

## THE EFFECT OF THERAPEUTIC MASSAGE ON THE PAIN OF CANCER PATIENTS

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**ABSTRACT:** *As people with cancer disease, beyond the side effects of treatments, uncertainties regarding the future, suffering, physical pain, anxiety, depression, loss of control and autonomy. The nurse must interact with how people, inserted in their sociocultural context, who are in a situation of health / illness transition. The intervention instituted in the present work was a therapeutic massage, due to the help to restore the physical and psychic balance. The application of massage and the maintenance of hygiene care and comfort and development, as well as the application of the complementary practice to the strategy of self-care and harmonization. We designed a quasi-experimental study whose objective is to evaluate the effect of therapeutic massage on mental health in a sample of 31 cancer patients, 16 in the experimental group and 15 in the control group. 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 the Mini Mental State Examination Scale was applied. There are some pathologies, signs and symptoms in which this intervention is contraindicated, namely: Patients with circulatory problems, varicose veins; inflammatory or fungal processes; fever or hyperthermia; on treatment with chemotherapy; post-surgery, post-radiotherapy, post-stroke or post-myocardial infarction; bone pathology (fractures, recent torsion); hypertension; hemophiliacs; localized contagious or dermatological diseases. For the operation of the independent variable, a therapeutic massage protocol recommended by Tiffany Field and Hernandez-Reif was used, and to evaluate the dependent variable, we used the Brief Pain Inventory, which revealed good internal consistency. This study revealed a beneficial effect of therapeutic massage with regard to pain, we showed a significant improvement in pain intensity ( $p < 0.001$ ) and pain interference ( $p < 0.001$ ). We intend with this study not only that health professionals use this intervention, as well as that these results encourage the scientific community, in the conduct of future research in this pathology and in other chronic pathologies.*

**KEYWORDS:** Massage, Mental Health, Cancer, Therapeutic Massage, Pain

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### INTRODUCTION

The most frightening pathology in the modern world is cancer, because the patient with oncological 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).

In 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, Lioffi & 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 by Martínez-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 2011, the Ordem dos Enfermeiros (OE) approved the regulation of specific competencies of the specialist nurse in medical-surgical nursing and that these nurses as elements of a multidisciplinary team should: Actively intervene in the intervention plan for the control of pain; Disregard the psychological, physiological and emotional components of pain discomfort, namely anxiety and depression, previous experience with pain, personal and individual perception, and cultural and spiritual influences; Use non-pharmacological interventions in complementarity and not substitution of pharmacological therapy, knowing their indications, contraindications and side effects; Ensure the management of pharmacological measures.

## **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.

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 subject, so 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 that, the Mini Mental State Examination Scale was applied);

The age group limitation was due to age differences in relation to this type of intervention. Paraphrasing Rodrigues (2007), the application of touch therapies to children under the age of 18 years, lacks divergent practices regarding their application to adults, because they present difficulties in staying in the proper position, influencing the time of each session and the posture of the nurse. Regarding the elderly ( $\geq 65$  years), the technique used must be specific regarding the use of pressure, supply, massage techniques and nurses' posture. Therefore, the nurse in applying therapeutic massage to these age groups will have to acquire other specific competences (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.

The participants were received in a room of the facilities equipped for this purpose (therapeutic massage) in the Regional Nucleus of the League against Cancer. In this space, a brief explanation was given about the objectives and the entire procedure to be carried out and, later, the authorizations were made official, through the informed consent signed by the participant.

Each therapeutic massage session lasted 30 minutes. Two sessions were repeated weekly for 5 consecutive weeks. Prior to the application of the therapeutic massage, the aforementioned vital signs were evaluated and recorded, and at the beginning of all sessions, questions were asked about possible therapeutic changes since the last session and about some remarkable event that could influence the daily life and, consequently, the dependent

For the operationalization of the dependent mental health variable the BPI validated for the Portuguese population was applied by Azevedo et al. (2007). This inventory presents fifteen items that evaluate the existence, intensity, location, functional interference, strategies to minimize pain and its effectiveness. The existence of pain is evaluated by an item (1) through yes or no, for the location of the pain the patient makes an indication in the pain area in a representative diagram of the human body (item 2), to evaluate the strategies there is an issue (item 7) and its effectiveness is evaluated in percentage terms (item 8). The BPI was applied by the author in chronic pain units, including at the Dr. Nélio Mendonça Hospital and presented an internal consistency coefficient of 0.99 for the pain intensity dimension and 0.84 for the pain

interference dimension. In the present study we can also observe a high internal consistency in both initial and final evaluations with values of 0.81 and 0.88 for pain intensity and 0.93 and 0.94 for pain interference.

## RESULTS E DISCUSSION

The application of the BPI allowed us to know the body zones in which the patients of each of the groups and at each moment felt more intense pain. The data presented in Table 1 allow us to verify that the dispersion of responses was very high and, consequently, the low frequencies. However, we can point out the abdomen area and the dorsal area with the highest percentage. The situation is very similar in both groups and in both evaluation moments.

**Table 1a - Zone referred to as the one that hurts the most, at the moments of the initial and final evaluation**

Group	Initial assessment				Final evaluation			
	Experimental		Control		Experimental		Control	
	n	%	n	%	n	%	N	%
The area that hurts the most								
Abdomen (lower right quadrant)	2	12.5	2	13.3	2	12.5	2	13.3
Abdomen (lower left quadrant)	0	0.0	2	13.3	0	0.0	2	13.3
Abdomen (upper left quadrant)	2	12.5	2	13.3	2	12.5	2	13.3
Mouth	1	6.3	0	0.0	0	0.0	0	0.0
Front head	2	12.5	0	0.0	2	12.5	0	0.0
Front right thigh	0	0.0	1	6.7	0	0.0	1	6.7
Dorsal	2	12.5	2	13.3	2	12.5	2	13.3

**Table 1b - Zone referred to as the one that hurts the most, at the moments of the initial and final evaluation**

Group	Initial assessment				Final evaluation			
	Experimental		Control		Experimental		Control	
	n	%	n	%	n	%	N	%
The area that hurts the most								
Right hemithorax	1	6.3	1	6.7	1	6.3	1	6.7
Left hemithorax	0	0.0	1	6.7	0	0.0	1	6.7
Right breast	1	6.3	0	0.0	1	6.3	0	0.0
Left breast	1	6.3	1	6.7	1	6.3	1	6.7
Breast	1	6.3	1	6.7	1	6.3	1	6.7
Left front neck	2	12.5	0	0.0	2	12.5	0	0.0
Did not answer	1	6.3	2	13.3	2	12.5	2	13.3

The inventory made it possible to obtain the results that constitute Table 2. We found that most patients reported pain other than common pain, with percentages being equal to or greater than 80.0%. Fisher's exact test did not reveal statistically significant differences between the two groups at any time point ( $p = 0.0333$ ;  $p = 1,000$ ). On the other hand, the McNemar test revealed no significant difference in each of the groups when compared in the two moments of evaluation ( $p = 1,000$ ).

Concerning pain relief perceived by patients in recent weeks, as a consequence of treatments and medications, we observed that in medium and medium terms, responses close to 40% or 50% were observed, and no statistically significant differences were observed between groups ( $p = 0.601$ ,  $p = 0.375$ ) or between moments of evaluation ( $p = 0.196$ ,  $p = 0.127$ ).

Concerning the open question about treatments and medications that patients used for pain relief, only 20% of patients in the experimental group and 30% of those in the control group responded. We observed that both groups used opioid medication, more precisely transdermal and adjuvant medication. At the end of the study the data were maintained for both groups. Only one person pointed to using a non-pharmacological measure for pain control - Reiki.

As for the intensity and the interference of pain during the preceding week to two moments of evaluation, we see results around the central value of the scale (0 to 10 points), not being statistically significant differences between groups ( $p = 0.143$ ;  $p = 0.512$  and  $p = 0.859$ ;  $p = 0.205$ ). However, when we compare the groups between the two moments of evaluation, the Wilcoxon test revealed highly significant differences ( $p < 0.001$ ) in the experimental group, but not in the control group ( $p = 0.721$ ;  $p = 0.649$ ). Analyzing the results of the measures of central tendency we can affirm that there was decrease in intensity and the interference of pain in two groups in the initial evaluation to the final, but these differences are significant only in the experimental group, namely, the one whose patients was applied to massage therapy. This fact allows us to assert that cancer patients in ambulatory when subjected to massage have chronic pain levels lower than those of the control group»

**Table 2a - Comparison of pain between groups and between moments of evaluation**

Variable	Group	Initial assessment				Final evaluation				Test
		Experimental		Control		Experimental		Control		
		n	%	n	%	n	%	N	%	
Existence of pain										
Yes		15	93.8	12	80.0	14	87.5	13	86.7	Exp. $p = 1.000$
No		1	6.2	3	20.0	2	12.5	2	13.3	Cont. $p = 1.000$
Teste exato de Fisher		$p = 0.333$				$p = 1.000$				$p = 1.000$
Pain Relief										
$\bar{x}$		38.75		42.00		45.00		51.33		Exp. $z = -$
Md		40.00		50.00		50.00		50.00		1.292
s		20.29		23.05		18.97		15.06		$p = 0.196$
xmin		10		10		10		20		
xmáx		70		70		70		70		
p		0.083		0.034		0.158		0.246		Cont. $z = -1.528$ $p = 0.127$
Teste Mann-Whitney		$z = -0.523$		$p = 0.601$		$z = -0.885$		$p = 0.376$		

Pain intensity					
$\bar{x}$		4.77	4.19	4.60	Exp. z = - 3.523 <b>p &lt; 0.001</b>
Md	5.61	4.25	4.00	4.25	
s	5.50	1.50	1.83	1.69	
xmin	1.70	2.75	1.00	1.75	
xmáx	3.00	7.50	7.25	7.50	
p	8.25 0.365	0.327	0.546	0.799	Cont. z = - 0.357 p = 0.721
Teste Mann-Whitney	z = -1.465 p = 0.143		z = -0.656 p = 0.512		

**Table 2b - Comparison of pain between groups and between moments of evaluation (cont.)**

Variable	Group	Initial assessment				Final evaluation				Test
		Experimental		Control		Experimental		Control		
		n	%	n	%	n	%	N	%	
Interference of pain										Exp. z = - 3.520 <b>p &lt; 0.001</b>
$\bar{x}$		5.05		5.05	3.87		4.78			
Md		5.36		5.57	4.00		5.85			
s		2.77		1.90	2.56		2.31			
xmin		1.00		1.57	0.43		1.00			
xmáx		9.71		7.71	8.71		7.86			
p		0.214		0.312	0.343		0.163			Cont. z = - 0.455 p = 0.649
Test Mann-Whitney		z = -0.178 p = 0.859		z = -1.266 p = 0.205						

Using the Portuguese statistical data it was noted that in 2003 the pain was considered the fifth vital sign. Given the important that the pain represents spent the same relief and control to be a duty of health professionals and a right of patients. Generated the need for constant evaluation and registration of the pain intensity (DGS, 2003).

According to the International Council of Nursing (2016) the cancer pain has been defined as a feeling of acute and chronic pain with different levels of intensity, caused by the progression, and treatment tumour sites.

In the present study and in the light of what is referenced by Trancas et al. (2010) impact of pain causes emotional disturbances, and that depending on your intensity, prevalence, longevity and control can lead to depressive symptoms accompanied by times of suicidal ideation.

Under the pain and as regards the existence of pain it was found that the experimental group presented high values of 93.8% in a universe of 15 patients with regard to the existence of pain and that in the control group ascertained that in a universe of 12 sample elements (80%)



showed existence of pain as opposed to 20% which showed no pain, but these differences were not significant ( $p = 0,333$ ).

In this, it has been shown that patients, on your overall felt pain. Reporting in the final evaluation, based on the intervention of the massage, it was noted that there is a decrease in terms of pain, showing values of 87.5%, with regard to the experimental group and 86.7% for the control group.

Evaluating proportionally to the experimental and control group with the intervention of massage therapy has been found to exist a percentage decrease of the existence of the pain, but if you look at in terms of significance these have not been statistically significant ( $p = 1,000$ ).

The complexity that surrounds the neurophysiology of cancer pain is inflammation, ischemia and compression neuropathy in multiple locations. People with oncological pathology may need the location of pain caused by cancer, for your treatment, General debility or concurrent disorders.

To achieve good control of chronic pain in cancer, according to Raphael et al. (2010), there must be understanding of your physiology and molecular structure. The authors Simone, Vapiwala, Hampshire and Metz (2012) and Ripamonti, Bossi, Santini and Fallon (2014) lead us to conclude that the experience of cancer pain is directly correlated with genetic factors, history, culture and humor. The subjectivity inherent to pain as well as the information provided by patients should be focus on temporal where specifications must be observed in the initial phase the your default and irradiation, location, severity, quality, duration, frequency and pain relief strategies (Ordem dos Enfermeiros, 2008).

Based on our study, we have concluded that the main pain locations mentioned by patients. The results determined that the initial assessment phase, with a 12.5 percent value, the main areas of pain were, for the experimental group, the abdomen (lower right and upper left quadrant), frontal lobe, cervical, dorsal, oral cavity were right, right and left breast. However, 6.3% didn't answer the question.

With regard to the control group, with a value of 13.3 percent, it was found that the critical areas to pain were in three abdominal quadrants, notably in the bottom right, top left, and left another area affected by the pain, and in the same proportion was in the dorsal region. Analyzing the before and after of these items we came not to change in the final evaluation stage except for localized pain in the area of the mouth which in your time down to zero, and this change explained with reason due to sick and m the phase of final assessment choose not to respond.

These locations are in line with the incidence rate of cancer in Autonomous Region of Madeira, which according to the Regional Cancer Registry (2015) the highest rate is related to the prostate (72.15%), breast (44.77%), later the lung (29.52%), colon (22.03), oral cavity and pharynx (17.14), straight (16.24%), stomach (14.69%), bladder (8.14) and primary location unknown (7.58%).

Throughout the study described that the intensity of pain in patients with oncological pathology, is based on a set of demographic variables, psychological and social and technical/professional nature, assigning weight to age, ethnic groups, among other items susceptible to make our measurement more volatile in terms of activity analysis even though the levels of pain were light, moderate or severe.

Using the pain intensity comparison 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 5.61 and 4.77 respectively.

In terms of moderate pain it was found that it appeared in patients in advanced stages of cancer, where it is given as moderate or severe in a population of approximately 40 to 50% and as maximum in 25 to 30% of the cases (Bair et al., 2003).

In the study by Rodrigues (2007), this study shows that the quantification of the patients who expressed very strong pain was 29.5%, 25.0% were categorized as uncomfortable, the severe pain was verified by 20.5% and 13.6% reported that the pain was very uncomfortable.

In sex, it was found that, in relation to the vehemence of pain, they presented an average of 7.16 for intense pain, being 7.23 for the female and 7.06 for the male sex. Machado (2011) found that 76.7% reported moderate pain, 13.3% severe pain, 10.0% mild pain, 90.0% of patients performed medication and that the higher the pain intensity the greater the probability of developing depressive symptoms ( $p = 0.014$ ). Carvalho (2010) found that 43.4% of the patients reported moderate pain and the intensity was on the order of 2.11. It found significant alterations in that the intensity of the pain was related to the professional situation presenting values on the order of 0.75 in relation to the no professional activity (2.22) ( $p < 0.001$ ), which means that the pain levels are perceived less intensely in patients with active professional activity.

The present study is in line with other research on the intensity of pain. As can be seen, Marmelo (2012) shows mean intensity levels of 7.2 for maximum pain in the last 24 hours, 5.5 for mean intensity in the last 24 hours and 5 for pain intensity at the precise moment, noting that 80% of patients presented moderate to maximum pain.

Conceição (2012) shows average levels of intensity of 5.56 and Rocha (2013) mentions that in his study the cancer patients presented an average value of maximum pain in the last week of 7.83, the minimum of 3.24, pain on average of 5.51 and in height application of the 5.56 instrument.

During the intervention of the therapeutic massage, the average values changed, causing the average pain index in the final evaluation and in the scope of pain intensity in the experimental group to decrease by about 1.49, thus presenting a final intermediate value in the order of 4.19. It was inferred that the output of the massage was beneficial to the point of decreasing the level of pain in this dimension and significantly ( $p < 0.001$ ). As for the control group, a decrease was observed, being on the order of 0.17, not as expressive and significant ( $p = 0.721$ ) as in the other group. Thus, the results of this dimension clearly show that there is an improvement in terms of pain intensity after the intervention of the therapeutic massage.

This improvement is due to therapeutic massage, due to the mobilization of the various structures, relieving pain (Domenico & Wood, 1998; Cassar, 2001). To paraphrase Fritz (2000), this intervention exerts a mechanical stimulation and favors the venous and lymphatic return and according to Domenico and Wood (1998) has a stimulating effect on sensitive nerve endings, relieving pain and muscle spasm, providing vasodilation of the skin and reducing ache. Veiga (20079) explains that the primary purpose of massage is pain relief, stimulation, muscle toning and will promote blood circulation, elimination of toxins and waste that causes painful sensations. For Downen (2003) the benefits of massage are normalization of blood pressure, decreased adrenaline production, respiratory rate and pain, relieving inflammation of



the muscles, activates circulation, which helps in the delivery of nutrients to all organs and skin, and increases the flow of fluids through the body, removing the toxins. According to González-Iglesias et al. (2009) the massage of the face, head and neck is indicated in cases of migraine, sinusitis, headache and nervousness.

Several international studies have been carried out to verify the effect of massage therapy on pain intensity. In particular, Weinrich and Weinrich (1990) report that therapeutic massage reduces immediate pain levels in male cancer patients ( $p = 0.01$ ). Paraphrasing Cassileth et al. (2004), there was a reduction of mean pain levels by 1.7 ( $p < 0.05$ ) and that this variable improved by more than 10% in the outpatient clinic than in the hospital and with more durability.

Ferrell-Torry and Glick (1993) report that massage reduces pain intensity by 60% and in the study by Wilkie et al. (2000) and Marchand (2014) found that there was a reduction in pain intensity of 42% in the experimental group and 25% in the control group ( $p < 0.05$ ) in the first author's study. Currin and Meister (2008) mentioned a positive and significant effect on pain reduction for the experimental group ( $p = 0.001$ ). Marques (2010) verified that there was a significant reduction in pain intensity values both in the group of patients who underwent therapeutic massage (reduction with a mean of 21.88% with  $p < 0.001$ ) and in the group of patients who did not undergo (mean reduction of 10.11% with  $p < 0.001$ ), being more evident in the first group ( $p < 0.001$ ).

Toth et al. (2003) reported an average decrease from 5.50 to 3.83, Ferreira and Lauretti (2007) found that in both groups there were immediate improvements ( $p < 0.001$ ) in the experimental and control groups in pain (-1.87 and -0.97), although with more relevance in the experimental group, the authors Adams et al. (2010) showed a decrease from 5.18 to 2.33 values ( $p < 0.001$ ). The latter author, through qualitative data, highlights relevant improvements in total pain. Similarly Mandim (2011) revealed that pain intensity improved with this intervention, decreasing the mean pain from 5.18 to 2.33. We can see that therapeutic massage has a beneficial effect on the decrease of levels of pain intensity in cancer patients.

The management of pain begins with the diagnosis of its cause through a clinical and imaging analysis, in parallel with the respective therapies directed to the disease. According to Turan, Öztürk and Kaya (2010), there is a wide range of pharmacological and / or non-pharmacological therapies strategies, which should be used as a resource for the individual basis and clinical situation, in order to improve the effectiveness of relief of the intensity of ache.

As far as our study is concerned, we found that only 20% of patients in the experimental group and 30% of those in the control group answered the question of pharmacological therapy, it was probably due to this open question, or it is presumed that few patients who take medication for control and relief of pain. It is also observed that, although not significant, the patients use transdermal opioids and coadjuvant medication.

Likewise Milhomens (2014) shows that only 5.7% of patients did not take medication for pain relief and that 41.5% performed psychiatric medication (antidepressants and anxiolytics).

The latter author shows an association between this medication and the intensity of pain ( $p = 0.019$ ), considering that this medication may be helpful in relieving pain. Still, Carvalho (2010) presents a correlation between pain with the existence of metastases ( $p = 0.008$ ) and analgesic

medication ( $p = 0.044$ ). In the latter, the highest pain intensity was expressed by patients who were being treated with analgesics of step III, with an average value of 2.34.

Regarding non-pharmacological treatment, Concepción (2012) mentions that the most used strategies for dealing with pain are resting (28%), distraction (8%), massage (4%) and Marmelo (2012) use non-pharmacological measures for pain relief. However in the present study only one person reported using Reiki.

In statistical terms, analyzing the efficacy of pain treatments, we found that in the initial evaluation, the experimental group had an improvement of 38.75% and the control group with 42.00%. It is evidenced that with the intervention of the therapeutic massage in both groups the percentage values increased, reaching 45% and 51.33% respectively. However, in neither group were the differences statistically significant ( $p = 0.196$  and  $p = 0.127$ ).

According to Grealish et al. (2000) and Kutner et al. (2008) counter that therapeutic massage reduces immediate pain levels ( $p < 0.001$ ). Jane et al. (2009), short-term (20/30 minutes) ( $p < 0.001$ ) and long-term (16/18 hours) relief of pain ( $p = 0.04$ ) and Sui-Whi et al. (2011) also showed that massage is effective in the short and long term, although the most significant impact occurred minutes after the intervention.

Deng et al. (2005) and Post-White et al. (2003) reported that this intervention reduced the use of analgesics and the consumption of rescue analgesics, although Ferreira and Lauretti (2007) found that the consumption of morphine was maintained for 10 days, although there was a decrease in pain levels after 5<sup>th</sup> intervention day. However, Kutner et al. (2008) report that there were no differences corroborating the decrease in the use of analgesics. Soden et al. (2004) and Kutner et al. (2008) report that significant long-term changes in the benefits of massage in terms of improvement, control, and pain levels have not been demonstrated. These results were similar to those of Downey et al. (2009), because in this study, despite the reduction of pain, the difference was not statistically significant. Thus, although there are authors who report the beneficial effects of massage therapy on pain relief, in the present study there was no such minimization in a statistically significant way.

Concerning another dimension of pain - interference of pain, it is revealed that this is a used term where the interposition of an action is associated with it, this is seen as a barrier to the continuity of pain (Merriam-Webster, 2017).

In statistical terms and analyzing pain interference in our study, we found that in terms of initial assessment both groups had an average of around 5.05.

We can observe that the perceived level of pain interference is in the intermediate value of dimension (5). However, in the study of Conceição (2012) regarding the interference in functional capacity, the mean value of 6.64 was shown to be: disposition (6.56), ability to walk (7.28), normal work (7.52), interpersonal relations (5.60), sleep (6.16), pleasure in living (5.36). It points out that the presence of pain affects the impact on the professional life (36%), there is a need for financial aid (88%) and that the strategies most used to deal with pain are rest (28%), distraction (8%) and massage (4%).

A slightly higher average value was found in the study by Marmelo (2012), where he found an average of 6.7 for the interference of pain in sleep, 6.5 on disposition, 5.7 on normal work and 5.3 on interpersonal relations.

In turn Rocha (2013) describes that the highest average was in items such as interference in general activity (7.84) followed by normal work (7.78), disposition (7.48), motor skills (7.00), in sleep (6.86), in socialization (4.70) and presenting with the lowest mean we found that was associated with the pleasure of living with values in order (4.41). A correlation was found between personal control and severity ( $r = -0.266$  and  $p = 0.017$ ) and pain interference ( $r = -0.321$  and  $p = 0.004$ ), that is to say, there is an inverse proportionality, that is, the greater the control the smaller staff will be these variables. The correlation between the coherence of the disease ( $r = -0.392$  and  $p < 0.001$ ) and the emotional representation ( $r = 0.451$  and  $p < 0.001$ ) with the pain interference were exposed.

The relationship between pain and fundamental aspects of the patient's well-being is well-known, and professionals should not restrict themselves to monitoring pain by intensity. As reported by Rodrigues (2007) the disability is related to the pain in at least 35.57%.

It is evidenced that with the intervention of the therapeutic massage both groups presented a decrease of the mean values, that is, in the final evaluation the average level of pain interference in the experimental group decreased by about 1.18, presenting an average value of 3.87, and this difference was statistically significant ( $p < 0.001$ ). Concerning the control group, we also noted that there is also a decrease, although not significant ( $p = 0.649$ ), being the same in the order of 0.27, presenting a mean value in the final evaluation in the order of 4.78 for the control group not as expressive as the group that underwent the massage intervention. The results presented here clearly show that this dimension has undergone a significant improvement in terms of pain interference.

Paraphrasing Domenico and Wood (1998), therapeutic massage promotes functional independence in a person who has a specific health problem, because as Feltman (1995) points out in this intervention circulatory stimulation occurs, it develops the mobility of the superficial soft tissues, increasing the range of movements in joints and limbs and provides relief from pain. According to Deng et al. (2004) massage therapy may aid in symptomatic relief and side effects such as pain, sleep, anorexia, constipation, edema, nausea, fatigue, muscle dysfunction, among others. Similarly, Domenico and Wood (1998) reported that it promotes sleep induction and Veiga (2007), which facilitates oxygenation in the muscle area through massage, reduces the sensation of fatigue.

These benefits of massage therapy were also found in the study by Toth et al. (2013) where there was an improvement in the sleep of cancer patients at the end of life ( $p = 0.03$ ). Also in the research study of Ahles et al. (1999), massage promoted an immediate effect on the reduction of nausea ( $p = 0.01$ ). Mandim (2011) and Soden et al. (2004) verified the minimization of sleep and Billhult et al. (2007) cites significantly improvement in the reduction of nausea in the experimental group ( $p = 0.025$ ).

In summary and taking into account the aforementioned we can affirm that the intervention, therapeutic massage, has a beneficial effect on pain, because although the majority of patients present pain, the intensity and interference of this variable in people's lives has improved significantly.

## CONCLUSION

With this work it was tried to verify if the therapeutic massage had effects on the mental health in the pain, for that was realized a research study 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 the pain of the oncological patient, showing a significant improvement in pain intensity ( $p < 0.001$ ) and pain interference ( $p < 0.001$ )

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 the pain of cancer patients?" Were positively assessed as a whole.

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 areas of care, such as at the hospital and community levels. It is suggested the adoption of consultations open to the community.

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