

ORIGINAL ARTICLE

Medicine Science 2023;12(2):574-8

Analysis of the relationship between pain, anxiety, depression, and self-care agency in patients who underwent major orthopedic surgeries

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Received 26 April 2023; Accepted 29 May 2023

Available online 30.05.2023 with doi: 10.5455/medscience.2023.04.052

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Abstract

Major orthopedic surgery is an invasive procedure applied in a wide area to correct degeneration caused by different factors. There are many symptoms that negatively affect the individual, especially in the acute period after surgery. In order to increase the comfort level of the individual and to make the person independent as early as possible, the detection of post-surgical symptoms is gaining more and more importance day by day. This study was carried out to examine the relationship between pain, anxiety, depression and self-care power in individuals who have undergone major orthopedic surgery. The population of the study consisted of all adult patients who had orthopedic surgery. In data collection, "Patient Description Form", "Visual Analog Scale", "Hospital Anxiety and Depression Scale" and "Self Care Power Scale" were used. As a result of the research, it was determined that the risk of anxiety and depression is high in patients who have undergone major orthopedic surgery and there is a significant relationship between them. It is possible to talk about a positive relationship between pain and anxiety, but a negative relationship between self-care power.

Keywords: Anxiety, depression, major ortopedik surgery, pain, self-care

Introduction

Major orthopedic surgery, in which a resection covering a large area is made, is performed as an invasive procedure in order to correct the degeneration that occurred in individuals due to aging, trauma, or various reasons and to overcome the problems occurring in relation to this situation such as pain, immobilization, depression, and anxiety. Although it is aimed to deal with these problems indicated in the preoperative period, pain and other symptoms that affect life negatively in the acute postoperative period can be observed [1,2].

One of the most important problem developing after major orthopedic surgeries is pain. Every year, millions of individuals undergo surgeries across the world, and approximately 80% of

these patients experience postoperative pain. Besides, it has been reported that 86% of these patients with pain problem experience severe pain [3,4]. Pain increases individuals' dependence on others in daily life. It also leads to anxiety and depression in individual.

The term depression included in psychological factors is used with different meanings. While some of these meanings refer to a mental problem, it is defined as a sad and sorrowful mental condition that may develop after a loss. With this meaning, it is indicated that depressive mood is a natural mood that can occur in healthy people as well [5].

Anxiety in individuals develops with the influence of factors such as worry, autonomic stimulation, and increased motor

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Demir B, Demir I. Analysis of the relationship between pain, anxiety, depression, and self-care agency in patients who underwent major orthopedic surgeries. Med Science. 2023;12(2):574-8.



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tension. In some studies conducted, the presence of anxiety in the preoperative period has been demonstrated, and it has been reported to continue after the surgery [6,7].

The continuation of preoperative problems negatively affects individuals. As in most surgeries, the aim in major surgical operations is to positively contribute to the health condition of the individual. In this sense, self-care agency, which has been defined by Dorothea Elizabeth Orem as “a multidimensional concept that covers having skills and equipment that are needed to realize self-care activities that ensure providing, maintaining, and developing wellness and health condition”, has an important place [8]. Surgical procedures that may necessitate long recovery periods are among the factors that affect self-care agency [9]. Postoperative complications also negatively affect self-care agency [10]. Self-care agency can be increased by creating a positive effect on these complications. In a study conducted on individuals who underwent abdominal surgery, it was determined that applications aiming at reducing anxiety increased self-care behaviors [11]. Determination of self-care agency being affected after various surgical operations, demonstration of the presence of pain, depression, and anxiety, and revealing their relationships in all these studies have led us to think that they may be related with self-care agency being affected.

The present study was conducted in order to determine whether there is a relationship between pain, anxiety, depression and self-care agency following major orthopedic surgeries.

Material and Methods

Study Design and Sample

The study was conducted with a descriptive design in order to analyze the relationship between pain, anxiety, depression and self-care agency in individuals who underwent major orthopedic surgeries. The study was conducted between October 2022-March 2023 with the participation of patients who underwent surgeries in the orthopedics clinic of a hospital located in the east of Turkey. The population of the study consisted of all adult patients who underwent orthopedic surgery. According to the sampling method, 51 patients were included in the study sample with 0.5 margin of error and 0.95 confidence interval. Study inclusion criteria were not being diagnosed with a psychiatric disorder, and being over the age of 18 years. Exclusion criteria from the study were not being cooperative and having communication problems. These patients were contacted on the postoperative 1st and 2nd days. The study data were collected through face-to-face interviews held with the patients who voluntarily participated in the study.

Data Collection Tools

In collecting the data, “Patient information form” (PIF), “Visual Analog Scale” (VAS), “Hospital Anxiety and Depression Scale” (HADS), and “Self-care Agency Scale” (SCA) were employed. PIF developed by the researchers consisted of two sections. The first section included questions about the individuals’

sociodemographic characteristics, and the second section inquired about the individuals’ medical characteristics.

Visual Analog Scale (VAS): The scale has been developed in order to identify patients’ pain levels [12]. It is considered as a repeatable, sensitive, and reliable method. The individuals mark a number between 0 and 10 on a 10 cm horizontal or vertical line. 0 indicates that there is no pain felt, while 10 demonstrates intolerable pain [13].

Hospital Anxiety and Depression Scale: The scale was developed by Zigmond and Snaith in 1983, and the Turkish validity and reliability study of the scale was conducted by Aydemir et al. in 1997. The scale consists of two subscales, which are anxiety and depression. There are 7 items under each subscale. The minimum and maximum scores to be obtained from the scale are 0 and 21. In the Turkish validity and reliability study, the cut-off point for anxiety subscale was found to be 10, while it was determined to be 7 for the depression subscale. Accordingly, individuals scoring higher than these values are considered to be under risk [14].

Self-care Agency Scale: The scale was developed in 1979 by Kearney and Fleischer [15]. Minimum and maximum scores to be obtained from the scale are 0 and 140. Scores below 82 indicate low self-care agency, scores between 82 and 120 show moderate self-care agency, and scores above 120 point to high self-care agency.

Statistical Analysis

In the statistical analysis of the data, IBM SPSS Statistics Version 22.0 (Statistical Package for the Social Sciences; SPSS Inc., Chicago, IL, USA) was used. Demographic data were presented as percentage, number, and mean. Kolmogorov-Smirnov test was used to examine whether data shows the normal distribution. In addition, Pearson correlation analysis was performed. All results were evaluated at 95% reliability and $p < 0.05$ significance level.

Ethical Considerations

Before data collection phase of the study, ethical approval was obtained from Turgut Ozal University Non-Interventional Clinical Research Ethics Committee with the decision number 2022/56. The study was conducted in accordance with the principles of the Declaration of Helsinki. Besides, all patients were informed about the study, and only voluntary patients were included in the study. The patients were also informed that their personal data would be protected, and that they could withdraw from the study whenever they wished to do so. Verbal consents of the participants were taken as well.

Results

In this part, the findings of the study conducted in order to determine the relationship between pain, anxiety, depression and self-care agency in patients who underwent major orthopedic surgeries are presented.

The distribution of the identifying characteristics of the

individuals who underwent major orthopedic surgery and were included in the study are presented in Table 1.

Table 1. The patients’ demographic characteristics (n=51)

Demographic Characteristics	n	%
Age (Mean±SD)	46.23±12.78	(min. 24, max. 69)
Gender		
Female	31	60.8
Male	20	39.2
Marital Status		
Married	30	58.8
Single	21	41.2
Educational Status		
Literate	8	15.7
Primary School	17	33.3
High School	10	19.6
Associate Degree	11	21.6
Undergraduate Degree	5	9.8
Income Level		
Income lower than expenses	22	43.1
Income equal to expenses	22	43.1
Income higher than expenses	7	13.7
Employment Status		
Unemployed due to health condition	14	27.5
Unemployed due to reasons other than health	10	19.6
Employed	15	29.4
Retired	12	23.5
Surgery Type		
Upper extremity surgery	16	31.4
Lower extremity surgery	16	31.4
Total hip/knee arthroplasty	19	37.3

SD: Standard Deviation

The patients’ VAS total mean score was found to be 5.03±1.07. The Anxiety subscale mean score of the patients was determined as 11.60±2.86, while their Depression subscale mean score was found to be 12.54±2.23. The patients’ Self-care Agency Scale mean score was determined as 88.52±11.16 (Table 2).

Table 2. The patients’ mean scores on VAS, hospital anxiety and depression scale, and self-care agency scale (n=51)

	Min-Max	Mean±SD
VAS Total Scale Mean Score	4-9	5.03±1.07
Anxiety Subscale Mean Score	5-15	11.60±2.86
Depression Subscale Mean Score	3-15	10.13±3.38
Self-care Agency Total Scale Mean Score	65-110	88.52±11.16

The distribution of the patients’ risk level according to Anxiety and Depression subscales cut-off points is presented in Table 3.

Table 3. The patients’ risk levels according to anxiety and depression scale cut-off point (n=51)

	n (%)	Mean±SD
Anxiety Risk		
10 points and below (Normal)	17 (33.3)	8.00±1.54
11 points and above (Anxiety risk)	34 (66.7)	13.41±1.10
Depression Risk		
7 points and below (Normal)	15 (29.4)	5.53±1.12
8 points and above (Depression risk)	36 (70.6)	12.05±1.73

It was found that 66.7% of the patients were under risk of anxiety according to the anxiety subscale score, and that 70.6% were under risk of depression. The Cronbach’s alpha coefficients were found to be 0.73 for the anxiety subscale and 0.75 for the depression subscale.

As shown in Table 4, a negative and significant correlation was found between VAS and Self-care Agency Scale total mean scores. The correlation coefficient was determined as r: 0.416 (p<0.05). In addition, a positive and significant relationship was found between VAS and Anxiety subscale mean scores (p<0.05). Besides, a positive and significant correlation (r: 0.546) was identified between Anxiety subscale and Depression subscale mean scores (p<0.05).

Table 4. Correlation between the patients’ VAS, anxiety and depression scale, and self-care agency scale scores (n=51)

Scales	VAS	Anxiety	Depression	Self-care Agency
VAS	-			
Anxiety	r: 0.240 *p: 0.040	-		
Depression	r: 0.005 p: 0.972	r: 0.546 *p: 0.000	-	
Self-care Agency	r: -0.416*p: 0.002	r: -0.117 p: 0.413	r: 0.127 p: 0.374	-

r, Pearson correlation; *p<.05

Discussion

The relationship between pain, anxiety, depression and self-care agency in patients who underwent major orthopedic surgery was discussed in light of the relevant literature. No study on in which all these factors were examined together in patients who underwent major orthopedic surgeries has been found in the available literature. In the present study, the relationship between pain, anxiety, depression and self-care agency in patients who underwent major orthopedic surgeries in the early postoperative period was examined.

Pain level of the patients in the period after major orthopedic surgery was found to be high in the present study. When the literature was reviewed, it was seen that the data obtained in similar studies conducted in different branches are in parallel with the findings of the present study. In some studies conducted in order to investigate the presence of postoperative pain, it was reported that the patients experienced pain due to reasons such as immobilization, drains, trauma, etc [16-18]. In another study conducted, it was stated that the presence of surgical trauma-related postoperative pain in early period following a surgery was an expected process [19]. In other studies conducted, pain was determined in the early postoperative period, and it was reported that it dissipated over time [20,21].

In the present study, anxiety risk was found to be high, and a positive and significant relationship was determined between the patients’ pain and anxiety levels. This situation can be explained by the patients’ increased anxiety level as a result of postoperative pain in individuals, as well as the role of increased motor tension

in the increase in anxiety levels. In a study conducted on patients who underwent a surgical operation and were hospitalized, it was stated that sensory factors such as pain and discomfort led to anxiety [22]. A positive and significant relationship was reported between preoperative anxiety level and postoperative pain in patients who had open heart surgery [23]. Some other studies conducted also reported a positive and significant relationship between postoperative pain and anxiety [24,25].

As a result of other studies conducted, it was reported that anxiety and fear experienced by patients before the surgery could negatively affect individuals' pain levels [26,27]. In many studies conducted, persistent pain was reported to lead to sleep disorders, movement difficulty, and anxiety in individuals [28-30]. In addition, it was also reported that anxiety affected pain, and that increased pain also elevated anxiety level, thus causing a chain reaction [31].

In the present study, depression risk for the patients were determined to be high, and a positive and significant correlation was found between the patients' depression and anxiety levels. No relationship was found between depression and the other variables. In some studies conducted in this regard, it was reported that pain negatively affected the individuals' psychological conditions, and added surgical trauma could lead to depression and anxiety development [32-35].

In this regard, the present study findings are not consistent with the literature. Sociodemographic characteristics may be the reason why the study results are not in line with the literature.

In the study, the patients' self-care agency levels following major orthopedic surgery were examined, and it was found to correlate negatively with pain. It was determined that as pain increased, the patients' self-care agency decreased. Patients may have difficulty in meeting their basic needs due to the pain they experience, and as a result, there may be disruptions in their social and working lives. In all these cases, a decrease in self-care agency could be inevitable. There are studies in the literature examining the power of postoperative self-care. In a study, the self-care power score average of individuals who had cardiovascular surgery was found to be similar to our study [36]. In another study, the self-care power of individuals who had kidney transplant surgery was examined and it was found to be higher than our study [37]. The reason for this is that the musculoskeletal system is affected in orthopedic patients, and there may be a decrease in functions such as standing up and moving. In this case, it may cause a decrease in the self-care power of individuals.

In the present study, the self-care agency mean score of the patients following major orthopedic surgery was found to be higher with a value of 88.52 ± 11.16 compared to other surgeries. This can be explained by the fact that in major orthopedic surgeries, resection is performed in a large area, that the trauma in the tissue is higher in comparison to many surgical procedures, and that patients return to their living activities later than normal.

Conclusion

When the overall data of the present study, which was conducted in order to determine the relationship between pain, anxiety, depression and self-care agency in patients who underwent major orthopedic surgeries, were examined, it was seen that anxiety and depression risk following major orthopedic surgeries was high in the patients, and that as pain levels increased, the patients' anxiety levels also increased. A significant correlation was also found between anxiety and depression. In addition, it was determined that pain experienced had a significant effect on self-care agency. Accordingly, as pain level increased, self-care agency decreased. Our study suggests that nursing care satisfaction is multidimensional and multifactorial, and patients can realize not only what is not done but also what is done. Relieving anxiety and pain is an important parameter in increasing the quality of postoperative care. For this reason, strategies should be developed to reduce anxiety and relieve pain after surgery. We believe that the findings of our study will shed light on all physicians and nurses involved in the perioperative process. The limitation of our study is that it is single-centered and our patient population is small.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

There is no financial support.

Ethical approval

Ethical approval was obtained from Turgut Ozal University Non-Interventional Clinical Research Ethics Committee with the decision number 2022/56.

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