anxiety symptoms, according to the WHO guidelines. Thus, interventions carried out by professionals, especially by nurses, are now considered as supporting health promotion, acting positively in reducing anxiety symptoms, improving quality of life and rehabilitation of the user[3].

Among the interventions employed as group therapies for people with anxiety symptoms, the Jacobson Progressive Muscle Relaxation Technique stands out, developed by North American physician Edmund Jacobson in 1935 with the purpose of taking patients to a state of intense muscle relaxation. After a number of research studies were conducted, it was noticed that the body responds with muscle tension to fear-related thoughts or events which, in turn, can increase the anxiety experience. Application of this technique does not aim at ending tensions, but at using it as a means to control intense or exaggerated tensions[4].

Health professionals have appropriated this technique in the treatment of anxiety as a complementary method, as it is an accessible and non-invasive technique, considered simple and not requiring special training[5]. National and international studies, with different populations, have investigated the effects of the muscle relaxation technique on anxiety and have shown good results[6-8]. This intervention method represents an important contribution because it results in improvements in patient stability, functional capacity and emotional well-being[4,5].

This study aimed at evaluating the effectiveness of applying Jacobson's progressive muscle relaxation technique in reducing mild and moderate anxiety symptoms in adults.

METHOD

This is a quasi-experimental clinical trial. This type of study involves two groups: Experimental and Control. Allocation of the participants to each group is as per the researcher's convenience and not in a random way[9]. Data collection was conducted from March to August 2018 with 11 Family Health teams (FHts) from the municipality of Teresina, Piauí, Brazil.

The subjects included were adults aged from 20 to 59 years old, assisted by the FHts, who presented mild and moderate anxiety symptoms and who had a mobile cell phone for the researchers to contact them. Users with severe anxiety symptoms (they could eventually need to use medication, which could interfere with the effect of the intervention) and with physical problems that made it impossible to participate in the intervention were excluded.

Of the population of 391 researched subjects, 108 (27.62%) adults that presented mild and moderate anxiety symptoms were selected to comprise the sample.

Data collection took place in three stages. In Stage I (pre-intervention), the anxiety symptoms were screened in the sample using the Beck Anxiety Inventory (BAI)[10] instrument, in order to classify symptoms as minimal, mild, moderate and severe. A questionnaire for sociodemographic questions, health conditions and life habits was also used. The approximate application time was 20 minutes per participant. This stage lasted three months.

The questionnaire used for sociodemographic questions, health conditions and life habits contained the following variables: sociodemographic - gender, age, marital status, if the participant has children, skin color/race, years of study, family income (in reais), if the participant works, occupation, if the participant has a religion and religious practice; health conditions - frequency with which they seek health services, presence of diseases, medication use, stressful event (last year) and sleep problems; life habits - use of licit and/or illicit substances, psychological and/or psychiatric treatment, alternative treatment, practice of physical activity and history of violence.

In order to assemble the Experimental Group (EG) and Control Group (CG), the participants were invited to take part in the research occasionally, when they attended the FHts for Nursing consultations and/or with other professionals. The data collection instruments were applied in a reserved room. A pilot test was performed and the research team was previously trained. It is noted that the BAI scores were classified into the respective levels by the professional psychologists working in the NASF.

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The participants classified as with minimal or severe symptoms were excluded from stages II and III. The reason corresponds to the fact that participants with minimal symptoms did not require any intervention. Those classified as with severe symptoms were referred for care at the NASF, and the treatment offered by the health team was able to reduce anxiety symptoms, generating bias in the results of this study. In addition to that, it is noted that no participants in the intervention groups underwent any other treatment (pharmacological or non-pharmacological) for anxiety symptoms, verified through questions related to the health conditions during Stage I.

The EG consisted of 41 participants who lived close to the BHU headquarters of the South, North and East NASF from the capital city, as they had the necessary physical structure to apply the muscle relaxation technique, in addition to proximity of the users' homes, as distance might reduce the participants' adherence, causing losses. The CG had 67 participants, as per the researcher's convenience.

Stage II consisted in the intervention, where the EG participants were invited via telephone calls and informed about the day, time and place for the interviews. In the EG, the progressive muscle relaxation technique was applied twice a week, with a two-day interval and lasting from 30 to 40 minutes, totaling six sessions.

The sessions were conducted by a health professional from the NASF and monitored by another one who is part of the research team. In each session and after due welcoming and demonstration of the technique, each participant was asked to tension each muscle group for five to ten seconds and then to relax from 20 to 30 seconds. Relaxation started in the hands, forearms and biceps, followed by the forehead, scalp, eyes, nose, mouth, jaws, neck, shoulders, chest, back and abdomen. Finally, legs, calves and right and left foot. The technique was always described while the procedure was demonstrated, in order to ensure that the participants learned it and performed it correctly.

The CG received a lecture during the study: its participants were contacted by telephone and invited to attend an educational lecture on anxiety (symptoms, treatment and clarification of doubts), developed by research team members and lasting a mean of one hour. One week after the end of the last session where the technique was applied, the research team conducted Stage III (post-intervention), where BAI was applied to both groups.

Stage III (Final evaluation/Post-test) included participants who were present in all the intervention sessions (EG) and those who attended the lecture (CG).

The IBM SPSS® software, version 24.0, was used for data analysis. Descriptive statistics (central tendency measures) and inferential statistics (Pearson's Chi-square, Fisher's Exact, Mann-Whitney and Wilcoxon tests) were applied, with a 5% significance level and 95% confidence intervals.

The research protocol was approved by the Research Ethics Committee of the proposing institution. All the participants signed the Free and Informed Consent Form (FICF) and were guaranteed anonymity, as stipulated in Resolution No. 466/12 of the National Health Council.

RESULTS

The sociodemographic characteristics of the 108 participants are presented in Tables 1 and 2.

TABLE 1: Characterization of related to the health conditions of the users selected in Stage I (Initial evaluation-Screening/Pre-test) to comprise the groups (n=108). Teresina, PI, Brazil, 2019.

Variables	n	%
Recent stressful events		
Yes	72(66.7)	66.7
No	36(33.6)	33.6
Sleep problems		
Yes	67(62.0)	62.0
No	41(38.0)	38.0

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TABLE 2: Characterization of the social profile and related to the health conditions of the users selected in Stage I (Initial evaluation-Screening/Pre-test) to comprise the groups (n=108). Teresina, PI, Brazil, 2019.

Variables	n (%)	$\bar{X}$*	Min†	Max‡	±§
Gender					
Male	18 (16.7)				
Female	90 (83.3)				
Age group‖		35	20	59	10.4
Young adults (20|-|39 years old)	70 (64.8)				
Mature adults (40|-|59 years old)	38 (35.2)				
Marital status					
With a partner, living together	54 (50.0)				
With a partner, not living together	13 (12.0)				
Without a partner, formerly married	15 (13.9)				
Without a partner, not formerly married	26 (24.1)				
Presence of children					
Yes	88 (81.5)				
No	20 (18.5)				
Race					
White	11 (10.2)				
Black	38 (35.2)				
Asian	6 (5.6)				
Brown	52 (48.1)				
Indigenous	1 (0.9)				
Schooling (in years)		10	0	16	4
Economic class					
10-20 MWs	1 (0.9)				
4-10 MWs	7 (6.5)				
2-4 MWs	10 (9.3)				
Up to 2 MWs	90 (83.3)				
Professional occupation (job)					
Yes	43 (39.8)				
No	65 (60.2)				
Religion					
Yes	95 (88.0)				
No	13 (12.0)				

*Mean; †Minimum; ‡Maximum, §Standard Deviation; ‖Villanueva.

There was predominance of females (83.3%), young adults (64.8%), mean age of 35 years old (Standard Deviation=10.4), with a partner living in the same household (50.0%), with children (81.5%) and brown skin color (48.1%). They had a mean of ten years of study (Standard Deviation=4.0), with monthly incomes of two minimum wages at the most (83.3%). Most of the participants reported not having any formal job (60.2%) and professing some religion (88.0%).

Table 3 presents the anxiety levels at the pre- and post- moments, according to BAI.

In the EG, the male gender was represented by four (22.2%) users in the pre-intervention and by one (11.1%) in the post-intervention, with a reduction from 17 to 9 in the median anxiety level. In the CG, 14 (77.8%) users took part in the pre-intervention, and eight (88.9%) in the post-intervention, with a reduction from 14.5 to 13.5 in the anxiety levels.

The Wilcoxon test showed that there was no statistically significant evidence for a decrease in the anxiety levels in the CG (p=0.271) due to the exclusive male participation in the post-intervention EG, which made it possible to reliably calculate the test statistics.

As for females, integrated into the EG, there were 37 (41.1%) users in the pre-intervention and 27 (46.6%) in the post-intervention, with a reduction from 18.0 to 7.0 in the median anxiety levels. In the CG, 53 (58.9%) women participated in the first moment and 31 (53.4%) did so in the second. A reduction in the anxiety levels was also verified: from 17.0 to 12.0. The Wilcoxon test result showed that there was significant evidence about a reduction of the median anxiety levels only in the EG (p<0.001).

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Among the age group classification, at the pre- and post-moments of the EG and CG there was greater participation of young adults, 70(64.8%) in the pre-intervention and 42 (62.7%) in the post-intervention, when compared to mature adults: 38 (35.2%) in the pre-intervention and 25 (37.3%) in the post- intervention, with a median reduction in the anxiety levels in both groups.

TABLE 3: Comparison between the intervention groups at the pre- and post- moments, according to gender, age group, recent stressful events and sleep problems. Teresina, PI, Brazil, 2019.

Variables			n (%)	$\bar{X}$	Median	±	p-value*
Gender	**Male**	**Experimental Group**					
		Pre	4 (22,2)	17	17	4,4	
		Post	1(11,1)	9	9	-	
		Control Group					0,271
		Pre	14 (77,8)	16,5	14,5	6	
		Post	08 (88,9)	15	13,5	7,7	
	Female	**Experimental Group**					**<0,001**
		Pre	37 (41,1)	18,1	18	4,6	
		Post	27 (46,6)	8	7	6,3	
		Control Group					0,375
		Pre	53 (58,9)	17,9	17	5,2	
		Post	31 (53,4)	12,7	12	6,9	
Faixa etária	**Adulto jovem (20|-|39 anos)**	**Experimental Group**					**<0,001**
		Pre	27 (38,6)	17,6	17	4	
		Post	18 (42,8)	7,2	7	4	
		Control Group					**0,025**
		Pre	43 (61,4)	18,4	18	6	
		Post	24 (57,2)	13,2	12	8	
	Adulto maduro (40|-|59 anos)	**Experimental Group**					**0,016**
		Pre	14 (36,8)	18,9	19	5	
		Post	10 (40,0)	9,7	9	9	
		Control Group					**0,035**
		Pre	24 (63,2)	16,2	15	5	
		Post	15 (60,0)	13,2	13	5	
Eventos Estressores Recentes	**Sim**	**Experimental Group**					**<0,001**
		Pre	26 (36,1)	18,5	18	4	
		Post	18 (42,8)	8,3	8	4	
		Control Group					**0,03**
		Pre	46 (63,9)	18,9	18	6	
		Post	24 (57,2)	13,8	14	8	
	Não	**Experimental Group**					**0,019**
		Pre	15 (41,7)	17,2	18	5	
		Post	10 (40,0)	7,7	6	9	
		Control Group					0,067
		Pre	21 (58,3)	15	14	4	
		Post	15 (60,0)	12,2	12	5	
Problemas com o sono	**Sim**	**Experimental Group**					**<0,001**
		Pre	24 (35,8)	19	19	5	
		Post	19 (47,5)	9,2	8	6	
		Control Group					**0,058**
		Pre	43 (64,2)	18,4	18	5	
		Post	21 (52,5)	14,9	13	7	
	Não	**Experimental Group**					**0,012**
		Pre	17 (41,5)	16,5	15	4	
		Post	9 (33,3)	5,7	7	6	
		Control Group					**0,034**
		Pre	24 (58,5)	16,2	15	5	
		Post	18 (66,7)	11,2	11	7	

*Wilcoxon test.

Among the young adults, the EG, comprised by 27 (38.6%) users in the pre-intervention and 18 (42.8%) in the post-intervention, presented a significant decrease between the median scores (p<0.001): from 17 (mild level) to 7 (minimal level). A similar behavior was found in the CG (p=0.025), 43 (61.4%) in the pre-intervention and 24 (57.2%) in the post-

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intervention, with a reduction from 18 to 12 in the median levels, although with no change in the mild classification of anxiety.

In the mature adults, the EG was comprised by 14 (36.8%) in the pre-intervention and 10 (40.0%) in the post-intervention and there was a significant 10-point reduction in the median anxiety levels between the moments (p=0.016): from 19 (mild level) to 9 (minimal level). In the CG there were 24 (63.2%) in the pre-intervention and 15 (60.0%) in the post-intervention, as well as a reduction from 15 to 13 with a significant difference (p=0.035), but without altering the mild anxiety classification.

Regarding the recent stressful events, more participants experienced this situation at both moments. Among the users that did not undergo any stressful situation, the EG totaled 15 (41.7%) in the pre-intervention and 10 (40.0%) in the post-intervention, whereas the CG had 21 (58.3%) in the pre-intervention and 15 (60.0%) in the post-intervention.

Regardless of the experience or of the group analyzed, a descriptive reduction was observed in the median values corresponding to anxiety symptoms. In the EG, among the users who experienced a recent stressful situation, the median values decreased from 18 (mild level) to 8 (minimal level); in the CG, the reduction was from 18 to 14, with no change in the classification of the levels (mild level).

Among the participants who did not experience any stressful situation, there was a reduction in median anxiety levels, from 18 (mild level) to 6 (minimal level) in the EG, and from 14 (mild level) to 12 (mild level) in the CG. The Wilcoxon test showed a statistical difference between the EG (p<0.001) and CG (p=0.03) moments. In the group that did not undergo any recent stressful situation, there was a statistically significant difference only in the EG (p=0.019).

For those who stated having sleep problems, it was observed that, in both groups and moments, there was a reduction in the median anxiety levels (from 19 to 8 in the EG and from 18 to 13 in the CG), with a change in the classification of the anxiety levels only in GE. In the group that stated not presenting problems, the median values of anxiety symptoms decreased from 15 to 7 in the EG and from 15 to 11 in the CG, with an improvement in the quality of the anxiety symptoms only in the EG, going from mild to minimal. The Wilcoxon test only showed a statistical difference in the EG (p<0.001). In both groups, Experimental (p=0.012) and Control (p=0.034) those who denied problems presented a significant reduction in the median levels.

The frequency of anxiety symptoms surveyed in the EG during Stage I showed that 65.9% presented mild level and that 34.1% had moderate level. The classification changed in Stage III, with the highest frequency for the minimal level (82.1%), followed by mild with 14.3% and by moderate with 3.6%. In Stage I, the CG had 67.2% mild level and 32.8% moderate level. Although the muscle relaxation technique was not performed in Stage III, there were reductions in the levels: 38.5% minimal, 43.6% mild and 17.9% moderate.

Table 4 presents the inferential analysis related to the anxiety symptoms in the EG and CG.

TABLE 4: Anxiety symptoms in the participants from the Experimental and Control groups (pre- and post-intervention) (n=108). Teresina, PI, Brazil, 2019.

	Experimental Group	Control Group	
Variables	**n (%)**	**n (%)**	***p*-value**
Levels of anxiety symptoms (pre-intervention)			0.707*
Mild	27 (65.9)	45 (67.2)	
Moderate	14 (34.1)	22 (32.8)	
Levels of anxiety symptoms (post-intervention)			**<0.001**†
Minimal	23 (82.1)	15 (38.5)	
Mild	4 (14.3)	17 (43.6)	
Moderate	1 (3.6)	7 (17.9)	

*Pearson's Chi-square test, †Fisher's Exact test

Pearson's Chi-square test showed that the anxiety levels between the groups at the pre-intervention moment (p=0.707) did not show independence, whereas at the post-intervention moment there was statistical evidence of independence between the groups (p<0.001). Consequently, the groups were homogeneous at the first moment and, at the second one, the users presented heterogeneity and independence in relation to the groups.

DISCUSSION

In the social profile of the EG and CG participants there was predominance of women with a mean age of 35 years old, married, with children, brown-skinned, mean of ten years of study, monthly incomes of up to two minimum wages

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but without formal work, and followers and/or practitioners of some religion. These data corroborate other studies conducted in Primary Health Care and which presented a similar profile[1,11].

Epidemiological data surveyed in 2015 verified that the female gender was more common among people with some anxiety disorder[2]. Anxiety is one of the most frequent forms of mental illness associated with life paths and with social and environmental conditions[12]. A number of studies have shown the close relationship between anxiety and low socioeconomic level, few years of study, unemployment and history of chronic diseases[13,14].

Mental health-related problems demand high economic costs to be mitigated. This health condition can lead to several costly situations, from problems related to interpersonal relationships in the social sphere, at work or social isolation, to deterioration of the health situation. The repercussions that exert a negative impact involve the difficulty maintaining a job, absenteeism from work and an increase in the cost of social and health services[15].

Estimating an intervention to solve problems and meet the mental health needs of the population requires an innovative, flexible, economical and comprehensive approach; and the relaxation technique, in addition to being financially viable, has presented a high level of evidence to mitigate this impasse[16]. The progressive muscle relaxation technique applied in this study compared the anxiety levels between the groups. The EG participants had a significant decrease in the median anxiety levels when compared to those with mild symptoms ($p=0.01$), female gender ($p<0.001$) and young adults ($p<0.001$), in addition to those who experienced stressful situations in the last year ($p=0.019$) and who had sleep problems ($p<0.001$).

In relation to the initial symptoms of the participants at the pre-intervention moment, it was shown that the Jacobson relaxation technique is more effective in users who started the study with mild anxiety symptoms, as only the group submitted to the technique (Experimental) presented an effective reduction in the anxiety levels after the intervention ($p=0.01$). On the other hand, among the users who started the study with moderate symptoms, both groups (Experimental and Control) showed significant improvements in the levels after the intervention, although this result may not be related to the technique.

A number of studies corroborate these findings, pointing out the effectiveness of the muscle relaxation technique in participants with mild anxiety symptoms, whereas in patients with higher levels, the technique did not significantly contribute to improving the anxiety levels[6-8,13,17]. Patients with mild anxiety symptoms show an increase in concentration, reflecting on the motivation degree; on the other hand, individuals with moderate and severe levels experience a feeling of dissatisfaction and may manifest inability in terms of interpersonal relationships, fear and disgust[18].

Regarding the participants' gender, this study had greater participation of females. Application of the technique proved to be effective in improving anxiety symptoms in females, as only the EG participants had a statistically significant reduction. Among the male participants, due to their little participation, it was not possible to evaluate effectiveness of the technique, a result that reflects on men's resistance to seek health services. Studies carried out with sessions of the progressive muscle relaxation technique for anxiety symptoms in women also pointed out significant differences between the EG and CG, with a reduction in the anxiety scores after the technique[6,19].

Regarding age, a significant reduction was identified in both age groups. A more effective reduction was evidenced in the groups subjected to the relaxation technique, with a change in the classification of the anxiety symptoms: from mild to minimal. A number of studies corroborate that the adult age group achieves greater benefits from the incorporation of relaxation techniques when compared to older ages. It is hypothesized that, over time, people have difficulties establishing coping strategies, which hinders good body functioning[15,17].

Regarding the recent stressful events, most of the participants underwent stressful situations in the last year. The participants submitted to muscle relaxation presented a significant improvement in the classification of the anxiety symptoms, a situation that did not occur with the CG, which, even with a significant decrease in anxiety levels, did not have the classification changed. On the other hand, in the participants who did not undergo any recent stressful events, the technique proved to be effective in the EG, with a decrease in the levels and classification of anxiety symptoms.

In this sense, similar studies prove that the technique has ensured more consistent results in patients with anxiety symptoms, not associated with stressful situations[20,21]. Stressful events are triggered by actions taken by an individual in order to face perceived excesses, or through cognitive or behavioral efforts[22]. Thus, social support is of fundamental importance in order to reduce this stress, as sharing time with friends, relatives or even with other professionals already assists in discerning the events experienced and, in this way, allows them to seek to maintain psychological balance, as

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a way of softening pressure moments. When associated with stressful events, anxiety symptoms potentiate the patients' clinical conditions, requiring combined treatments with pharmacological techniques[13].

It was possible to identify that most of the participants had sleep problems. For those who stated having such problems, only the participants who underwent the relaxation technique had a significant improvement in the levels of anxiety symptoms between the moments. In the participants who asserted not having problems, both groups presented a significant reduction in the anxiety levels, but only the participants who underwent the technique achieved a reduction in the classification of the levels.

Corroborating the current study, anxiety symptoms negatively interfere in sleep quality[23]. The muscle relaxation technique has already proved to be effective in improving sleep quality and, consequently, in reducing anxiety symptoms in the EG when compared to the CG[23], in addition to ensuring improvements in sleep, allowing for a deep rest to provide more energy and willingness for the development of activities of daily living and a refreshed sensation[8,24].

Study limitations

The individuals' participation in the intervention was considered a study limitation, as there was evasion both in the EG and in the CG. Some factors, such as duration of the process as a whole or locus and time of the sessions, may have contributed to this; as well as the type of study, where there is no total control over variables external to the intervention, which may have occurred concomitantly with the intervention, and which may have contributed to the change in the outcome. In addition to that, limitations related to the method should be considered when generalizing the results.

CONCLUSION

In this study, application of Jacobson's progressive muscle relaxation technique proved to be effective in terms of improving anxiety symptoms in adults, initially screened with mild and moderate symptoms, in women and in both age groups (young and mature adults). The technique proved to be effective both for individuals that underwent recent stressful events and for those who did not, as well as for people with sleep problems. The results point to a significant reduction in the levels of anxiety symptoms among the EG participants.

In addition to using a simple, accessible and low-cost technique, the intervention applied can be employed in Primary Health Care by professionals, especially nurses, who, in conducting their practices, work with groups for prevention and health promotion actions. For future studies, it is suggested to adopt larger samples and to improve the randomization technique in order to compensate for possible losses, as well as strategies for controlling variables that may influence potential bias and internal validity of the study.

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