



Effect of classic massage in quality of life of university students

Efeito da massagem clássica na qualidade de vida de universitárias

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Abstract

Introduction: Due to often excessive academic activities, some university students are affected by stress, anxiety and depression, which can negatively influence quality of life. The classical massage was tested as a strategy for improving quality of life, since it presents psychogenic effects that contribute to this. **Objective:** To evaluate the effects of classical massage on quality of life, in stress, anxiety, depression and cardiorespiratory variables of university students. **Methods:** The sample consisted of an intervention group and a control group. While the intervention group (n = 10) received ten massage sessions, twice a week, for 30 minutes in the region of the cervical and thoracic spine, the control group (n = 12) received no intervention. For evaluating psychological variables, the Quality of Life Scale, the Lipp Inventory of Stress Symptoms for Adults, and the Hospital Anxiety and Depression Scale were used. To assess cardiorespiratory variables, blood pressure, heart and respiratory rate were measured. **Results:** There was a significant improvement in quality of life and significant decrease in cardiorespiratory variables. **Conclusion:** The classic massage can be a strategy for the improvement of quality of life in university students who present symptoms of stress, anxiety, elevation of blood pressure, heart and respiratory rate.

Keywords: Massage. Quality of life. Stress. Psychological. Anxiety.

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Resumo

Introdução: Devido às atividades acadêmicas muitas vezes consideradas excessivas, algumas universitárias são acometidas pelo estresse, ansiedade e depressão, o que pode lhes influenciar negativamente na qualidade de vida. A massagem clássica foi testada como estratégia para melhora da qualidade de vida, uma vez que apresenta efeitos psicogênicos que contribuem para tal. **Objetivo:** Avaliar os efeitos da massagem clássica na qualidade de vida, no estresse, na ansiedade, na depressão e nas variáveis cardiorrespiratórias de universitárias. **Metodologia:** A amostra foi composta por um grupo intervenção e um grupo controle. Enquanto grupo intervenção (n=10), recebeu 10 sessões de massagens, duas vezes por semana, durante 30 minutos na região cervical e torácica da coluna vertebral, o grupo controle (n=12) não recebeu intervenções. Para a avaliação das variáveis psicológicas utilizou-se a escala de qualidade de vida, o Inventário de Sintomas de Stress para Adultos de Lipp e a Escala Hospitalar de Ansiedade e Depressão. Para avaliar as variáveis cardiorrespiratórias aferiu-se a pressão arterial, a frequência cardíaca e respiratória. **Resultados:** Houve uma melhora significativa na qualidade de vida e diminuição significativa nas variáveis cardiorrespiratórias. **Conclusão:** A massagem clássica pode ser uma estratégia para a melhora na qualidade de vida em universitárias que apresentam sintomas de estresse, ansiedade, aumento da pressão arterial, frequência cardíaca e respiratória.

Palavras-chave: Massagem. Qualidade de vida. Estresse psicológico. Ansiedade.

Introduction

Admission to a federal university, which generally has highly competitive admission, is the desire of the majority of the young Brazilian students who have the dream of attending higher education. In order to achieve such intent, many need to sacrifice themselves, while giving maximal effort and devoting much of their time investing in preparatory courses, abdicating sufficient leisure activities. Research indicates a high prevalence of anxiety and stress during this preparatory stage (1).

In this sense, the popular imagination believes that once admitted to a university, some physical and mental relaxation would occur, helping to alleviate possible situations of anxiety and stress experienced in the long period of pre-university preparation, improving the quality of life.

However, studies with university students show that both the curriculum analysis of what should be accomplished during the undergraduate period, as well as frightening verbal information from veteran students, induce healthcare students to have the tendency to overestimate what to expect (2). The physical therapy course, an education that directly addresses suffering and human pain, can place the student in contact with stressful situations for which they are not qualified; whether due to personal

characteristics, lack of training, or different situations. This hard reality experienced by students can increase their level of anxiety, highlighting that in addition to the curriculum requirements, several social and educational factors, such as the transition to adult life and the fantasy of not reaching the expectations of the course contribute to intensifying this feeling (3).

In addition to the fact that, usually during the first year, fiefdoms can be found within the classrooms, where competition between students can be so intense that it dates back to the pre-university preparatory course, leading them to experience some ambiguity of feelings: in one moment they are dazzled for having been approved in a long awaited university, in another, they face an unexpected reality; a quite theoretical course compared to those in the high schools from which they came. The initial classes, usually rich in content, seem too long and boring, (2) and if some extra class work is added as extension projects and research, too much of the desired academic free time is consumed.

While a large part of these students need to get used to living away from family, they need to learn how to work to best organize their time, and adapt to the teaching-learning contingencies. In addition, they often need to share their living quarters with other colleagues in the university community, which implies further adjustments to interpersonal

relationships, which may be particularly stressful for most academics (4).

In this sense, both the anxiety as well as the stress can have a negative impact on cognitive processes and on learning, triggering the most significant frustrations that can lead to difficulties in interpersonal relationships, contributing to a depressive process in students (3). It is interesting to note that a comparative study analyzing the depression in medicine, biochemistry, pharmacy and environmental engineering students showed higher prevalence of depressive symptoms in medical students (40.7%), with women having a higher level of symptoms (53.45%) compared to men (46.55%) (5). These findings suggest that women in healthcare courses seem to be more susceptible to depression.

A similar study developed in Colombia (6) with different university courses also identified a prevalence of depression in academic women. The authors understand that the higher incidence of depression in women can be explained by multiple factors, such as the psychobiological structure and psychosocial factors, which seem to increase vulnerability in females. However, women are more likely to ask for help. So, the fact of being a woman, being able to recognize psychological needs and experience symptoms of anxiety, is related to the search for help from the Mental Health Service of the University (7).

Stress, a decrease in the physical and mental state, resulting from a stressful situation, frustration, anxiety and human exhaustion, triggers symptoms that interfere with the psychophysiological aspects of the person. It is a quite disturbing fact, considering that a recent study indicated a stress index of 48.19% in university students (8).

Although contemporary research indicates that tachycardia, dizziness, headache, muscle aches, tingling, sweat, tension, insomnia, irritability and anguish are already part of everyday life of modern people (9); the presence of these stress signs and symptoms is harmful to the human being, as it can cause negative perceptions of motor and intellectual abilities, interfere in understanding, reasoning (3, 9) and, consequently, quality of life.

For the World Health Organization (WHO), quality of life is the perception that the subjects have "of their position in life, in the context of culture and value systems in which they live and in relation to their goals, expectations, and standards concerns"(10). Thus, the influence of stress, anxiety and depression

on the subject's quality of life is extremely significant from a subjective point of view, since they can change the perception of the individual about his own life.

Different countries have studied the incidence of such disorders in young academics, and some of them have tried to verify the effectiveness of intervention programs to assist the enhancement of strength and psychological resources as successfully verified in Madrid; students had their mood improved, some increase in life satisfaction, a reduction of anxiety, stress and depression (11). There is a clear need to develop prevention programs for the health of university students in order to reduce elevated levels of stress and anxiety and, consequently, improve their quality of life. In this context, the use of classical massage is interesting primarily due to its low cost, fewer side effects, and great physical and emotional benefits (12, 13); however, for better evidence, more scientific studies are needed.

In this context, the hypothesis that classical massage could be used as a strategy to improve the quality of life of university students was proposed; because muscle relaxation, triggered by massage, contributes to the decrease in heart rate (14) generating better circulation, decreasing pain level, and could also reduce stress, anxiety and depression, generating behavioral changes, causing the so-called psychogenic effect (14).

Therefore, the aim of this study was to evaluate the effects of classical massage on the quality of life, stress, anxiety, depression and cardiorespiratory variables in students of the physical therapy course at the Federal University of Triangulo Mineiro (UFTM).

Material and methods

This was a study of an explanatory nature and prospective experimental design, characterized as randomized study. The project was approved by the Ethics Committee of the Federal University of Triangulo Mineiro (CEP-UFTM), Opinion n. 1714/2011.

Out of the 224 students of the physical therapy course of UFTM, Uberaba, Minas Gerais invited to participate in the study, 22 participated, according to the following inclusion criteria: physical sedentary lifestyle, normal body mass index, normotensive, and age between 18 to 25 years. Exclusion criteria were: hypertension or hypotension, use of anxiolytic

medications, painkillers or muscle relaxants, pregnancy and contraindications to classical massage. This large decrease in sample size was due to the lack of interest in the study, lack of time for massage sessions both of the possible participants and the researcher, the time line for data collection, and the criteria adopted for the study.

Women who met the inclusion criteria were invited to participate in the next stages of the research and allocated into two groups by a random drawing: intervention Group (IG) and control group (CG).

Of the 22 students, ten received ten sessions of classical massage lasting 30 minutes each, to the cervical and thoracic spine, often twice a week (IG), the other 12 volunteers did not receive massage (CG), as shown in Figure 1. Both groups were evaluated before and after the ten massage sessions, by a psychology teacher, two students of psychology and a physiotherapist through a semi-structured interview, addressing their history of life, and by application of the following scales: The World Health Organization Quality of Life (WHOQOL-BREF) (10), Hospital Anxiety and Depression Scale (HADS) (15), *Lipp Inventory of Stress Symptoms for Adults* (LISS) (16), and evaluation of cardiorespiratory variables, such as: blood pressure (BP), heart rate (HR) and respiratory rate (RR). These assessments were performed at the Center for Studies and Research in Applied Psychology (Centro de estudos e pesquisa em Psicologia Aplicada CEPPA) of Uberaba. At this location there were private rooms that guaranteed the confidentiality of the volunteers and absence of interference from others.

There was no limitation in relation to the activities of the control group; but some minimal time for evaluation and reevaluation was observed (see results), along with the exclusion criteria.

The classic massage sessions in the cervical and thoracic spinal region were performed with the students in the prone position, on stretchers, using mineral oil. The classic massage was performed exclusively by the principal investigator, and involved the following techniques: superficial gliding - longitudinal, oblique, transverse, oscillating, reversed; deep gliding - longitudinal, oblique, transversal, with forearm strengthening the hands with the fist, with thumb in the paraspinal and scapula region and lateralized movement; friction - closed and digital cubital; kneading - repetitive rolling, twisting, simple kneading and

pinching; percussion: - closed cubital, digital, open cubital; vibration - flat, sliding and penetrating.

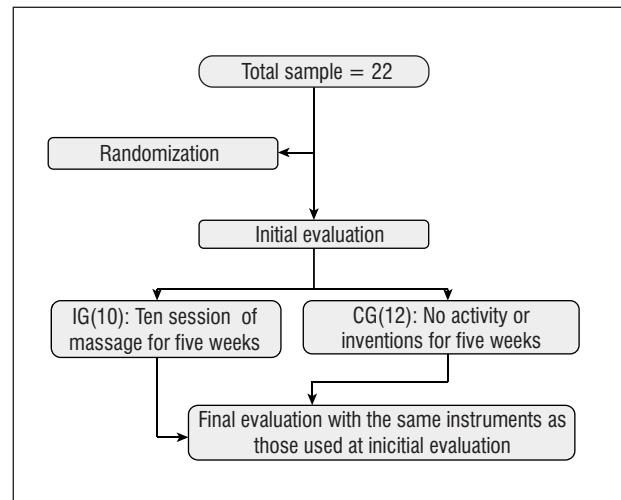


Figure 1 - Description of the allocation process and evaluation of the volunteers in the study

Statistical analysis

Data from the initial evaluation and reevaluation for all variables (intra- and inter-group) were compared, in order to verify differences between the CG and IG through the use of the parametric Student t-test for continuous variables and the chi-square test for categorical variables. For comparison of data, a significance level of 5% was adopted.

Results

The IG and CG showed homogeneity in relation to age, level of education and study, and time in the undergraduate course, in semesters. The mean age was 20.54 years (SD: 1.53), and the mean age of the CG and IG was 21.16 years (SD: 1.40) and 19.80 (SD: 1.39), respectively. The mean time between the first and last assessment was 6.37 weeks (SD: 1.35), and in CG and IG it was, respectively, 5.77 weeks (SD: 1.72) and 6.88 weeks (SD: 0.77). Regarding the time in the undergraduate program, the mean was 4.09 semester (SD: 1.86), and the CG and IG were, respectively, 4.00 semesters (SD: 2.12) and 4.16 semesters (SD: 1.83).

The analysis of quality of life showed the best indices for the IG in the physical, psychological and

environmental domains ($p < 0.05$), when compared to the CG (Table 1).

With regard to the occurrence of stress symptoms at the end of five weeks the IG presented a lower frequency of symptoms when compared to the CG ($p < 0.05$ - Table 2).

The occurrence of depression was not influenced by the intervention (Table 3).

The intervention seems to be determinant in decreasing the incidence of anxiety among the study subjects ($p < 0.05$ - Table 4).

The cardiorespiratory variables decreased significantly when analyzed and compared at the beginning and end of the study (Table 5).

Discussion

After performing the massage, the IG showed an improvement in quality of life in the physical, psychological

and environmental domains. The effects by classical massage, such as muscle relaxation, improvement of blood supply, reducing pain, release of adhesions and fatigue reduction affected the physical aspect directly, which in turn influenced the psychological state through a psychogenic effect, namely, the coordinated touch of classical massage contributed to the cited benefits of peacefulness, calmness, decrease in stress and anxiety of the volunteers. This change in the psychological state influenced the way they interacted with the environment, promoting an improvement in this area, since stress results from the interaction between the external and internal environment (17).

In a similar manner to our study, Castro-Sanchez, Peñarrocha, Molina, et al (18) conducted studies on patients with fibromyalgia and showed the positive effects of massage. After 20 weeks of massage was performed, an improvement in quality of life, a reduction in anxiety and sensitivity to pain, and improved sleep were indicated.

Table 1 - Distribution of initial and final means and standard deviations (SD) of scores of the quality of life domains in the WHOQOL-BREF scale, according to groups

Domains	Group – Mean (SD)			p ¹
	Control	Intervention	Total	
Initial				
Physical	16.04 (1.86)	16.23 (1.73)	16.13 (1.76)	> 0.05
Psychological	16.05 (1.78)	16.39 (1.64)	16.20 (1.68)	> 0.05
Social Relationships	16.44 (2.15)	17.20 (1.92)	16.78 (2.04)	> 0.05
Environment	13.83 (1.86)	14.95 (2.29)	14.34 (2.09)	> 0.05
Final				
Physical	15.05 (2.01)	16.94 (2.27)	15.91 (2.29)	< 0.05
Psychological	15.52 (1.45)	17.19 (2.69)	16.28 (1.75)	< 0.05
Social Relationships	16.88 (2.30)	17.86 (1.80)	17.33 (2.10)	> 0.05
Environment	14.29 (1.45)	16.10 (1.57)	15.11 (1.73)	< 0.05

Note: ¹ Student's t-test.

Table 2 - Distribution of number of occurrences (n) of the stress symptoms in percentages according groups

(to be continued)

Stress symptoms	Group – n (%)			p ²
	Control	Intervention	Total	
Initial				> 0,05
None	6 (46.15)	7 (53.85)	13 (100.00)	

Table 2 - Distribution of number of occurrences (n) of the stress symptoms in percentages according groups

(conclusion)

Stress symptoms	Group - n (%)			p ²
	Control	Intervention	Total	
Resistance	6 (75.00)	2 (25.00)	8 (100.00)	
Exhaustion	0 (0.00)	1 (100.00)	1 (100.00)	
Total	12 (54.55)	10 (45.45)	22 (100.00)	
Final				< 0.05
None	6 (40.00)	9 (60.00)	15 (100.00)	
Resistance	6 (85.71)	1 (14.29)	7 (100.00)	
Exhaustion	0 (0.0)	0 (0.0)	0 (0.0)	
Total	12 (54.55)	10 (45.45)	22 (100.00)	

Note: ² "Chi-square" test.**Table 3** - Distribution of occurrence (n) of depression in percentages according groups

Depression ³	Group - n (%)			p ⁴
	Control	Intervention	Total	
Initial				> 0.05
No	12 (54.17)	9 (42.86)	21 (100.00)	
Yes	0 (0.00)	1 (100.0)	1 (100.00)	
Total	12 (54.55)	10 (45.45)	22 (100.00)	
Final				⁵
No	12 (54.55)	10 (45.45)	22 (100.00)	
Yes	0 (0.00)	0 (0.00)	0 (0.00)	
Total	12 (54.55)	10 (45.45)	22 (100.00)	

Note: ³ Depressed with level > 9. ⁴ "Chi-Square" test. ⁵ Impossibility of computing statistical tests because there were no data in both categories.**Table 4** - Distribution of occurrence (n) of anxiety in percentages according groups

(to be continued)

Anxiety ⁶	Group - n (%)			p ⁷
	Control	Intervention	Total	
Initial				> 0.05
No	9 (56.25)	7 (43.75)	16 (100.00)	

Table 4 - Distribution of occurrence (n) of anxiety in percentages according groups

(conclusion)

Anxiety ⁶	Group - n (%)			p ⁷
	Control	Intervention	Total	
Yes	3 (50.00)	3 (50.00)	6 (100.00)	
Total	12 (54.55)	10 (45.45)	22 (100.00)	
Final				
No	8 (44.44)	10 (55.56)	18 (100.00)	< 0.05
Yes	4 (100.00)	0 (0.00)	4 (100.00)	
Total	12 (54.55)	10 (45.45)	22 (100.00)	

Note: ⁶ Anxious with level > 8. ⁷ "Chi-squared" test.

Table 5 - Distribution of initial and finals means and standard deviations (SD) of cardiorespiratory variables of the group with classical massage intervention

Vital signs	Intervention Group - mean (SD)		p ⁸
	Initial	Final	
SBP	105.66 (7.87)	98.61 (7.90)	0.003
DBP	73.23 (7.14)	70.48 (7.88)	0.0005
HR	75.75 (9.62)	68.55 (7.95)	0.000008
RR	15.46 (3.38)	12.7 (2.68)	0.00000001

Note: ⁸ *Students' t* Test. SBP – Systolic blood pressure. DBP – Diastolic blood pressure. HR – Heart rate. RR – Respiratory rate.

The quality of life improvement after the classic massage sessions was accompanied by the reduction of stress in students. This finding is consistent with those obtained by Basler (19), which found a significant decrease in stress after application of Ayurvedic massage. This is a very interesting finding, especially if we consider the female university population of our study.

Recent research showed higher frequency of stress in the resistance phase from female subjects, with a predominance of psychological symptoms, followed by physical ones. Stress in the resistance phase has symptoms such as sensations of fatigue and memory difficulties, in addition to an impact on the immune system, which increases the possibility of illness (4).

Early diagnosis of stress in the initial stages, such as alert or resistance, encourages a search for treatment alternatives, since stress in later stages such as the exhaustion phase may cause physiological disorders (such as increased blood pressure, heart and respiratory rate), cognitive issues (low concentration and thoughtless decisions) and psychological disorders (depression and anxiety) (20), which contribute to the risk of suicide among university students (21).

Individuals with depression commonly have reduced study and work performance because of sleepiness, fatigue, difficulty concentrating, muscle weakness, psychomotor retardation or agitation, and tremors (21).

The HADS scale did not identify signs of depression in the participants of the CG group, but identified

one student with such symptoms in the IG. Research that examined depression and stress in psychology students through the Beck Depression Inventory, the Social Readjustment Rating Scale and the Lipp Inventory of Stress Symptoms for Adults showed interesting results (22). A minimum degree of depression was identified, stress in the resistance and exhaustion stages, as well as poor social adjustment. Our study, using the same Lipp instrument, also identified volunteers with stress in the resistance and exhaustion stages. Although the psychological measurement instrument used to assess depression in the prior study (22) was different, there were findings similar to our study, as a student also showed signs of depression.

Contrary to the literature (23), the rate of depression among university students may have been insignificant due to the fact that participants have used the denial mechanism and idealization, due to prejudice, shame or fear, which was also suggested by a study performed with medical students in the south of the country (24).

However, although we did not find significant rates of depression in the study sample, recent studies indicate that students with higher levels of stress are more likely to experience depression, which deserves the attention of educators (25) and managers.

Although this last result was not significant, probably due to the small sample size, after performing classic massage, the IG group student did not show any depression. Muscle relaxation, decrease in fatigue and pain are benefits provided by classical massage, which probably act to reduce depression. Although it is not yet clear what real massage does to the body to decrease this pathology, Moyer et al (26) report that massage is responsible for decreasing cortisol, which is associated with reduction of depression.

The anxiety analysis showed that initially both the CG and the IG had three volunteers with symptoms of anxiety. After the intervention with classic massage, total reduction of anxiety in the IG with statistical significance was observed, while three to four volunteers had such symptoms in the CG, indicating that in our study, massage reduced anxiety states. However, studies differ from ours as to the effect of massage as a reduction of the anxiety process. Research conducted with 32 students of the Police Science and Homeland Security Institute, which used the *State-Trait Anxiety Inventory* (STAI) to assess the level of anxiety after massage, among other forms of relaxation, showed no significant difference (27).

Such findings suggest that the results were not similar because of the difference between the instruments used, or even among the participating subjects. While our study included intervention on female university students, the other noted study had male subjects and a profession that is known to be highly anxiogenic.

Another study, with subjects with cancer, found that massage increased the perception of relaxation, decreased anxiety, pain sensations, and decreased the physiological parameters of blood pressure, heart and respiratory rates (28).

According to that study (28), the IG group demonstrated a statistical reduction in relation to cardiorespiratory variables. Such findings reinforce the idea that massage promotes relaxation and autonomic changes, such as to acetylcholine, which acts on the parasympathetic autonomic system, reducing heart rate and blood pressure. With relaxation, blood pressure, heart and respiratory rates decrease (29). Studies show that increases in emotional stress due to these variables lead to changes in cardiovascular reactivity (30).

Conclusion

The presented data must be analyzed with caution, given the small number of participants and the sample selection. Further investigations with students from other courses and of both sexes should be performed; however, the result of this study suggests that intervention by classical massage helps to reduce stress and anxiety and it is beneficial in promoting an improved quality of life, as was found with the physical therapy students.

The literature states that, in an attempt to cope with stress, some students use positive strategies such as the valuing of interpersonal relationships and daily phenomena, organizing time to promote a balance between study and leisure, health care, food and sleep. Still, others adopt regular physical activity, religiosity and look for psychological help to deal with adverse situations in order to provide a better quality of life.

However, not everyone has this ability, consciousness or initiative. Understanding how students interact with the university, social and family environment is vital these days. Thus, it is necessary to implement interdisciplinary programs which use diverse knowledge and have the aim of providing specialized care to control stress and anxiety, and to improve the quality of life of university students.

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