ORIGINAL RESEARCH PAPER

Volume-7 | Issue-3 | March-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

THE EFFECT OF MASSAGE THERAPY ON THE CANCER PATIENT: MENTAL HEALTH

Medical Science

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ABSTRACT

Summary: People with oncological disease present, in addition to the side effects of treatments, uncertainty for the future, suffering, physical pain, anxiety, depression, loss of control and autonomy (Cardoso, Luengo, Trancas, Vieira & Reis, 2009), having this pathology impact on self-image, in interpersonal relationships, the meanings and the meanings of life (Visser, Garssen & Vingerhoets, 2010).

According to Meleis (2012) the nurse must interact with people, entered in your cultural context, they are in a situation of transition health/disease. The intervention established in this work was therapeutic massage, due to this help restore the physical and mental balance. The application of massage is performed upon the provision of hygiene and comfort and should be encouraged to use this additional practice as self-care strategy and harmonization.

We design a quasi-experimental study whose objective aims to evaluate the effect of massage therapy on mental health to a sample of cancer patients 31, 16 of the experimental group and the control group 15.

For the operationalization of the independent variable was used a protocol of massage therapy advocated by Tiffany Field e Hernandez-Reif and to evaluate the dependent variable, use the Mental Health Inventory (MHI), that showed good internal consistency.

This study found beneficial effect of massage therapy on mental health showed significant improvements ($p < 0.001$) in anxiety, depression, emotional control, losses on positive affection, in emotional ties, in distress psychological and psychological well-being.

We want with this study not only that health professionals use this intervention, and that these results encourage the scientific community, in carrying out future research in this pathology and other chronic diseases.

KEYWORDS

massage, mental health, cancer

Introduction

The most frightening pathology in the modern world is cancer, since the patient with oncologic pathology - cancer patient - undergoes changes, including psychological ones. Psychological distress and psychiatric disorders are common changes in these patients. The factors associated with these morbidities are the histories of mood disorders, alcohol or drug abuse, the existence of changes in body image, being young, having insufficient social support and having a reduced life expectancy and presence of pain.

Currently, some scientific evidence has shown that psychological factors could be associated with the prognosis of chronic pain. In this context, it seems presumable that these factors could play an important role in people with chronic pain. Self-efficacy has been a proposed factor to predict pain, behavior, physical functioning and disability in chronic musculoskeletal pain (Asghari & Nicholas, 2001; Liew, Brown, Cronan, Bigatti & Kothari, 2013).

n addition to that, self-efficacy is considered as a stronger mediator of the relationship between pain behavior, pain intensity and disability than psychological factors such as acute pain (Woby, Urmston & Watson, 2007; Costa, Maher, McAuley , Hancock & Smeets, 2011).

Given the importance of pain as a mechanism of survival, it is notable that the perception of pain is clearly influenced by conscious and unconscious memory. Cognitive and emotional functioning as well as contextual factors are included in a biopsychosocial formulation of pain (Thompson, Oldham & Woby, 2016; Rajapakse, Liossi & Howard, 2014). In this sense, there has been increasing recognition regarding the degree of chronic pain influenced by people's beliefs, attitudes and expectations (Nijs, Goubert & Ickmans, 2016; Greenberg, 2014).

In the biopsychosocial understanding of chronic pain there is a growing interest and acceptance on the hypothesis that there is a direct association between physical disability, pain intensity and pain-related disability and its impact (Gill, Shanahan, Taylor, Buchbinder & Hill, Jensen et al., 2016).

A study conducted by Martinez-Calderón, Struyf, Meeus, Morales-Ascencio and Luque-Suarez (2017) aimed at analyzing the level of association between psychological factors and pain / disability at baseline and assessing their prognosis, assessing the association of severe and prospective pain in the relationship between pain intensity and disability or between self-efficacy and disability in patients with chronic pain. This study was carried out in primary care centers and a hospital in the province of Malaga, Spain with 307 participants aged 18 to 70 years suffering from chronic pain. The results of the study included acute pain, anxiety, depression, patient recovery expectations, age, gender, duration / intensity of symptoms, educational level and other predictable factors. This prospective cohort study contributed to a new insight into the role played by fear related to pain, anxiety, depression, and self-efficacy.

In addition to the physical complications of cancer, psychological issues such as anxiety and depression can also arise due to extensive changes in the body and mind of patients (Chua, DeSantis & Fingeret, 2015; Hopwood et al., 2010; Alicikus et al., 2009).

Thus, anxiety arises from links between the persistent state of anxiety and the intense responses to fear (Margis, Picon, Cosner & Silveira, 2003), and can be described as an emotional state characterized by sensations of imminent danger and unpleasant anticipatory feelings that are disproportionate to the representation of the threat (Thielking, 2007).

In the version 2 da CIPE, o ICN (2011), defined anxiety as a negative emotion with specific characteristics such as sense of threat, danger or distress.

Anxiety is one of the most common mental disorders (Patten et al., 2006; Somers, Goldner, Waraich, & Hsu, 2006). The lifetime

prevalence of anxiety disorders is 16.6% (Somers et al., 2006), compared with 12.2% for major depressive disorder (Patten et al., 2006) and 2.2% for bipolar disorder (Schaffer, Cairney, Cheung, Veldhuizen, Levitt, 2006). These disorders are not only frequent and debilitating, but are often concomitante (Andrews, Anderson & Slade, 2008; Lopez, 2006; Revicki et al., 2012).

According to DSM-5 the diagnostic criteria of anxiety disorder are the presence of inappropriate and excessive fear or anxiety, excessive and anticipated suffering of an occurrence, persistent and excessive worry of an unwanted event, persistent reluctance or refusal to leave, withdrawal being or sleeping away from home, persistent and excessive fear of being alone, repetitive nightmares and repetitive complaints of somatic symptoms (headache, nausea, vomiting) when separating people close to them (American Psychistric Association, 2013).

There are several authors in Portugal who, through their studies, have focused their research on the mental health of cancer patients, Souza e Seidl (2014) the diagnosis of cancer is a situation of providing an imbalance of emotions before which the patient has to mobilize various individual resources and capabilities.

Rodrigues (2007) revealed a correlation between high anxiety and chronic pain ($p < 0.001$) and among women with anxiety ($p < 0.05$). With regard to depression, people with pain tend to have higher levels of depression ($p < 0.001$), in which patients with pain have 54.5% moderate depression, 20.5% have mild depression and 25% do not present depression.

Guadalupe (2008) designed a study that describes the characteristics and analyzes the relationships between health, and for that purpose used the Portuguese version of the Mental Health Inventory (MHI) and the Inventory of Psychopathological Symptoms (BSI) and the Social Support Scale. The mean values were 47.01 for anxiety, 40.2 for depression, 33.42 for emotional and behavioral control losses, 47.96 for positive affects, 70.34 for emotional ties, 40.58 for psychological distress and 52.75 for psychological well-being. It revealed that women had higher mean values in all negative dimensions of this scale and lower values in positive ones ($p < 0.003$). They also mention a correlation between literacy and these dimensions ($p < 0.05$), where the people with the highest qualifications are those with the worst mental health index.

In 2010, Carvalho draws a cross-sectional study to explore differences in pain intensity, levels of anxiety and depression in cancer patients. Used the Inventário de Saúde Mental (ISM) and Qualitative Pain Scale. Concerning pain, they had an average intensity of 2.11, in which the majority had moderate pain (43.4%). As for anxiety, he presented an average of 3.48 and depression of 3.67. A statistically significant association ($p = 0.047$) between gender and anxiety levels was observed, where women (3.22) had higher anxiety levels than men (3.74). It also reports a correlation ($p = 0.004$) between anxiety and pain and between depression and pain ($p = 0.012$), where patients with higher levels of anxiety and depression have more pain intensity.

In the study of Machado (2011) found that 62.0% take antidepressants. According to gender, the majority of women (73.1%) take antidepressants, in contrast to men, where this figure is 50.0%. However, there were no statistically significant differences ($p = 0.093$). It reports averages of depression of 27.23 for women and 24.63 for men. Regarding severity, 60.0% reported severe depression, 20.0% moderate depression, 12.0% mild, and 8.0% did not present any depressive symptomatology.

Milhomens (2014) intended to evaluate the correlation between pain, anxiety and depression in patients with palliative oncology. For this he used the Escala Hospitalar de Ansiedade e Depressão (HADS). Concerning the levels of anxiety and depression, the subjects had, respectively, averages of 10.29 and 9.75. The anxiety levels are higher in the female gender than in the male gender (11,12 and 9,22), the difference being statistically significant ($p = 0.017$). There was a correlation between anxiety and pain ($p = 0.003$) and between depression and pain ($p = 0.048$). These values suggest that as pain increases, levels of anxiety and depression increase concomitantly.

In 2014, Silva carried out a study with the aim of analyzing the existence of differences between oncological, family and general population patients with regard to subjective well-being. Revealed patients with higher education tended to have lower levels of pessimism compared to the remaining levels of schooling ($p = 0.001$) as well as widowed patients. However, divorced patients showed high levels of optimism ($p = 0.003$) and married high levels of self-esteem ($p = 0.041$). He also observed high levels of positive affect ($p < 0.001$), optimism ($p = 0.049$) and life satisfaction ($p = 0.049$) for patients who are active. In relation to cancer patients, there were several associations: Age with optimism ($r = -.292$ and $p < 0.001$) and with pessimism ($r = 0.251$; $p = 0.019$); Optimism with life satisfaction ($r = 0.453$ and $p < 0.001$), with self-esteem ($r = 0.518$ and $p < 0.001$) and with pessimism ($r = -0.457$ and $p < 0.001$); Pessimism and satisfaction with life ($r = -0.343$ and $p = 0.001$) and with self-esteem ($r = -0.445$ and $p < 0.001$); Positive affectivity with negative affectivity ($r = 0.752$ and $p < 0.001$); Satisfaction with life with self-esteem ($r = 0.425$ and $p < 0.001$).

Costa (2015) intended to determine the emotional patterns of patients in a palliative situation and used as data collection instruments the Sleep Questionnaire of Oviedo, a Symptom Assessment Scale of Edmonton, a Herth Hope Index and Emotional Thermometers. With diagnosis of cancer presented 67.5%, presenting as most prevalent symptoms severe fatigue (41.0% and $\bar{x} = 5.42$), well-being sensation (37.3% and $\bar{x} = 4.84$), appetite (37.3% and $\bar{x} = 4.71$), and decreased hope (27.7%). Regarding the emotional pattern, 47.0% presented emotional distress and revolt, 48.2% anxiety ($\bar{x} = 4.72$), 36.1% depression ($\bar{x} = 4.36$) and 74.7% help. Concerning well-being, they observed a relative balance revealing mild (32.5%), moderate (30.1%) and severe (37.3%) changes. However, there are more men (75.6%) who reported a greater change in their sense of well-being (moderate or severe) than women (59.5%). As for depression, 42.2% reported mild depression, 26.5% moderate depression and 31.3% severe depression, and found a balance between men (60.6%) and women (54.8%) who reported moderate or severe depression. This relationship was also observed in anxiety and most people felt moderate or severe anxiety (61.4%). These differences between dimensions and sex are not significant.

Therefore, these implications will be minimized when there is evolution, adaptation and mobilization of strategies. However, if self-regulation does not occur, it will limit freedom, inhibit creativity and generate despair and initiation of the above-mentioned disorders.

Methodological Design

We designed a quasi-experimental level IV study in a population of oncology patients followed up at the visit of the chronic pain unit of the oncology day hospital of the Autonomous Region of Madeira (RAM).

Taking into account that sampling is a procedure that chooses a group of people or a subset to obtain information on a phenomenon (Fortin, 2009), In this study we included two groups of cancer patients, one to whom we applied the massage - experimental group ($n = 16$) and another to whom we did not apply this intervention called the control group ($n = 15$), in order to verify it from a comprehensive and comparative way.

The selection criteria of this study considered research on this theme, so that we can have models of comparison of results. Therefore, the inclusion criteria were patients aged between 18 and 65 years old, included in an outpatient clinic, with a medical diagnosis of cancer and with a cognitive ability to self-fill the questionnaires. For this, Scale was applied Mini Mental State Examination);

The age group limitation was due to age differences in relation to this type of intervention. Paraphrasing the author Rodrigues (2007) the application of touch therapies to children under the age of 18 requires divergent practices regarding the application of these therapies to adults because they have difficulties in staying in the proper position, influencing the time of each session and the nurse's posture. Regarding the elderly (≥ 65 years), the technique used must be specific regarding the use of pressure, supply, massage techniques and nurses' posture. Therefore, the nurse in applying massage therapy to these age groups will have to acquire other specific skills (Silva, Elsen & Lacharité, 2003; Rodrigues, 2007).

The exclusion criteria of the study in hurry were patients with circulatory problems, varicose veins, inflammatory or fungal processes, fever or hyperthermia, in treatment with chemotherapy,

post-surgery, post-radiotherapy, post-stroke or myocardial infarction, with bone pathology (fractures, recent twisting), with hypertension, hemophiliacs, and with localized contagious or dermatological diseases.

For the operationalization of the dependent mental health variable, the Mental Health Inventory (MHI), validated for Portugal by Pais-Ribeiro em 2001. This inventory evaluates mental health in its two positive dimensions (positive affect and emotional ties) and three negative ones (anxiety, depression, loss of emotional / behavioral control) and consists of 38 items.

Results e Discussion

With regard to Mental Health we observe the results that constitute Table 1. Bearing in mind that all dimensions, subscales and overall are evaluated on a scale ranging from a minimum of 0 to a maximum of 100 points.

We found that, in most situations, patients in both groups presented mean and median results that were around the central value of the scale, that is, around 50 points. In the initial evaluation, no statistically significant differences were observed when comparing the experimental group with the control group ($p > 0.050$).

However, the final evaluation found significant differences in anxiety ($p = 0.038$), loss of emotional / behavioral control ($p = 0.007$) and positive affect ($p = 0.016$). Similarly, statistically significant differences were observed in the psychological distress subscales ($p = 0.011$), psychological well-being ($p = 0.007$), and overall mental health ($p = 0.009$). In all of these situations, the patients in the experimental group showed a better mental state compared to those in the control group.

The longitudinal comparison between the final and initial evaluations revealed statistically significant differences in the experimental group in terms of anxiety ($p < 0.001$), depression ($p = 0.001$), loss of emotional / behavioral control ($p < 0.001$), emotional distress ($p < 0.001$), psychological distress ($p < 0.001$), psychological well-being ($p < 0.001$) and overall mental health ($p < 0.001$). In the control group, there were only significant differences in terms of positive affect ($p = 0.011$), emotional ties ($p = 0.024$), psychological well-being ($p = 0.004$) and overall mental health ($p = 0.027$).

From the comparative analysis of measures of central tendency, it is important to point out that the significant differences occurred with variations of opposite meanings, that is, in the experimental group the differences were a consequence of the improvement in mental health and in the control group these differences correspond to worsening of health mental.

In view of these results, we can say that the data corroborate the hypothesis that "the patients in the outpatient clinic when subjected to massage have better levels of mental health compared to those in the control group".

Table 1a - Comparison of mental health among groups and between moments of evaluation

Group	Initial evaluation		Final evaluation		Test
	Experimental	Control	Experimental	Control	
Variable	n	%	n	%	
Anxiety					Exp.
$\bar{x}$	50.00	54.53	65.50	54.93	z = -3.519
Md	53.00	54.00	65.00	56.00	**p < 0.001**
s	15.85	9.64	12.58	9.65	
x_{min}	14	32	46	34	Cont.
$x_{máx}$	74	68	88	66	z = -0.725
p	0.702	0.174	0.784	0.079	p = 0.469
Teste Mann-Whitney	z = -0.654 p = 0.513		z = -2.079 p = 0.038		
Depression					Exp.
$\bar{x}$	54.43	58.61	65.63	60.00	z = -3.309
Md	52.08	58.33	66.67	58.33	**p = 0.001**
s	11.83	7.46	10.26	9.29	
x_{min}	38	50	46	42	Cont.
$x_{máx}$	75	75	79	75	z = -0.669
p	0.231	0.078	0.113	0.808	p = 0.503
Teste Mann-Whitney	z = -1.321 p = 0.186		z = -1.563 p = 0.118		
Loss of emotional / behavioral control					Exp.
$\bar{x}$	54.83	54.85	66.48	52.73	z = -3.431
Md	50.00	54.55	67.05	54.55	**p = 0.001**
s	16.84	11.06	16.44	8.16	
x_{min}	25	39	34	41	Cont.
$x_{máx}$	80	75	91	66	z = -1.490
p	0.247	0.464	0.519	0.369	p = 0.136
Teste Mann-Whitney	z = -0.040 p = 0.968		z = -2.695 p = 0.007		

Table 1b - Comparison of mental health between groups and between moments of evaluation

Group Variable	Initial evaluation		Final evaluation		Test
	Experimental	Control	Experimental	Control	
Positive affection					Exp.
$\bar{x}$	35.45	41.94	48.98	39.15	z = -3.527
Md	36.36	43.64	47.27	40.00	p < **0.001**
s	13.99	6.92	13.90	7.95	
x_{min}	9	22	16	22	Cont.
$x_{máx}$	55	53	75	53	z = -2.537
p	0.359	**0.018**	0.871	**0.004**	p = **0.011**
Teste Mann-Whitney	z = -1.150 p = 0.250		z = -2.419 p = **0.016**		
Emotional bonds					Exp.
$\bar{x}$	55.43	56.00	61.67	51.11	z = -2.913
Md	53.33	53.33	60.00	53.33	p = **0.004**
s	18.81	9.02	17.30	10.59	
x_{min}	27	33	33	33	Cont.
$x_{máx}$	100	67	100	67	z = -2.264
p	0.490	**0.017**	0.839	0.093	p = **0.024**
Teste Mann-Whitney	z = -0.406 p = 0.685		z = -1.830 p = 0.067		
Psychological Di*stress*					Exp.
$\bar{x}$	52.70	55.48	65.89	55.14	z = -3.523
Md	49.15	56.78	65.68	57.63	p < **0.001**
s	13.67	7.12	12.35	6.34	
x_{min}	31	42	49	42	Cont.
$x_{máx}$	75	66	86	63	z = -0.063
p	0.286	0.615	0.292	0.105	p = 0.950
Teste Mann-Whitney	z = -0.890 p = 0.373		z = -2.553 p = **0.011**		

Table 1c - Comparação da saúde mental entre grupos e entre momentos de avaliação

Group	Initial evaluation		Final evaluation		Test
	Experimental	Control	Experimental	Control	
Variable	n	%	n	%	
Psychological well-being					Exp.
$\bar{x}$	39.73	44.95	51.70	41.71	z = -3.533
Md	41.43	45.71	52.86	44.29	**p < 0.001**
s	13.11	4.77	13.54	6.83	
x_{min}	13	31	20	26	Cont.
$x_{máx}$	64	50	80	49	z = -2.851
p	0.768	0.009	0.633	0.003	**p = 0.004**
Teste Mann-Whitney	z = -1.452 p = 0.147		z = -2.694 p = 0.007		

Global mental health					Exp. z = -3.520 **p < 0.001**
$\bar{x}$	47.87	51.56	60.61	50.14	
Md	45.48	53.19	59.31	52.13	Cont.
s	12.20	5.10	11.83	5.37	z = -2.216
x_{min}	30	41	38	39	**p = 0.027**
$x_{máx}$	70	60	84	57	
p	0.381	0.510	0.912	0.217	
Teste Mann-Whitney	z = -1.206 p = 0.228		z = -2.631 p = 0.009		

As discussed previously, one of the dimensions under analysis in the field of mental health is psychological distress and this is commonly used in public health as the indicator of the mental health of the general population. According Bultz e Johansen (2011) refer that the Psycho-Oncology Society considered distress as the sixth vital sign when providing care to cancer patients.This dimension indifferently analyzes and associates depression, general anxiety, and loss of emotional and behavioral control of the patient.

Using the comparison of the distress in the present study, it was found that between the groups and in terms of initial evaluation, the experimental and control groups had an average of 52.70 and 55.48 respectively, with both groups being slightly above of the intermediate values of the scale (50), which is contrary to the results of the Guadeloupe study (2008), which presented an average distress in cancer patients of 40.58. When this pathology is advanced, and consequently the patient is at the end of life, patients experience high levels of anxiety, signs of depression, as well as fear of abandonment or loneliness, that is, there is a loss of control, in which patients are physically and psychologically dependent, and they present self-destructive behaviors and family conflicts (Mitchell et al., 2012). According to NCCN (2016) it is at this stage that we must be attentive to the emotional needs of the patient, who must be in a state of well-being in psychological, existential, spiritual and social terms.

Taking into account the above mentioned, we have investigated the impact of massage therapy in patients with oncologic pathology, and in our study it was explicitly positive since it showed signs of evolution, causing levels of psychological distress to decrease, thus increasing mental health. Therefore, the increase is visible, presenting initial evaluation values in the order of $\bar{x}$ = 52.70 for the experimental group and with the application of therapeutic massage the value increased to an average value of 65.89, which clearly translates into an improvement in the in terms of mental health, causing it to vary positively in the order of $\bar{x}$ = 13.19, this difference being statistically significant (p <0.001).

The opposite occurred in the control group, in agreement with what has been demonstrated throughout this study, the result for this group being inversely positive, since the results presented values in an initial phase in the order of $\bar{x}$ = 55.48, constituting a decrease in relation to the final phase with values in the order of $\bar{x}$ = 55.14, which shows that this group suffered a decrease, although not very expressive, of mental health levels, this variation in an even deeper decline in terms of psychological distress.

These results corroborate the Ahles et al. (1999) that mentioned immediate effect in the decrease of distress (p = 0.02) and with Marchand (2014) which revealed reduced levels of stress levels.

In the point of view of Domenico e Wood (1998) therapeutic massage improves blood and lymphatic flow, provides vasodilation of the skin and reduces fatigue, promoting stress relief and relaxation. Similarly Cassar (2001) e Veiga (2007) reported that it improves the venous return, helping muscle relaxation, reduction of nodular formulations and reduction of fatigue. González-Iglesias et al. (2009) specifies that massage the face, head and neck provides relaxation, releasing worries, stress and fatigue. There are positive results in this dimension, presenting improvements in terms of distress levels in mental health.

Anxiety is defined as a set of negative emotions associated with feelings of threat, danger and distress (ICN, 2016). This may be a consequence of the links between the persistence of anxiety and the feedback of fear, being able to describe it as a set of emotions marked by a sense of imminent danger and disagreeable disproportionate to the representation of the threat (Thielking, 2007).

Using the comparison of anxiety in the present study, it was found that between the groups and in terms of initial evaluation that the experimental group and the control group presented an average in the order of 50.00 and 54.53 respectively. We found that in both groups are slightly above the intermediate values of the scale (50), which is contrary to the results of the Guadalupe (2008) who presented an average of anxiety in oncologic patients of 47.01.

In the study of Costa (2015) corroborates the results in the present study because it indicates that 48.2% of the patients present anxiety and the majority of people felt moderate or severe anxiety (61.4%). In studies of Carvalho (2010) and also according to Milhomens (2014) there was a statistically significant association (p = 0.047) between gender and levels of anxiety in which women had higher anxiety levels than men reported a relationship between anxiety and pain (p = 0.004; p = 0.003), in which patients with higher levels of anxiety present more pain intensity.

The similarity of symptoms is reflected in the majority of patients and according to the American Psychiatric Association (2013), in DSM-IV, it becomes relevant to evaluate the first signs consequent of the anxiety disorders through a complete physical evaluation to the anxiety disorders panic disorder, phobias, obsessive-compulsive disorders, and post-traumatic stress disorder.

It was found that the results of therapeutic massage in cancer patients were positive, observing that the mental health averages associated with anxiety decreased by increasing improvements in mental health. The experimental group in the initial evaluation phase presented values in the order of $\bar{x}$ = 50.00 and with the intervention of the therapeutic massage, the mean value increased to 65.50 in the final evaluation phase. This difference is statistically significant (p < 0.001), which shows that there was an improvement in mental health and decreased anxiety in the patients under study.

As regards the control group, there is a decrease in anxiety and a slight improvement in mental health, presenting values of $\bar{x}$ = 54.53 at an initial evaluation stage, which increase slightly to the final evaluation stage ($\bar{x}$ = 54.93), with a change in mean values of 0.40, concluding that these results are not statistically significant (p = 0.469).

The results of the present study are in agreement with published results on the effect of massage therapy on cancer patients, and Ferrell-Torry and Glick (1993), who observed effects on the decrease in anxiety with 24%, indicating their relaxing action and, consequently, increased relaxation. Ahles et al. (1999) reports immediate effect on anxiety (p < 0.001) and Cassileth et al. (2004) reported an average decrease in anxiety of 2.8 (p <0.05). However, in the study by Toth, et al. (2003) the anxiety increased from 3.83 to 4.75. Field (2000), Post-White et al. (2003), Hernandez-Reif et al. (2004), Deng et al. (2005) and Marchand (2014) report a significant (p <0.05) reduction in anxiety after therapeutic massage. Jane et al. (P = 0.001) in the short term (20/30 minutes) (p <0.001) and in the long term (16/18 hours) (p = 0.04) in relieving anxiety.

In the study by Billhult et al. (2007), there were no significant differences in anxiety in both groups and Ahles et al. (1999) and Soden et al. (2004), there were no significant differences in long-term anxiety. Wilkinson et al. (2007) corroborate these results indicating that there were no significant differences in anxiety and depression improvement, however, and through structured interviews, self-reported anxiety improved for patients receiving therapeutic massage. According to González-Iglesias et al. (2009) and Ernst (2009) foot massage has beneficial effects in cases of circulatory problems of the lower limbs and in the abdomen and chest, stimulating the blood and lymphatic circulation of the lower limbs, relaxing the diaphragm, calming people in anxiety and stress, minimizing pain, fatigue, nausea, anxiety, depression and stress.

Therefore, the positive effects of therapeutic massage are evidenced, with improvements in mental health levels and a consequent decrease in anxiety levels for the experimental group.

Depression originates from an accumulation of symptoms associated with loss of interest and pleasure in performing almost all activities and mood changes. When analyzing the results of the present study we

contacted mean levels of depression at the initial evaluation of 54.43 for the experimental group and 65.63 for the control group.

We found that both groups are slightly above the intermediate values of the scale (50), which is contrary to the results of the Guadeloupe study (2008), which presented an average of anxiety in cancer patients of 40.2. In the study by Machado (2011), 60.0% reported severe depression, 20.0% moderate depression, 12.0% mild and 8.0%. In the study by Costa (2015), 42.2% of the people reported mild depression, 26.5% moderate depression and 31.3% severe depression and found a balance between men (60.6%) and women (54.8%) who reported moderate or severe depression.

As in depression, Carvalho (2010) e Milhomens (2014) report a statistically significant association between anxiety and pain ($p = 0.012$) ($p = 0.048$), where patients with higher levels of depression have more pain intensity. Rodrigues (2007) adds that people with pain tend to have higher levels of depression ($p < 0.001$), presenting 54.5% for moderate depression, 20.5% for mild depression and 25% do not present depression.

Given the ideology of Miovic and Block (2007), depression in patients with oncological pathology has low levels of therapeutic adherence and, consequently, the use of long-term hospitalizations leads to a decrease in quality life in those patients.

According to Bottino et al. (2009) feelings of sadness and despair are the main causes of nonadherence to treatments being directly related to the tumor and its location, level of pain, as well as its functional and social support capacities. In 2010, Jadon et al. Reported possible causes of depression in cancer patients as being: the diagnosis, the duration of treatment and its effects, as well as the disturbance of life.

It has been found that pain is present between 14% and 100% of patients with cancer oncology and depends on the disease as a whole and its prevalence. It has been studied that pain and depression are undiagnosed symptoms, although they may be treated in cancer patients. In the present study, we found that this whole set of symptoms has an opposite effect on the well-being of the patient, as well as on his / her functional status, leading to accelerated death in cases of advanced cancer (Gripp et al., 2007) .

The study by Lichtenstein et al. (2015), when the association between depression and social support in the attempt to quantify the levels of depression in cancer patients, revealed a symmetry in terms of depression, confirming that the highest levels were associated with female, low unemployment, low levels of social support and high levels of social destabilization. It is observed that in the present study this symmetry is exposed, since it presents data that consolidates this ideology, being that part of the sample, for the experimental group, only had the first cycle of the basic education or lower level, presenting data on the order of 50% and for the control group these data were in the order of 60%, which proves that these characteristics may be linked to the mean of depression presented by the patients of the present study.

When studying the effects of massage therapy in this dimension, signs of significant improvements ($p = 0.001$) were found. The benefit of the massage was found in the experimental group because the values increased from an average value of 54.43 to a value of 65.63 in the final phase, thus reinforcing an increase in terms of the suffering allusive to this dimension.

In the control group, an improvement was found, although not so proportional to what we found in the experimental group, and its evolution caused the results to vary from $\bar{x} = 58.61$ to $\bar{x} = 60.00$, however was not statistically significant ($p = 0.503$).

This effect was corroborated in the studies of Field (2000), Post-White et al. (2003) and Deng et al. (2005) in which they report a significant reduction of depression after massage therapy. Ahles et al. (1999) and Hernandez-Reif, Ironson et al. (2004), Cassileth et al. (2004) and Chang (2008) add that massage therapy has immediate effect in reducing depression. Ahles et al. (1999) and Soden et al. (2004) cite the lack of significant differences in long-term depression.

In turn Hernandez-Reif, Ironson et al. (2004) reported immediate effects on depressed mood ($p < 0.01$) and rabies ($p < 0.01$) and, according to Post-White et al. (2003), Deng and Cassileth (2005) and Currin and Meister (2008), this intervention reduced the incidence of muscle fatigue ($p < 0.05$).

According to Cassileth and Young (2004) therapeutic massage promotes symptomatic relief and side effects such as pain, anxiety, depression, stress, sleep, anorexia, constipation, edema, nausea, fatigue, muscular dysfunction, among others.

Thus, we can see that therapeutic massage has a beneficial effect in reducing the average levels of depression in the cancer patient. According with Cardoso et al. (2009) it was observed in their study, a greater demand on the part of the oncological patients, to integrate themselves in activities of relaxation or in groups of self-help, because these psychological methods are that end up promoting the adaptation to the disease situation. It is through these disease improvement strategies that the patient has a better emotional and behavioral control, as well as a better evolution and ability to perform activities. It has been pointed out that patients who surrender to the disease have a higher rate of development of mental and behavioral disorders.

Comparing the mean levels of this dimension, in the present study, it was found that between groups and in terms of initial evaluation the experimental and control groups had an average of 54.83 and 66.48 respectively. We can see that both are slightly above the intermediate values of the scale (50), which is contrary to the results of the Guadeloupe study (2008), which presented an average anxiety in cancer patients of 33.42.

Given that 56.2% of patients in the experimental group and 46.6% of patients in the control group were aware of their diagnosis less than 5 years ago, we can see that these levels of loss of emotional and behavioral control can be explained by Sousa (2014) which relates to nervousness, sadness, crying, hostility, euphoria, anger, self-pity, guilt, hopelessness, boredom, emotional exhaustion, sleep disturbances with nightmares, death wish, feeling of loss of control, feeling of worthlessness, misunderstanding , difficulty in thinking, disinterest, attention focused on symptoms and illness, complaints, current and life negative assessments, crisis of beliefs, distress, fear, hopelessness, catastrophic thoughts related to ideas that trigger drama and self esteem problems such as emotional changes arising lack of control. In contrast, Cardoso et al. (2009) complement that information with the state of panic and isolation.

When studying this dimension, we found that patients in the experimental group showed significant improvements ($p = 0.001$) by increasing the mean value from 54.83 to 66.48, with a variation of 11.65. According to Fritz (2000) therapeutic massage improves the influence on mental function through the body / mind connection.

With respect to the control group we found that the results were inverses, there was a decrease in values which shows an increase in instability in emotional and behavioral control, although these differences were not statistically significant. In the parameters of this dimension, their decrease caused the results to vary from $\bar{x} = 54.85$ in the initial evaluation phase to $\bar{x} = 52.73$ in the final evaluation phase.

We can see that therapeutic massage has a beneficial effect in controlling the emotional and behavioral losses of cancer patients.

The psychological well-being, already mentioned, integrates positive affection and emotional bonds. It is associated in a complementary way with the prolongation of life, focusing not only on longevity but also on the way in which the end-of-life will be experienced, having as its main focus and in the light of the quotation from Queirós (2013, p.116) "The pursuit of well-being is the engine of human development". It is unthinkable to imagine the real impact of the physical, emotional, and aesthetic sequels that the disease causes on the patient's life.

Meleis (2013) centralizes well-being in the nursing mission, since this profession facilitates transition processes and advocates the existence of four types of transition, namely in the transition of development during the life cycle, transition from situations where there is a change of roles in different contexts where the person is inserted, transition in health-disease where there is change from a state of well-being to an acute or chronic illness or, from a state of chronicity to a new one of well-being and organizational transitions where it can trigger changes in context social, political and economic.

Using the analysis of the quantitative data of the present study we can verify that, at an initial stage, the experimental and control group had an average of 39.73 and 51.70 respectively. These results do not corroborate with the study by Guadeloupe (2008), since this indicates an average value for cancer patients of 52.75 in this dimension, nor with the study of Rosa (2014) which confirmed high levels of life satisfaction ($p = 0.049$) for active patients and an association between life satisfaction and self-esteem ($r = 0.425$ and $p < 0.001$). This divergence of results may be due to the sample of the present study being mostly reformed / invalid (50% for the experimental group and 46.7% for the control group).

The study of Costa (2015) consolidates the results of the present study by mentioning that patients have varying levels of well-being, including mild (32,5%), moderate (30.1%) and severe (37.3%). However, men (75.6%) reported greater changes in their sense of well-being (moderate or severe) compared to women (59.5%).

We denote in this dimension that patients showed significant improvements in the experimental group ($p < 0.001$). In quantitative terms in the initial evaluation phase the mean value for the experimental group was 39.73, presenting in the final evaluation phase 51.70, presenting a variation of 11.97.

The same is no longer true in the control group, since the results were opposite, generating a decrease in values, depicting a decline in terms of psychological well-being, which caused the results to vary from $\bar{x} = 44.95$ at the initial evaluation stage for $\bar{x} = 41.71$ at the final evaluation stage, and this welfare decrease was statistically significant ($p = 0.004$).

Taking into account the above on this dimension we can see that massage therapy has a beneficial effect on it in a significant way.

Happiness is positively associated with subjective well-being and this in turn is related to positive, negative affective and life satisfaction (Diener et al., 2009). It is a complementarity of this ideology on the part of other authors when they report that the BES is analyzed on a three-dimensional basis, being the same ones the satisfaction with the life, the positive affection and the negative. It is also noted that although there is a relationship between them, they differ. Given the above, for the existence of a satisfaction with life we must have an appreciation of life in positive cognitive terms and the experiences and emotional affections are positive / negative that the patient has experienced / felt before the disease. It is observed that this assessment assumes a volatility that adapts according to the daily life of the person and there must be a balance between both (Diener et al., 2002; Hutz et al., 2014). Using the statistical analysis of this dimension, we can observe mean levels of 35.45 for the experimental group and 48.98 for the control group. In the context of the positive affections it was observed throughout the study that these are associated with pleasant feelings generating good states of humor, which reflect the absence of negative feelings. Given this, in complementary terms, positive affects stimulate the inner thoughts as well as the assimilation of external events (Primi, 2003). Keyes (2005) adds to the above mentioned emotions the good humor, happiness, tranquility, satisfaction and fulfillment. According to Zanon et al. (2013) positive affection is a protective factor against psychopathologies, taking into account that they perceive happiness and thus acquire beneficial emotions in relation to life. These affectivities are associated with successes throughout life, making them have the capacity for social adaptation.
In the study by Noronha et al. (2015), there was a significant correlation between extroversion and positive affects taking into account the intensity of interpersonal interactions. Although there is no benefit associated with unrealistic optimism, since they translate into preventive health behaviors (Hevey et al., 2009). From the point of view of Cassidy et al. (2008) another association of positive affect is the commitment to leisure, since it is in leisure time that the person should promote enjoyable behaviors. Rosa (2014) ($r = -0.292$ and $p < 0.001$) and with pessimism ($r = 0.251$; $p = 0.019$); Optimism with life satisfaction ($r = 0.453$ and $p < 0.001$), with self-esteem ($r = 0.518$ and $p < 0.001$)

In analyzing the effects of massage therapy it was found that there were beneficial effects of massage in the experimental group, since an increase in the mean value was generated in 13.53, presenting in the final evaluation phase values in the order of 48.98, thus depicting a significant improvement ($p < 0.001$). The same was not observed for the control group where we found that the result was inversely positive in comparative terms with the experimental one, it changed from $\bar{x} = 41.94$ to $\bar{x} = 39.15$, reflecting an increase in their mean levels of positive affect in this dimension and significantly ($p = 0.011$).

According to Damásio (2000) psychic and physical variation is a consequence of emotion as a response to a stimulus, contributing the emotion to evaluate the surroundings where we are inserted our adaptive and reactive capacity. Complementarily Twain (2010) cites that these attitudes relate and direct themselves to some or some situation promotes emotional bonds.

Using the statistical analysis of this dimension, we can observe mean levels of 55.43 for the experimental group and 56.00 for the control group. Fischer and Manstead (2008) characterize emotion as a regulating and shaping sensation in inter-relational behavior with other people or groups, for safety and adaptability, and through behaviors expressed in cases where there is danger. According to Ekman (2011) it was found that in interpersonal terms are the emotions that establish the well-being of the patients and are interconnected to the interpersonal relationship during the work activity, in the family and in the community. In the study of this dimension, there were significant improvements ($p = 0.004$) among the patients included in the experimental group, taking into account that, in quantitative terms, the effects of therapeutic massage were positively felt, representing a statistically significant improvement in health associated with emotional ties. It can be seen that in the initial evaluation phase, the mean value was $\bar{x} = 55.43$, showing an evolution to an average value in the final evaluation phase of the order of 61.67, showing a positive variation of 6.24.

On the other hand, we found that for the control group there was a significant decrease ($p = 0.024$), which in terms of statistical values shows a decline in mental health, associated with affective ties, in the order of $\bar{x} = 56.00$ at the initial evaluation stage for $\bar{x} = 51.11$ in the final evaluation phase.

Maintaining or improving global mental health in our daily lives is not easy, since it transcends the absence of physical illness, raising its scope to the mental forum. Keyes (2002) reports that healthy mental health is positively reflected in aspects such as positive feelings of emotional and spiritual well-being where there are values such as culture, equity, social justice, interconnections and dignity .

It is imperative that the mental health variable be systematically evaluated when daily care is provided to patients with oncological pathology, and as a consequence, there is a need to identify the distress in advance, to understand its origin and which the factors that will be influenced by it, in order to determine if that anxiety is or is not detrimental to health (Bainbridge et al., 2011; Traeger et al., 2012). In view of this need, we used the Mental Health Inventory (ISM) for being able to evaluate these disorders as well as psychological well-being. It is a scale that is composed of 38 items and measures mental health in two positive dimensions (positive affect and emotional ties) and three negative ones (anxiety, depression, loss of emotional / behavioral control).

By quantitatively analyzing the global mental health dimension and the effect of therapeutic massage in congenital patients we found that the results showed signs of positive evolution, thus improving mental health indexes and consequent improvement in patients. We found that this intervention in the experimental group increased the levels of mental health, and that at an initial stage the experimental group had values of $\bar{x} = 47.87$ and that after the application of the massage therapy made the mean value of global health an average of 60.61, which clearly shows an improvement in terms of mental health, making it vary positively in the order of $\bar{x} = 12.74$, this difference being statistically significant ($p < 0.001$). If we analyze the data from the control group, and in agreement with what has been demonstrated throughout this study, we found that the result was inversely positive, that is, it is verified that this group suffered a decrease of the levels of health mental, presenting values at an initial stage in the order of $\bar{x} = 51.56$, regressing in the final evaluation phase to values in the order of $\bar{x} = 50.14$, which consequently represents a decline in terms of global mental health. This decrease in mental health levels in the control group was statistically significant ($p = 0.027$). From the comparative analysis of measures of central tendency, it is important to point out that the significant differences occurred with variations of opposite

meanings, that is, whereas in the experimental group the differences are a consequence of the improvement in mental health, in the control group these differences correspond to a worsening of it. We have shown that therapeutic massage improves the mental health of cancer patients at the level of global mental health, as well as in all its scale dimensions, namely psychological distress (anxiety, depression and loss of emotional / behavioral control) and well-being psychological (positive affect and emotional ties).

Conclusion

With this work it was tried to verify if the therapeutic massage had effects on the mental health in the oncological patient, for that was realized a study of investigation based on the quasi-experimental scientific method. We established two independent groups, termed experimental group, in which the nursing intervention was applied therapeutic massage and the control in those who were not submitted to this application. The suffering variable was evaluated in two moments, namely at an initial moment of data collection and after 5 weeks of the first questionnaire.

The methodology described above allowed us to obtain results that demonstrated the beneficial effect of therapeutic massage on cancer patients in all the variables studied in the experimental group in relation to the control group, that is, we showed significant improvements ($p < 0.001$) in mental health in relation to anxiety, depression, loss of emotional control, positive affect, emotional bonds, psychological distress, and psychological well-being

In this way, how can we understand the objectives initially outlined, to answer the initial and central question "What is the effect of Therapeutic Massage on mental health in the cancer patient?" Were evaluated positively in their entirety.

The results found may contribute to a structured basis for the role of nurses, and to develop strategies for prevention and minimization of the aforementioned variable in cancer patients.

After analyzing the results and during the whole work, suggestions come up with different alternatives and directions that would certainly produce data worthy of analysis, which are:

Develop a study with the same design and evaluation of the same variables, but with a longitudinal evaluation, which evaluated not only the short-term but also the long-term effect of therapeutic massage;

To deepen the effect of therapeutic massage on the functional implications of oncological patients, namely sleep, anorexia, fatigue, functional capacity, among other functional alterations mentioned above.

We consider that, with this study, there is a marked research in the health area, since, although we know that massage therapy is a nursing intervention and is a non-pharmacological treatment, we are also aware that it is not currently inserted in the practice of care. Thus, in addition to contributing to a more sustained scientific knowledge in this subject, we believe it is appropriate to promote therapeutic massage intervention and, consequently, to optimize the practice of care, quality and continuous improvement.

With the contribution and dissemination of this study, we consider to be an important factor in health policies, being able to boost and motivate the implementation of this intervention in the different care areas, such as at the hospital and community levels. It is suggested the adoption of consultations open to the community.

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