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Anxiety in patients with malignant neoplasms in the mediate postoperative period: a correlational study

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ABSTRACT

Aim: To investigate anxiety in cancer patients hospitalized in the mediate postoperative period, through the Trait-State Anxiety Inventory, and the correlation between anxiety and malignant neoplasms of the head and neck, stomach, and colorectal. **Method:** This is a descriptive, quantitative and correlational study, performed in a hospital located in the state of Ceará. We used an analysis of variance, ANOVA-F test, to assess the existence of differences in the scores of the scales. **Results:** The participants were 80 patients with a mean age of 50.9 years; they were mostly men (53.8%) with head and neck cancer (40.0%). The level of anxiety state and trait was moderate, and anxiety-state was slightly higher than trait anxiety in the three groups. Participants with head and neck malignant neoplasm had higher average scores of the state anxiety and trait anxiety. **Conclusion:** There was no statistically significant difference between anxiety and the three oncological surgical groups evaluated.

Descriptors: Neoplasms; Anxiety; Medical Oncology; Postoperative Period.

INTRODUCTION

The word anxiety is derived from a German word, *Angst,* whose root means "narrowing" or "constriction, tightening". In Latin, its synonym is *angor*, which expresses breathlessness or oppression. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), from 1980, pathological anxiety was classified and admitted as a mental illness. Anxiety can be defined as an unpleasant emotional state characterized by fear with regard to the future, disproportionate and subjective discomfort, resonating both in voluntary and involuntary bodily manifestations, as in biological and chemical changes[1].

Anxiety and depression are mental disorders more routinely associated with clinical diseases[2]. Cancer is one of these clinical disorders; most patients experience anxiety because the awareness of malignant neoplasm has a strong impact on people's lives, causing physical, emotional, and mental changes. It is worth noting that each individual's life history, their beliefs, values, and past experiences reverberate negatively or positively to the confronting of a sign or symptom. Therefore, some people face certain circumstances better than others[2,3].

In the trajectory of an individual with cancer, anxiety concerning the disease manifests itself from diagnosis to the end of treatment and is strongly associated with the mental health of these patients[2]. For cancer patients, the condition of the diagnosis and its association with death, as well as the side effects of treatments, can trigger cases of anxiety and depression[3]. Among these treatments is the surgical, widely used for solid cancers, such as colorectal, stomach, and head and neck. The surgical procedure itself, the fear of pain and the possible anatomical-functional alterations caused by cancer surgery can also cause anxiety[4].

In parallel, it takes several invasive procedures, such as nasoenteric tubes and drains. With respect to colon cancer, it is often also necessary to make stomas, which cause loss of faecal elimination control, and hence a change in self-esteem and self-image. Feelings of rejection, shame, or anger also occur and may contribute to anxiety states[4].

Still, in the perioperative period there may be concern regarding future treatments needed for cancer control, since treatment protocols involve mostly adjuvant treatments, that is, treatments performed after surgery. Among these treatments are radiotherapy and chemotherapy, carried out in order to obtain higher rates of disease control[5]. Thus, the concern, in terms of the future, can still become a source of stress in the perioperative period.

Anxiety causes unpleasant symptoms, such as feelings of restlessness, fatigue, difficulty concentrating, irritability, muscle tension, tachycardia, palpitations, sweating, and insomnia, among others[1]. The assessment of anxiety and depression should be routine in health institutions, since the effectiveness of the cognitive-behavioral interventions have been documented in the literature for its control [6].

There are several tools to assess anxiety. One of them is the State-Trait Anxiety Inventory (STAI), which measures two concepts: the state of anxiety, which refers to a transitory emotional state characterized by subjective feelings or tension and can vary in intensity over time; and trait anxiety, that is, a relatively stable disposition of the person to respond to stress with anxiety and a tendency to perceive a wider range of situations as threatening[7].

When professional nurses become aware of the presence of this frame in the patients under their care (state-anxiety), and the possibility of individuals developing anxiety (trait anxiety), they can intervene, together with the interdisciplinary team, in its prevention and control.

From these assumptions, we raised the hypothesis that cancer patients present anxiety in the mediate postoperative period and that there is a difference when comparing the anatomic site of the malignant neoplasm and the degree of patients' anxiety.

The choice of the mediate postoperative phase was made due to the psychological distress, including anxiety, which may negatively influence patient satisfaction and prolong hospital stay, as pointed out in studies[8,9].

Although there is discussion on anxiety in the perioperative period, there was extensive search for literature whose core discussion was based on themes related to anxiety in patients with malignant neoplasms in the postoperative period.

That said, we sought research/works in the Virtual Health Library that would expand on this issue, using all the bases of national and international data available - MEDLINE (Medical Literature Analysis and Retrieval System Online) via PubMed and CINAHL (Cumulative Index to Nursing & Allied Health Literature) - and the combination of several descriptors in different languages related to anxiety, postoperative and oncological surgery. We have found some international studies; however, there was an absence of national literature on anxiety in patients with malignant neoplasms in the postoperative period.

Given the above, it was thus intended to investigate anxiety in cancer patients hospitalized in the mediate postoperative period,

through the application of the State Trait Anxiety Inventory, and verify the correlation between anxiety and malignant neoplasms of the head and neck, stomach, and colorectal.

METHOD

This is a cross-sectional, correlational study with a quantitative approach: using the quantitative research concepts proposed by some authors as methodological reference[10,11]. It was performed in a surgical clinic of a university hospital in the state of Ceará, composed of beds distributed in wards according to surgical specialty: orthopedic surgery, head and neck, breast and plastic, heart and vascular, digestive tract, ophthalmological and otolaryngologistical, coloproctological and urological.

The participants were chosen by a consecutive sampling process, as they were admitted to the inpatient unit and met the established criteria. Consecutive sampling is important to include the entire population (with seasonal variations or temporal changes relevant to the research question) available for a period of time[10].

The participants were cancer patients hospitalized in the aforementioned unit from March 2014 to May 2015, in the mediate postoperative period, with head and neck, stomach, (gastric) or colorectal (colon and rectum) cancer. Inclusion criteria were infirm individuals over the age of 18 years, who underwent cancer surgery and were conscious (the level of consciousness was checked by applying the Glasgow Coma Scale) with a score of 15. Illiterate individuals were excluded - since the instrument is self-administered - as were patients who used anxiolytic medications, as well as those with some kind of psychiatric

diagnosis. There were a total of 80 participants in the study, as shown in Figure 1.

For the collection of data, we used a questionnaire developed by the authors of the study, containing characterization data of the participants, including age, gender, presence of an accompanying family member, place of occurrence of the oncological disease and associated medical conditions, and State-Trait Anxiety Inventory (STAI), one of anxiety self-report measures most commonly used in the research and in clinical practice in different cultures[12].
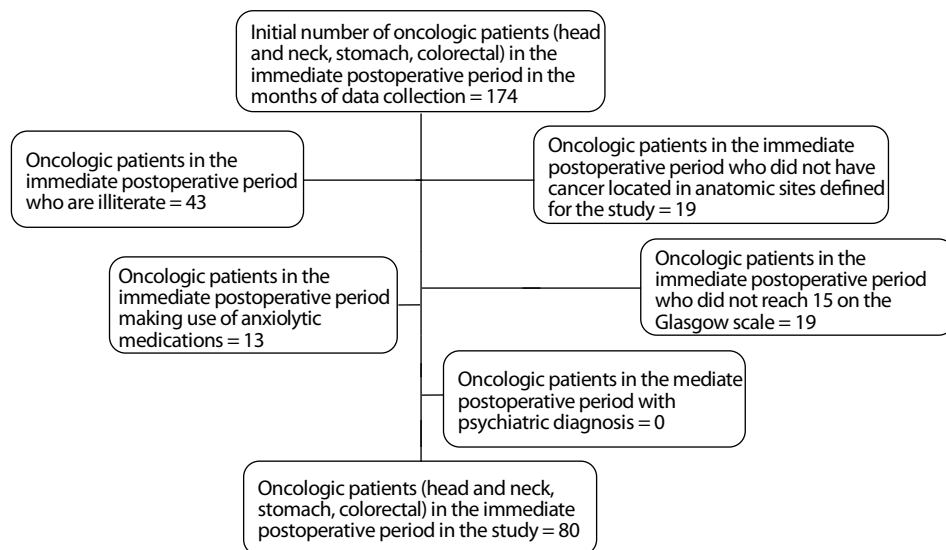
The STAI consists of two scales: trait anxiety, which features assertions so that the individuals describe how they often feel anxious; and anxiety-state, which requires the person to answer how they feel at any given time, that is, in this study, in the mediate postoperative period of oncological surgery[7,13]. Each of these scales is made up of 20 statements with a Likert answer format, as follows: 1- rarely; 2- sometimes; 3- enough; 4- almost always. The score of each part varies from 20 to 80 points, with higher scores indicating higher levels of anxiety[12], which may indicate the following in trait anxiety and anxiety state: low level (0-34), moderate (35-49), high level (50-64) and very high level (65-80)[12].

It is noteworthy that the STAI is conside-red the gold standard internationally to assess anxiety appears on the list of Psychological Testing Assessment System (SATEPSI) as an unfavorable instrument (Plenary 2003), in order to explain that that it still needs validity and precision studies. However, later research was made allowing its application in clinical and non-clinical studies as a reliable instru-ment to assess anxiety in its trait anxiety and state anxiety modes in various areas of know-ledge, being useful and effective in assessing anxiety[12,13].

Data analysis was preceded by the development of a database, using the *Microsoft® Office Excel* application (2013), for the encoding of the variables and validation by double entry and was analyzed with the help of SPSS® 13.0 for Windows. In order to expose the variables, descriptive statistics were employed involving the acquisition of

Figure 1 - Flowchart of constitution of the study population. Fortaleza, 2015.

Source: Prepared by the authors, 2015.

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absolute distributions, percentages, means and standard deviations.

The ANOVA-F test analysis of variance was used to assess the existence of differences in the scores of the STAI scales between the three oncological surgical groups evaluated, and the correlation between them and the variables of the characterization of the participants. The margin of error used for the decision of the statistical tests was 5.0% ($p > 0.05$).

The study was approved by the Ethics Committee in Research of the Federal University of Ceará (CAAE No. 32961314.0.3001.5045) and the data was collected after signing the Statement of Consent.

RESULTS

The participants were 80 cancer patients with head and neck, stomach (gastric) and colorectal (colon and rectum) cancer, hospitalized in the mediate postoperative period, aged between 18 and 84 years (mean 50.9, SD 15.1); they were mostly male (53.8%), without the presence of a family companion (71.2%) and without comorbidities (73.7%). Regarding the site of occurrence of oncological diseases, 40% had cancer in the head and neck, 38.7% had stomach cancer, and 21.3% had colorectal cancer. It is noteworthy that, of those who had colorectal cancer (21.3%), the majority (11 patients) required colostomy.

It is noteworthy that, for better detailing the results related to the characterization of the participants regarding gender, presence of family, companion and comorbidity, data was grouped according to the type of oncological disease, as you can see in **Table 1**.

Participants with colorectal cancer had a mean age (m 53.8, standard deviation 17.1) slightly higher than the patients with head and neck cancer (mean 51.6, SD 15.2), and stomach cancer (mean 48.6, SD 13.9); a difference that, when statistically analyzed (Analysis of Variance - ANOVA-F) was not significant ($p > 0.05$).

As for the sex of the participants, men were the majority in the cases of head and neck (23.7%) and colorectal malignant neoplasm (13.8%). In the stomach cases observed, women were the majority (22.4%). Regarding the presence of a family companion, participants with head and neck cancer and stomach cancer were those who had the lowest number of accompanying family members (30.0% each).

As stated in the method for the characterization of the respondents according to their degree of anxiety, the State Trait Anxiety Inventory (STAI) was used. It was found that, considering the total of 80 respondents, the average score of the participants presented in state anxiety (mean 40.8, SD 9.7; range 21-77) was slightly higher than those observed for trait anxiety (mean 39.9, SD 8.9; range 24-71). When compared to the scores exhibited by trait anxiety types of malignancies considered in this study, it was observed that although participants with malignant neoplasms of the head and neck have presented average scores higher on trait anxiety (mean 41; deviation standard 10.1), compared to colorectal (mean 39.4, standard deviation 9.2) and stomach (mean 38.9, standard deviation 7.3), this difference was not statistically significant (Frequency 0,45; $p > 0.05$) (Table 2).

Similarly to the assessment of trait anxiety, when considering the average scores presented in state anxiety, although patients with head and neck cancer have presented averages higher than the other two oncological surgical groups evaluated, this difference was not statistically significant, as seen in **Table 2**.

A graphic detailing the behavior of mean differences from the three groups studied can be seen in **Figure 2**. Note that the average of the trait anxiety and state anxiety was higher in patients with head and neck cancer and lower in the group of patients with stomach cancer.

Additionally, in order to verify the distribution of the anxiety level presented by patients from each oncological group to the classification in trait anxiety and state anxiety - low level (0-34), moderate level (35-49) high level (50-64) and very high level (65-80) – we proceeded as stated in the method. As can be seen in **Figure 3**, there was a predominance of moderate trait anxiety, regardless of the oncological group investigated. It also highlights that the very high level of trait anxiety was not observed in patients with stomach cancer.

Thus, in evaluating the anxiety-state, as happened with the trait anxiety, there was a predominance of mild anxiety levels for all oncological conditions (**Figure 4**), a lack of very high state anxiety in patients with

Table 1 - Characterization of participants with head and neck cancer, stomach and colorectal regarding sex, presence of a family companion, and comorbidity. Fortaleza-CE, 2015.

Type of cancer		Head and Neck		Colorectal		Stomach		Total	
		Absolute frequency (n=80)	Relative frequency (%)	Absolute frequency (n=80)	Relative frequency (%)	Absolute frequency (n=80)	Relative frequency (%)	Absolute frequency (n=80)	Relative frequency (%)
Sex	Male	19	23,7	11	13,8	13	16,3	43	53,8
	Female	13	16,3	6	7,5	18	22,4	37	46,2
Family companion presence	No	24	30	9	11,2	24	30	57	71,2
	Yes	8	10	8	10	7	8,7	23	28,7
Comorbidities	Does not have	25	31,2	10	12,5	24	30	59	73,7
	"Cardiopathy"	1	1,2	2	2,5	0	0	3	3,7
	Diabetes mellitus	1	1,2	1	1,2	0	0	2	2,4
	Systemic Arterial Hypertension (SAH)	3	3,7	4	5,2	5	6,3	12	15,2
	SAH / Diabetes Mellitus	2	2,5	0	0	2	2,5	4	5

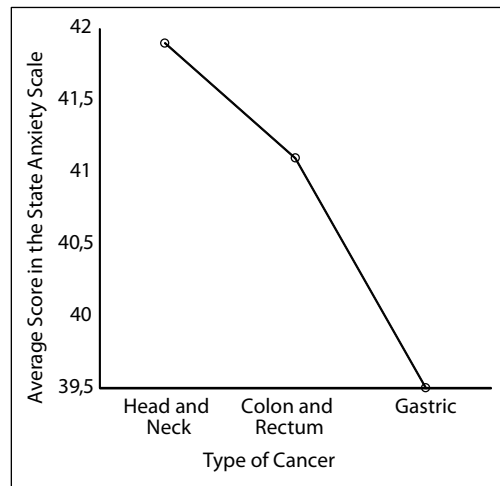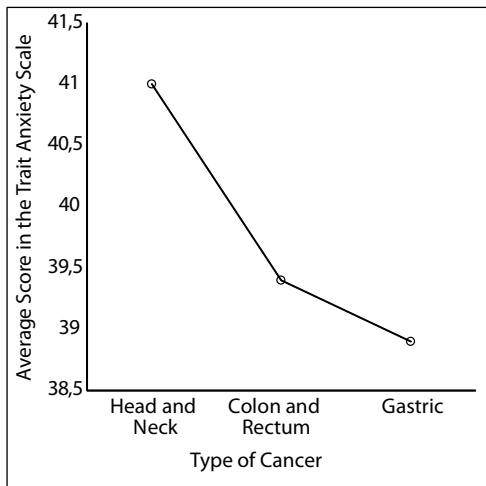*Source: Prepared by the authors, 2015.*

Table 2 - Difference in average scores on trait anxiety and state anxiety scales in the three surgical oncological groups evaluated. Fortaleza-CE, 2015.

| Type of cancer	Head and Neck (n=24)		Colorectal (n=14)		Stomach (n=22)		Frequency	P*
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation		
State-anxiety	41,9	11,8	41,1	9,3	39,5	7,2	0,49	>0,05
Trait-anxiety	41	10,1	39,4	9,2	38,9	7,3	0,45	>0,05

*p-value - ANOVA-F test
Source: Prepared by the authors, 2015.

Figure 2 - Breakdown chart of the average scores of the cancer groups in trait anxiety and state anxiety. Fortaleza, 2015.
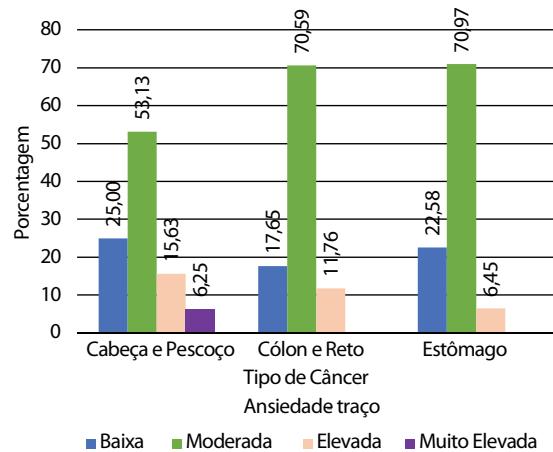

Source: Prepared by the authors, 2015.

Figure 3 - Trait anxiety level in the three oncological groups. Fortaleza, 2015.
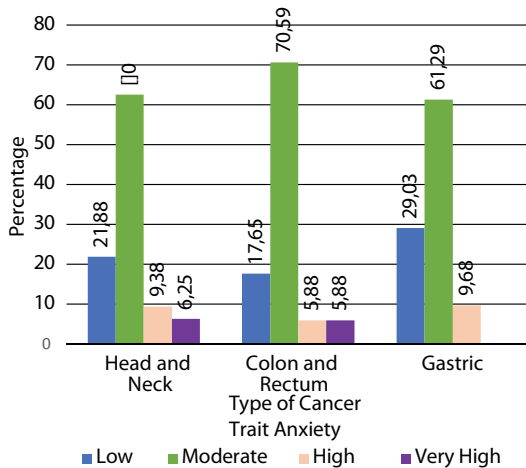
Source: Prepared by the authors, 2015.

Figure 4 - State anxiety level in the three oncological groups. Fortaleza, 2015.

Source: Prepared by the authors, 2015.

colorectal cancer (colon and rectum) and stomach cancer.

DISCUSSION

The studied participants were mostly men, converging with the data found in the literature[5,14,15], where, according to the Instituto Nacional do Câncer (National Cancer Institute) (INCA), there is estimated to be 395,000 new cases of cancer for the biennium 2014/2015, 204,000 of which are for men, and 190,000 for women[16].

The most common types of cancer in the Brazilian population, with the exception

of non-melanoma skin cancer are prostate tumors (69,000), female breast (57,000), colorectal (33,000), lung (27,000), and stomach (20,000). In contrast, the most frequent cancer in the population studied was that of the head and neck; the anatomical sites that are included in this group are the cancers that affect the oral cavity, including the oral mucosa, gums, hard palate, tongue, and tongue floor; pharynx, including the oropharynx, nasopharynx, and hypopharynx; nasal cavity, and paranasal sinuses; glottic, subglottic, and supraglottic larynx; and salivary glands[15]. It is noteworthy that in the north east, the research site, the incidence of head and neck cancer is higher than in other regions of Brazil[15,16].

The data found in this study, with regard to sex and type of cancer, corroborates the literature, showing the predominance of head and neck cancer in males[17]. According to INCA, there is an estimated risk of 11.54 new cases of head and neck cancer every for 100,000 men and 3.92 per 100,000 women[16]. This is partly due to the risk factors, such as smoking and alcohol consumption, which, although they are increasing in both sexes, are more often associated with men.

However, colorectal cancer occurred more often in men, which differs from the estimate of INCA for the biennium 2014-2015, in which, specifically in the state of Ceará, there is a prediction for more cases of malignant tumors of the colon and rectum for women than for men (8.81 for every 100,000 women versus 7.51 per 100,000 men). Still, on the type of cancer and sex, in the gastric cancer group, there was a predominance of women, at odds with the estimate, which predicted 13.19 new cases per 100,000 men and 7.41 per 100,000 women in Brazil in the biennium 2014/2015; there were 750 new cases in men against 480 cases in women in the state of Ceará[16].

Most patients in this study were without a family companion (71.2%). Research indicates that anxiety in cancer patients may be related to a multitude of reasons: as a response to the diagnosis of malignant neoplasm, long-term treatments, side effects of therapy, poor adherence to treatment, frequent hospitalizations, changes in the normal pattern of life, decreased quality of life, possible disfigurement, possibility of death, financial and social issues, and even the absence of family members during treatment/hospitalization[2,9,17-19]. Other studies have shown a strong relationship between the family and the state of health and illness of their hospitalized members: that is, the family is extremely important in maintaining the health at all times of treatment, helping the patient to overcome feelings of anxiety[6,17,19,20]. Therefore, the absence of a family companion may have been one of the contributing factors to trait anxiety and state anxiety in moderate levels of the study participants.

The most prevalent comorbidity in the study group was hypertension (15.2%). Although the majority of participants (73.7%) did not have a diagnosis of another disease, this fact is relevant since hypertension is closely related to anxiety. Anxious patients may have decompensation of blood pressure levels, which can compromise the clinical course in the preoperative and postoperative periods. A study conducted in a hospital in southern Brazil showed a statistically significant difference between hypertensive subjects and controls, demonstrating the association of hypertension with anxiety[20].

There are several fears and concerns that patients and family face with the diagnosis, treatment, and interventions in cancer (especially if they are ostomy carriers), ranging from their rejection by society to the difficulty in

dealing with ostomy due to the lack of knowledge and barriers in terms of social integration. Thus, they face emotional imbalance, resulting in, among other things, anxiety and depression[4,6]. One study reported that more than half of patients with colorectal cancer begin to use ostomy[4]; and in the case of this study, 13.8% of participants had this type of malignant neoplasm and had colostomy.

Regarding the results of the Trait Anxiety Inventory-State, state anxiety appeared slightly higher than trait anxiety in the three oncological surgical groups evaluated. Both trait anxiety and state anxiety presented in moderate levels (scores between 35 and 49), regardless of the type of cancer. The exhausting process of hospitalization, which involves surgery, often mutilating, especially in resections of head and neck cancers and colorectal cancers, associated with invasive and painful procedures, as well as the distancing from the home environment, can cause anxiety[17,19]. In a study conducted in a university hospital in Madrid, Spain, perioperative anxiety was strongly correlated with higher incidence of post-surgical pain, an increase in the need for analgesics and anesthetics, in addition to the delay in the recovery and hospital discharge[14].

Stress is often a trigger for anxiety and depression, and cancer is one of the most stressful events a person can experience. These conditions may interfere with the treatment of malignant neoplasm; for example, patients with untreated anxiety or depression may be less likely to take their medication, continue the good health habits because of fatigue or lack of motivation, move away from family or other social support systems, which means that they will not ask for emotional and financial support needed to deal with cancer. All this, in turn, can result in increased anxiety[17,19].

It is noteworthy that a moderate level of trait anxiety and state anxiety, as was identified in the study population, should represent a concern for the health team to meet this demand, since these levels can increase with the exhausting treatment process of the oncological disease. This is because the cancers involved in this study tend to be diagnosed in advanced stages, requiring adjunctive treatments such as chemotherapy and radiation[5,17].

Despite the increased likelihood of cancer patients to suffer from psychological disorders, including anxiety, studies have reported that health workers cannot identify people with malignant neoplasm as having depression and anxiety, leading to a lack of treatment in more than half of all cases[3,6].

Thus, the Canadian Association of Psychosocial Oncology and the American Society of Clinical Oncology (ASCO) recommend that all patients with malignant neoplasm should be evaluated for symptoms of anxiety and depression at various times during treatment. The evaluation needs to be carried out using validated measures, depending on the levels of reported symptoms, different processing routes are recommended. Failure to identify and treat anxiety and depression, in the context of cancer, increases the risk of reduction of quality of life, and potentially increase morbidity associated with the disease and mortality[2,18].

It may be also noted that the very high level of trait anxiety was not observed in patients with stomach cancer. This is in contrast with the literature, which associates gastric cancer with increased prevalence of anxiety and depressive symptoms in patients[19].

Likewise, it is important to note that there was only very high state anxiety in cases of head and neck cancers. In addition

to the stigma attached to the diagnosis of malignant head and neck cancers, treatment technologies in the area still generate a lot of fear and anxiety because the treatment of this cancer is complex, requires the involvement of many health professionals, and can involve surgery, teletherapy, biological therapy, chemotherapy, or a combination of two or more of these treatments[17]. At the same time, more complex surgical procedures are usually necessary, with resection of the facial bones, soft parts and often the skin, needing closure with tissues. This can lead to complications such as speech alterations, difficulty chewing, and aesthetic changes, contributing to social and psychological problems[17,19].

It is noteworthy that studies show that higher levels of uncertainty, in terms of the future, were associated with higher levels of postoperative anxiety[8,12]. Further, the greatest difficulty in dealing with the treatment was associated with higher levels of state anxiety after surgery and a slightly more pronounced decline in the state of anxiety over time[8,9].

The Canadian Association of Psychosocial Oncology and the American Society of Clinical Oncology (ASCO) indicate that health professionals, especially nurses, as these are professionals who have the closest contact with patients, in the continuous and dynamic process of caring for people with cancer, can build with them a relationship and an assertive dialogue, detection, and an assessment of anxiety/depression in order to provide support and guidance in adopting the best way to be followed in developing effective interventions, including non-pharmacological, such as music therapy, acupuncture, reflexology, therapeutic touch, and meditation[2:18].

One of the goals to be achieved in care provision to cancer patients is to provide them the best possible level of comfort and quality of life, both to those who are in a curative treatment phase and to those who are in palliative care. Thus, knowing the impact of disease and treatment in the life of each patient is vitally important for planning actions aimed to adequately meet their needs, promoting the reduction of anxiety for patients and their families[2:14].

Despite being in accordance with the criteria stipulated in the methodology, one of the limitations of this study was the sample size, which prevents generalization of the results because it was made up of adult cancer patients in the immediate postoperative period, admitted to a surgical clinic unit with head and neck, stomach, or colon and rectum cancer. Other limitations are related to STAI, since their scales have no defined cutoff points, in addition to the contraindications of the SATEPSI. However, this limitation does not invalidate the study and responds satisfactorily to the propositions of the research. The results stimulate the continuity of this type of research/evaluation with a larger group of patients for a possible confirmation of our preliminary results.

CONCLUSION

Study participants who underwent cancer surgery had moderate levels of anxiety in the mediate postoperative period. The state anxiety was higher than trait anxiety, regardless of the cancer type investigated.

It was found that patients with head and neck cancer had higher average scores of trait anxiety and state anxiety than the groups of participants with malignant stomach and colorectal cancer. However, there was no statistically significant difference.

National research on the investigation of anxiety in cancer patients hospitalized in the mediate postoperative period is scarce; therefore, we stress the importance of developing more studies on the subject, expanding the sample size.

However, it is expected that the results assist in the organization of a data record on anxiety in health services that meet these types of patients, with the main objective of determining targets for intervention thereby making the care aimed at people with malignant neoplasm more efficient and comprehensive. By detecting trait anxiety and state anxiety, nurses can plan a service that enables their reduction and, thus, improve the quality of life of these patients.

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