

Patient satisfaction with their pain management and comfort level after open heart surgery

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KEY WORDS

pain, comfort, patient satisfaction, nursing, open heart surgery

ABSTRACT

Objective

The aim of this study is to determine patient satisfaction with pain management and comfort levels after undergoing open heart surgery.

Design

This descriptive study was performed between January 31 and April 29, 2011.

Setting

The study was conducted in the cardiovascular surgery clinic of Region Training-Research hospital in Erzurum, Turkey.

Subjects

Fifty two patients (32 males, 20 females; mean age 58.4 years; range 25 to 77 years) who had undergone open heart surgery were included in the study.

Main outcome measure(s)

The patient data was collected using Personal Information Form, Pain Satisfaction Surveys and General Comfort Scales at the time of discharge. The Pain Satisfaction Survey is a survey tool which was developed by the 'American Pain Society' in 1991. The General Comfort Scale was developed by Kolcaba in 1992 and its validity and reliability in a Turkish setting was tested by Kuşuoğlu and Karabacak in 2004.

Results

In this study, 61.5% of the patients underwent coronary artery bypass graft surgery, 30.7% aorta and/or mitral valve replacement and 7.7% aneurysm repair. The mean scores of pain intensity immediately after surgery, at first post-operative ambulation, at 24 hours before discharge and at discharge were 7.07+2.6, 6.71+2.7, 6.32+2.4 and 4.57+2.3, respectively. Most subjects (88.5%) reported a wait time of 15 min as the longest time they had to wait for pain medication and patient satisfaction with pain management was found to be high. The mean score of comfort level at discharge was 3.16+0.2 and there was no statistically significant difference between the comfort level and pain rating at discharge ($r=-0.225$, $p>0.05$).

Conclusion

It was found that pain intensity gradually decreased as patients neared hospital discharge and their overall satisfaction with the nurses' pain management was high.

INTRODUCTION

Pain after cardiac surgery is often severe (Mueller et al 2000). After open heart surgery patients can be affected in a variety of ways. Pain after surgery decreases the quality of life of the patients and affects their comfort level. Pain is defined as an unpleasant sensory and multidimensional experience associated with actual or potential tissue damage. Although pain is a predictable part of the postoperative experience, inadequate management of pain is common and may result in clinical and psychological changes that increase morbidity, mortality, and costs and decrease the quality of life (Tse et al 2005; Apfelbaum et al 2003; Walker and Wagner 2003).

Pain has also been reported as one of the primary sources of concern for cardiac surgery patients, and post-operative pain is still an important clinical problem although major advances in pain management and treatment have been made (Mueller et al 2000). There are many different causes of post-operative pain after cardiac surgery. Numerous sources of pain have been identified, such as incisions, trauma, immobility, chest tubes left in after surgery, invasive equipment, and nursing and medical interventions (Gélinas 2007; Kwekkeboom and Herr 2001; Hamill-Ruth and Marohn 1999). The impact of inadequate pain relief is well known and can result in delayed mobilisation and related complications as well as psychological distress and anxiety (Taylor and Stanbury 2009).

In 1995, the American Pain Society (APS) indicated that pain is the fifth vital sign and should be measured and treated in the same way as other vital signs, because poorly managed pain leads to negative consequences for the organism (Mularski et al 2006; Reimer-Kent 2004). The American Society for Pain Management in Nursing (ASPMN) states that appropriate pain management is a primary nursing duty for any patient experiencing pain. It is also stated that "*pain management*" and "*comfort management*" are terms that can be used interchangeably (Czarnecki et al 2011). Comfort is defined as the convenience to facilitate daily life and it is a concept central to nursing care (Kolcaba 2002). All health care professionals (HCPs), including nurses, have a responsibility to advocate for optimal comfort of patients and to intervene based on the situation and setting in order to protect the best interests of the patient (Czarnecki et al 2011).

A patient satisfaction tool was developed by the Quality Assurance Committee of the APS in 1991 and used by Ward and Gordon (1996), Beauregard et al (1998), Carroll et al (1999), Miaskowski et al (1999) and Comley and DeMeyer (2001) in a variety of settings. A common finding in these studies is that patient satisfaction with pain management was high even though patients also reported significant levels of pain intensity, long waiting periods for pain medication and ineffective treatment. However, no study was found that used the APS Patient Outcome Questionnaire survey for the extent and nature of the postoperative pain experience of cardiac surgery patients. A study conducted by Doering et al (2002) examined satisfaction, care, physical needs and informational needs of cardiac surgery patients using a single-ended questionnaire. The need for better pain management was mentioned by 15% of patients. These patients stated that pain medication was a problem, they didn't get pain medication and pain killers should be routine. Bedard et al (2006) note that to determine if a relationship exists between satisfaction and pain, it would be important for future studies to ask patients about their expectations of pain following surgery. Therefore, this study examining open heart surgery patients' satisfaction with their pain management and comfort level was initiated. These results may help nurses anticipate and address patient pain more effectively in the early post-operative period following open heart surgery.

METHOD

A descriptive survey design was used to determine patient satisfaction with pain management and patient

comfort levels after open heart surgery. The target population for the research was those patients who had undergone open heart surgery in the cardiovascular surgery clinic of the Region Training-Research hospital in Erzurum, in the east of Turkey. Approximately 200 patients undergo open heart surgery each year in the cardiovascular clinic of the hospital. A convenience sample (n=52) was taken from patients who met the study criteria and underwent open heart surgery between January 31 and April 29, 2011. The sample consisted of 20 females (38.5%) and 32 males (61.5%) who were all of Turkish nationality, were aged 25 to 77 years (mean, 58.48; SD=13.16), underwent open heart surgery for the first time, were 18 years and older, and were literate, able to respond to the questionnaire and consented to participate in the study. Patients who were not able to hear or see, had chronic pain, or had hemodynamic instability or prolonged hospitalisation were excluded from the study. Eight patients did not meet the eligibility criteria because they were cognitively impaired and had hemodynamic instability and 12 patients refused to participate in the study.

The study was undertaken in Erzurum, in the east of Turkey. The existence and intensity of pain are measured by patient's self-reporting every eight hours or when the patient experiences pain after cardiac surgery in the cardiovascular surgery clinic. A nonopioid analgesic was given if there are pathologic conditions or procedures likely to cause pain or if pain behaviours continue after attention to basic needs and comfort measures. If mild to moderate pain is suspected, nonpharmacological approaches such as rhythmic breathing exercise and a single low-dose short acting opioid (e.g. hydrocodone, morphine) may be also given to provide pain management and comfort to all patients in the postoperative period.

The study was approved by the ethics committee of the Health Sciences Institution at the University of Ataturk. Verbal consent was obtained from the patients participating in the research. All participants were informed of the purpose and design of the study. Participation in the study was voluntary. The participants were reassured that confidentiality would be strictly maintained.

The patient data was collected by the researchers using the 'Personal Information Form', 'Pain Satisfaction Survey', and 'General Comfort Scale' at the time of discharge. The Personal Information Form included questions about the date of hospitalisation and discharge, type of surgery, age, gender, education, profession, marital status, previous surgery, chronic diseases, and smoking and alcohol use. The Pain Satisfaction Survey was the survey tool which was developed by APS in 1991. In 1995, a panel of experts reviewed reports using the 1991 survey, and added six items to the original survey. This modified version of the survey was renamed the American Pain Society Patient Outcome Questionnaire (APS-POQ). This questionnaire consists of 16 questions (Carlson et al 2003). The original APS-POQ had been adapted from previously validated tools, as described by the Quality of Care Committee. Internal consistency varied from 0.82 to 0.68 (McNeill et al 1998). Patients' pain ratings were taken immediately after surgery, at first post-operative ambulation, and at discharge using a scale of 0 to 10 in the survey. It also included some items related to the hours until post-operative ambulation, the worst pain experienced in the previous 24 hours, satisfaction with the nurse's treatment, percentage of pain relief on a scale of 10 to 100, frequency of nausea and vomiting, percentage of the amount of time that pain interfered with sleep, pre-operative and post-operative anxiety about addiction to medication, and receipt of written materials about pain management and the helpfulness of these materials. A total of three new questions were added to the survey. These questions are as follows: "Were there any non-pharmacologic interventions applied for pain relief?", "What are the non-pharmacologic interventions applied for pain relief?", "Who applied this intervention to you for pain relief?" Finally, this study included The General Comfort Scale which was developed by Kolcaba in 1992 (Kolcaba 1992) and its validity and reliability in a Turkish setting was tested by Kuşuoğlu and Karabacak in 2004 (Kuşuoğlu and Karabacak 2008). Kuşuoğlu and Karabacak found that Cronbach's alpha coefficient of the scale was 0.85 and the scale had high reliability. This is a four point likert-type scale consisting of 48 items. The response patterns of the scale consisting of positive and

negative items are presented in mixed order. While evaluating the scale, the negative points obtained are coded in reverse and evaluated with the positive items. The highest total that can be obtained from the scale is 192 and the lowest total is 48. The total score is divided by the total number of items and the average value is obtained. The result is indicated in the 1 and 4 range. Therefore, the highest point (4) in positive items corresponds to the highest comfort and the lowest point (1) corresponds to the lowest comfort level.

Data Analysis

The Statistical Package for Social Sciences (SPSS, Chicago, IL) for Windows version 12.0 was used for data entry and analysis. The patient characteristic variables were evaluated using the percentage distribution and mean. Descriptive statistics (i.e., mean, range, standard deviation, frequency) were used to address study questions. These included patients' beliefs and expectations about pain, its intensity, and its management, and subsequent satisfaction levels with pain management. In addition, patients' worst pain scores were examined in regards to the following: frequency of the worst pain scores, percentage of patients experiencing discomfort with the worst pain, and types of activities that were being performed at the time of the worst pain. A partial correlation was used to examine the relationship between patients' pain intensity at discharge and general comfort level of the patients. A p-value below 0.05 was considered to indicate a statistically significant difference.

FINDINGS

The demographic characteristics of the patients are presented in table 1. The sample consisted of 52 Turkish subjects, 32 male and 20 female. Patients ranged in age from 25 to 77 years, with an average age of 58.4 years. Of the patients in the study, 92.3% were married, 48.2% were literate and 73.1% had chronic disease. The majority of subjects (61.5%) underwent coronary artery bypass grafting while 30.7% underwent an aorta and/or mitral valve replacement and 7.7% underwent aneurysm repair (table 1).

Table 2 shows the principal components of satisfaction with pain management. Patients' pain intensity was measured on a scale from "0" (no pain at all) to "10" (the worst pain possible). The mean scores of pain intensity immediately after surgery, at first post-operative ambulation, in the 24 hours before hospital discharge and at discharge were 7.07 ± 2.6 , 6.71 ± 2.7 , 6.32 ± 2.4 and 4.57 ± 2.3 , respectively (table 2). One patient experienced no pain in the 24 hours before discharge.

Table 1: Sample Characteristics (n=52)

Age (Mean \pm SD)	58.4 \pm 13.16	
	n	%
Gender		
Female	20	38.5
Male	32	61.5
Marital status		
Single	48	92.3
Married	4	7.7
Educational status		
Literate	25	48.1
Primary school	21	40.4
High school	6	11.5
Working condition		
Unemployed	7	13.5
Housewife	21	40.4
Worker	5	9.6
Self-employed	9	6.0
Retired	10	19.2
State of health problems other than heart disease		
Yes	38	73.1
No	14	26.9
Health problems other than heart disease		
Diabetes Mellitus	12	23.1
Hypertension	17	32.7
Rheumatism	3	5.8
Other*	6	11.5
Type of surgery		
Coronary Artery Bypass Grafting	32	61.5
Aorta and/or Mitral Valve Replacement	16	30.7
Aneurysm	4	7.7

* Chronic Obstructive Pulmonary Disease (COPD), Kidney Disease, Benign Prostatic Hyperplasia, Gastric Ulcer

Table 2: Principal Components of Satisfaction Items with Pain Management

Component	Item	Mean \pm SD
I. Pain Intensity	Rate your worst pain in the last 24 hours from the day before discharge	6.3 \pm 2.46
	Pain rating at first post-operative ambulation	6.7 \pm 2.71
	Pain rating now (at discharge)	4.5 \pm 2.34
	Pain rating on the first day after surgery	7.0 \pm 2.64
II. Satisfaction	Percentage of pain relief (%)	82 \pm 13.48
III. Dysfunction	Hour after surgery that you are able to walk	32.1 \pm 14.48

The average worst pain score for the entire sample was much higher at 6.32 and ranged from 0 to 10. However, the majority of patients reported that they experienced their worst pain when they were mobilising.

Patients reported their satisfaction with pain management on a scale of “very dissatisfied” and “very satisfied”. It was determined that 80.8% of the patients were very satisfied with the nurses’ pain treatment. One component of satisfaction examined was the waiting time for analgesic medication. Most subjects (88.5%) reported 15 minutes as the longest time they had to wait for pain medication (table 3). Of the patients in the study, 3.8% stated that their pain was reduced by 60% after treatment, 11.5% reduced by 70%, 44.2% reduced by 80%, 30.8% reduced by 90%, and 9.6% reduced pain by 100%. (graph 1).

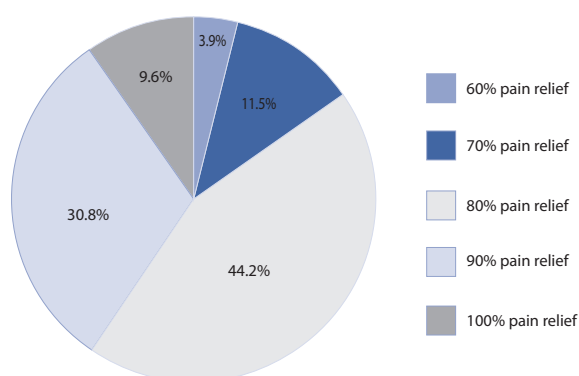
Table 3: Waiting time for pain medication

Time	n	%
<15 minutes	46	88.5
15-30 minutes	5	9.6
Never received medication	1	1.9

Table 4: The Comparison of the ‘General Comfort Scale’ and ‘Pain intensity’

	Pain rating at discharge	
	R	p
General Comfort Scale	-0.225*	0.109

*Pearson correlation

Graph 1: The patients’ pain relief after taking pain medication

Thirty-eight patients (73.1%) reported that pain impacted their sleep patterns and had sleep problems due to pain. Twenty-nine patients (55.8%) experienced nausea and vomiting in post-operative period. In the post-operative period, 78.8% of the patients indicated that doctors and nurses asked patients to notify them when patients experienced pain; however, all of the patients indicated that no written material was received about the importance of their pain management.

The comparison of the mean pain intensity and comfort level of the patients are presented in table 4. The mean of patients’ comfort level score at discharge was 3.16 ± 0.2 . No statistically significant differences were found between patients comfort level and pain intensity at hospital discharge ($r = -0.225$, $p > 0.05$).

DISCUSSION

In this study it was found that patients experienced moderate to severe pain after open heart surgery. It was observed that the patients had more severe pain on the first day after the surgery and at first ambulation, and pain intensity gradually decreased as patients neared hospital discharge. Similarly, a

survey of 14 hospitals in the United Kingdom revealed that at 24 hours post-operative period, 60% of patients had a pain score of 5 or more out of 10 during movement (0=no pain; 10=unbearable or very severe), while at 7 days postoperative, 39% had a pain score of 5 or more during movement, with only 8% reporting a pain score of 8–10 (Moss et al 2005).

Only a handful of studies have explored patients' worst pain after surgery. One of these studies focused on patients who had cardiac surgery (Leegaard et al 2008). In a qualitative study of patients after cardiac surgery, Leegaard et al (2008) reported that women experienced worst pain levels of moderate to high intensity. Their worst pain mostly occurred at night and caused sleep disturbances. Similarly, 73.1% of the patients in this study indicated that pain interfered with their sleep. Therefore, it is important to continue to assess patients' pain when they are sleeping. Furthermore, it was reported that patients first mobilised approximately 32 hours after surgery and patients' worst pain was experienced during first ambulation in this study. Since the patients experience severe pain during mobilisation, the pain should be assessed before mobilisation, during mobilisation and again when the patient returns to bed. Teaching the patients turning exercises in bed, supporting the patient during ambulation and using analgesics before mobilisation may help to manage pain episodes (Brown et al 2011).

Svenssen et al (2000) found that patients experienced moderate to severe level of pain during the first 72 hours after various elective surgeries and most of the patients experienced pain while resting. In this study it was reported the patients had pain in the first 24 hours after surgery and during ambulation. Most of these patients had severe pain (at the level of 6-7). According to these findings, it is suggested that nurses should assess the patients' pain during the early periods after surgery. Furthermore, pain assessment should not only be done during mobilisation; it should also be done while resting. The nurses should be careful, as the patients may experience high levels of pain (>7) and they must not ignore the fact that the patients can also experience pain while resting as well as during mobilisation and exercises (Brown et al 2011; Svenssen et al 2000).

The patients in the present study reported high satisfaction with pain management. Most subjects reported a waiting time of 15 minutes as the longest time they had to wait for pain medication and eighty percent of the patients were very satisfied with the nurses' pain treatment. Similarly, Mueller et al (2000) evaluated the location and intensity of pain after cardiac surgery and found post-operative first day patients had relief of 86.5% after the analgesic treatment. Yorke et al (2004) in their study found that although 45.1% of the patients were informed by the nurses about pain management, only 32.4% indicated that they took their pain experience into account. In the same study it was reported that the patients experienced relief of only 67.4% after the pain treatment. Patients in the present study waited less time than subjects included in Miaskowski et al (1994), in which almost one-half of the patients reported a waiting time more than 15 minutes for pain medication. Bookbinder et al (1996) reported 74% of patients surveyed recalled waiting 15 minutes or less for pain medication. In the present study, it was pointed out this rate was quite high and 80.8% of the patients were relieved after the pain treatment applied by the nurses and the nurses treated the patients' pain within 15 minutes.

In this study subjects were also asked whether non-pharmacological methods were applied during the pain management or not. Four patients (7.7%) responded that non-pharmacological interventions were applied for pain management and the most commonly used non-pharmacological method was deep breathing exercises applied by the nurse. McNeill et al (1998) stated that 62% of the patients used prayer, 27% relaxation techniques, 24% distraction, 18% heat application, 13% cold application and 10% massage therapy as non-pharmacological methods for pain management.

According to McCaffery's definition "pain is a sensation that can be described by the patient experiencing it." Therefore, the communication between the nurse and the patients is very important for optimal pain management (McCaffery et al 2000). This study found 78.8% of patients indicated nurses asked patients to notify them when they experienced pain; however, all of the patients indicated that no written material was received about the importance of their pain management. Nurses should ensure that patients are educated pre-operatively about the importance of information concerning their pain and that the expression of pain is acceptable.

Earlier studies indicate that certain beliefs about pain and its management are counter-productive in effective pain control (Dawson et al 2005). Brown et al (2011) stated patients believed they became addicted to pain medication easily and pain medication should be saved for cases where pain gets worse. These beliefs may lead patients to underreport their pain or refuse pain medication even in the presence of substantial pain (Lai et al 2002). Only 7.7% of the patients were concerned about becoming addicted to analgesic drugs during pain medication in this study.

As shown in table 4, the comfort scores of the patients were found to be high at discharge (comfort level, 1-4 range); however, no significant difference statistically was found between the comfort level and pain intensity at discharge ($p > 0.05$). The fact that the pain intensity decreases towards the discharge of the patients may be effective on this result. A study by Milgrom et al (2004) found that pain intensity gradually decreased after the second day in the postoperative period and increased comfort level of the patients after cardiac surgery. Additionally, it is considered that effective pain management, effective communication with the patients and giving information about pain management after surgery are influential in increasing comfort levels. Since the pain experienced by the patient affects the comfort level, assessment of the pain and comfort level can also increase the nursing quality and patient satisfaction in the presence of pain.

STUDY LIMITATIONS

This study had several limitations. The study was conducted in only one cardiovascular surgery clinic and the findings cannot be generalised to all patients who had undergone open heart surgery in Turkey. The findings therefore cannot be generalised to other countries. Another limitation of the present study is the small sample size, which prevents any definite conclusion from being drawn from the findings. For future studies, the present study should be repeated with a larger sample of open heart surgical patients in a different setting in order to test the generalisability of the results. These study findings also rely on patients' recollection information because data were provided at discharge.

CONCLUSION

It was found the pain intensity of patients gradually decreased prior to discharge and their satisfaction with nurses' pain management was at a high level. Assessing patients' pain intensity may be important to monitor and manage in the early post-operative period.

RECOMMENDATIONS

These points can be suggested as results of this study: written material should be given to patients and the use of non-pharmacological interventions in pain management; patients should be encouraged to understand they need to report their pain. Nurses should also understand how difficult patients find this, but by having an understanding of this, they can encourage patients through open communication and compassion. Nurses should assess pain regularly and respond to this by providing appropriate treatments and assessing their effects.

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