Original Article

The effect of a care program on pain intensity of cancer patients who underwent surgery and hospitalized in Sayyed-Al-Shohada Hospital of Isfahan University of Medical Sciences in 2011

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Abstract

Introduction: One of the most frequent issues nurses encounter with after or during cancer-related surgeries is pain. For postoperative pain relief, different nonpharmacologic interventions, such as nurse–patient communication, mental support, preoperative education, and consultation can be used. Doing such interventions may decrease postoperative pain. However, the research results regarding the effect of such measurements on pain intensity is contradictory. So in this research study the effect of a pain management plan on pain intensity after cancer surgery was assessed.

Materials and Methods: The present study is a pre- and posttest case and control clinical trial, which was conducted in Sayyed-Al-Shohada Hospital of Isfahan University of Medical Sciences in 2011. Care program consisted of pain education, communication with the patient, and pain measurement. Seventy patients were sampled based on the inclusion criteria and randomly assigned in 2 groups. Data were collected using American Pain Society-patient outcome questionnaire, which measured pain intensity.

Results: In the experimental group, the mean score of pain intensity before surgery and in the first 12–24 h after surgery was less than the control group. Also comparing pain intensity mean differences before and in the first 12 h, before and in the first 24 h indicated that the experimental group had lower scores than the control group, but these differences were not statistically significant. In both the groups, in the first 24 h following surgery the mean score of pain intensity decreased significantly.

Discussion: Results of the present research study suggested that a nursing pain management program consisting consultation, education, and pain assessment may have a clinical effect on cancer patient pain intensity following surgery. However, these results were not statistically significant. This might be due to the limited sample size as well as conducting the program in a short period of time. It is recommended that effects of such a program on the pain intensity will be examined further with a larger sample and in a longer period of time.

Key words: Cancer, communication, consultation, nursing, pain, patient education, surgery

Introduction

Every day millions of people undergo surgery and after that they experience pain. Therefore, pain is one of the most popular problems in surgical wards.[1] One group of patients who experience a severe pain after surgery are cancer patients because cancer surgery often is harmful for the psychosomatic system.[2,3]

Studies of cancer pain prevalence indicate that approximately 30%–50% of patients receiving cancer treatment, such as surgery experience pain.[4,5] In short, pain after cancer surgery is very popular, which has physical, mental, and economic problems for patient, family and society.[6]

Postoperative pain management remains one of the major challenges in the care of surgical patients.[7] For postoperative pain relief, different pharmacologic and nonpharmacologic interventions are used.[8] Training is a nondrug intervention and can be done before surgery. Preoperative information given to patients improves their postoperative wellbeing. Well-informed patients experience less anxiety. This information may reduce the surgery consequences, such as pain intensity, using analgesics, the length of staying in hospital, and patients also appreciate receiving information and tend to be more satisfied with the care they receive.[5,9,10]

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One of concerns of patients before surgery is the fear of not getting relieved of pain after surgery, which should be resolved through comforting the patient that postoperative pain is controllable. The process of reporting pain intensity and intervention for relieving pain should be explained for patients.[11]

So communicating with patients before and after surgery, such as informing, training, psychosocial support, and consulting are important skills that health care professionals should try to improve. With preparing the patient for surgery, the positive results after surgery may be improved and the process of healing may be accelerated.[12] In the health care team, the role of nurses in controlling acute pain and postoperative pain is essential. According to the Britain Pain Society, nurses are key members in pain relief.[13] In fact, nurses are recognized as the principal providers of pain relief and pain education. They should advocate for their patients' needs for pain relief.[2] Teaching and interaction with the patient before surgery not only may affect the experience of pain after surgery but also it seems that pain assessment by nurses can lead to pain control that accompanies patient satisfaction.

Previous research studies that assessed the effect of pain-controlling programs by nurses on the pain intensity have contradictory results in different group of cancer patients. For example, Yildirim,[14] Smith,[15] Van der peet,[16] Vallieres,[17] MacLellan[7] found positive results. In these studies patients that received pain controlling interventions experienced low pain intensity and higher levels of satisfaction of pain control. In other studies like Ruston,[18] Panteli,[19] Dawson,[20] Kelly[21] nurses' effective communication with patients led to the high level of patient's satisfaction from pain management. However, in these studies the relationship of such interventions with pain intensity had not been approved. Studies like Reynolds,[22] Hansson,[23] Yates[24] and Watt-Watson[25] did not support the effect of pain-controlling programs.

Researchers could not find any research studies in Iran in which the effect of the whole caring program (training and interaction between nurses and patients) on the pain intensity and patient satisfaction have been measured. The research results in other countries and care settings regarding the effect of such programs on pain intensity are also contradictory. Therefore, a research study was planned with the following primary aims: (1) comparing the mean score of pain intensity in experimental and control groups before surgery and 12 and 24 h after surgery and (2) comparing pain intensity mean differences between experimental and control groups before surgery and 12 and 24 h after surgery.

Materials and Methods

The present study was a clinical trial of 2 groups using a pre- and posttest administration in 2011. The research study was completed during a 4-month period from July to November 2011 in the surgical ward of Sayyed-Al-Shohada Hospital in Isfahan, Iran. A convenience sample of 70 cancer patients were recruited and randomly allocated into experimental and control groups. The inclusion criteria for patients were medically diagnosed as having cancer and undergoing surgery in chest and abdomen, staying in the ward for at least 24 h after surgery, ability to understand and speak Farsi (Persian), willingness to take part in the study, lack of any mental illnesses, able to communicate and understand questionnaire, having 18- to 75-years old, not being addicted to any kind of drugs and not having any other chronic pains.

The exclusion criteria were lack of willingness or any other kinds of problems that patient cannot participate in the study, returning to the operating room, being confused after surgery, and referring to the Intensive Care Unit (ICU). A convenience sample of cancer patients were recruited and randomly allocated into experimental and control groups. The instruments for collecting data were a demographic questionnaire and American Pain Society-Patient outcomes questionnaire. American Pain Society-patient questionnaire was prepared by Pain Society of America to improve the quality of pain treatment in 1991 and by this questionnaire different outcomes, such as pain intensity and satisfaction can be tested. Pain intensity is scored from 0 to 10 by American Pain Society-patient outcomes questionnaire in which 0 shows lack of pain and 10 shows the highest level. Instrumental reliability about pain intensity dimension in an Iranian population was reported to be 0.89 using Cronbach's alpha.[26]

This research was approved by the appropriate research committee of Isfahan University of Medical Sciences. Verbal information about the research study was provided for patients and written informed consent was given by patients. Patients also informed about their right to withdraw from the study at any time if they so desired. The demographic questionnaire including information, such as age, gender, job, marriage, type of cancer, and type of surgery, was then completed by interviewing patients and using the patient clinical record. The numerical pain scale was explained for the subjects and completed by them too. Pain intensity in the 2 groups was measured before the surgery.

Caring program in the experimental group consisted of 2 parts. The first part was before the surgery, including 30 min patient's education and training that was done for the

whole group in the patients' room. Groups consisted of at least 2 patients. In some cases due to the limited number of patients, the training sessions were done individually in their room. This method was the same as Wong study.[27] At the first 5 min, the aim was to introduce the intervention and empathy with the patient. This was followed with 15 min giving comprehensive information about the pain to patients. In this part, necessary information about the meaning of the pain, different types of pain (acute, chronic, and pain related to cancer), undesirable effects of pain after surgery on physical, mental, and economic dimensions, pharmacologic and nonpharmacologic methods of pain relieving, and the method of pain measurement by different scales was given to the patient. The final part was 10 min teaching patients about breathing and relaxation methods to follow when they experience pain. At the end of the training intervention, the content of the program was given to patients in the form of a pamphlet asking them to read it.

The second part of the caring program was about 5-min interaction with patients after the surgery. The content of the interaction with the patient was speaking about what was interesting for the patient, such as the experience of the surgery, learning relaxation methods, and how pain will be managed after surgery. In the first day after surgery following every interaction with the patient, pain intensity was measured by the researcher according to numerical scale of measurement every 2 h. In addition, the patients' complaints of pain were reported to the supervisor of the ward and analgesic was given based on what was prescribed. The amount of analgesic in every session was recorded. To prevent any interference with the patients' sleep, pain recording was done only in the day from 8 AM to 8 PM. Totally, in the first 24 h after surgery, the patients' pain was measured 6 times.

In the control group, patients received nothing except routine interventions of the ward. In the 24 h after surgery, similar to the experimental group, the patient pain intensity was recorded every 2 h and patients' complaints were reported to the supervisor of the ward and analgesic was given to the patients according to the doctor's prescription. For all patients in both experimental and control groups, the pain intensity form was completed before the surgery and 24 h after surgery.

In the first 24 h after surgery, the pain intensity mean scores were calculated according to pain intensity scores recorded every 2 h. Statistical analysis of data was done by means of SPSS version 16 software using Mann–Whitney test, Chi-square test, dependent and independent *t* test, and analysis of variance with repetitive measurements. $P \leq 0.05$ was considered significant.

Results

The highest percentage of patients in each group was women (80% in the experimental group and 71.4% in the control group). The mean of patients' age in the experimental and control groups was 45 and 43.62 years, respectively. The highest percentage of patients who underwent Lumpectomy in the experimental group was 31.4% and Lumpectomy and Mastectomy in the control group was 22.9%. Majority of patients were married (77.1% in the experimental group and 85.7% in the control group) with the education level under Diploma (45.7% in the experimental group and 42.9% in the control group). Also, housewives (77.1% in the experimental group and 60% in the control group) and breast cancer (54.3% in the experimental group and 51.4% in the control group) were rated as a highest percentage of patients' job and cancer diagnosis, respectively [Table 1].

Statistical tests, including Chi-square test, Mann–Whitney test, and independent *t* test showed that patients in both groups were homogeneous according to their demographic features, including age, gender, marital status, education, job, type of cancer, type of surgery, and the kind of analgesic and amount of analgesic used. The mean and standard deviation of pain intensity before surgery was 1.30 (2.40) and 1.80 (2.80) in the experimental and control groups, respectively. The mean and standard deviation of pain intensity 24 h after the surgery in the experimental group was 1.70 (1.30) and in the control group was 2.80 (1.30). Using paired *t* test indicated that in each group 12 h after the surgery, the pain intensity mean scores increased significantly ($P < 0.05$). However, after that up to 24 h following the surgery, the pain intensity scores decreased significantly ($P < 0.05$). The pain intensity mean differences 12 h after the surgery compared with relevant scores before the surgery in the experimental group was 2.9 (2.4) and in the control group was 3.2 (3.3). Independent *t* test showed that these differences were not statistically significant ($P > 0.05$). In the experimental group, the pain intensity mean differences 24 h after the surgery in comparison with relevant scores before the surgery was 0.3 (2.5) and in the control group was 0.9 (3.2). Independent *t* test showed that these differences were not statistically significant ($P > 0.05$) [Table 2].

Discussion

This study was conducted with the aim of studying the effect of a caring program on pain intensity of cancer patients following surgery. A comparison between pain intensity before and 12 h after surgery indicated that the pain increased significantly. This is not surprising because by cutting the skin and stimulation of nerves the patient feels pain. Then 24 h after surgery pain intensity decreased slowly in both groups. The pain intensity mean differences between the 2 groups of

Table 1: Types of surgery in experimental and control groups

Group	Kind surgery	Frequency	Frequency (%)	Statistic test
Experimental	Gasterectomy	2	5.7	$P = 0.81$
	Mastectomy	9	25.7	$\chi^2 = 2.97$
	Laparotomy	5	14.3	
	Lumpectomy	11	31.4	
	Splenectomy	4	11.4	
	Thoracotomy	1	2.9	
	Others	3	8.6	
	Total number	35	100	
Control	Gasterectomy	2	5.7	
	Mastectomy	8	22.9	
	Laparotomy	5	14.3	
	Lumpectomy	8	22.9	
	Splenectomy	3	8.6	
	Thoracotomy	4	11.4	
	Others	5	14.3	
	Total number	35	100	

Table 2: Comparing pain intensity mean differences before surgery and 12–24 h following surgery between the 2 groups

Time group	First 12 H- Before Surgery		Independent *t* test	first 24 h - Before surgery		Independent *t* test
	Differences of mean	Standard deviation		differences of mean	Standard deviation	
Experimental	2.9	2.4	*t*=0.4	0.3	2.5	*t*=0.7
Control	3.2	3.3	*P*=0.6	0.9	3.2	*P*=0.4

experimental and control groups did not show any statistically significant differences before surgery, and 12 and 24 h after surgery. The interesting point is that the experimental group in comparison with the control group experienced less pain intensity 12 and 24 h after surgery. This means that pain controlling program can reduce pain intensity after the surgery, although differences were not statistically significant. The reasons that the caring program did not have significant effect may be the presence of some problems, such as having a busy ward and doing caring intervention at the same time as similar routine nursing programs took place. It is possible that with increasing the number of sample, increasing the number of measurements, and recording pain intensity and performing the caring program in a longer period of time the differences become significant. The findings of other research studies are contradictory. For example, research studies by Wells,[28] Berge,[29] Innis,[30] Watt-Watson,[25] Hansson,[23] Reynolds,[22] Yildirim,[14] and Smith,[15] have identified similar findings. But MacLellan,[7] Cheung,[12] Vallieres,[17] Van der peet,[16] and Wong,[27] have identified different results.

In Yildirim's,[14] study, a pain education program decreased pain intensity in weeks 2–4 and 8 following surgery. However, no significant difference was found between the groups with regard to pain intensity on the day of surgery. In this study, the time of patient education was 30–40 min that similar to our research was conducted in the patients' rooms and content of the booklet (the definition and causes of pain, pharmacologic pain treatment, and its side effects, such as constipation and tolerance, nonpharmacologic pain treatment) were exactly similar to those of our study. The only difference was that the main aim of performing intervention in Yildirim's study was to decrease misconceptions about cancer pain control. This factor may affect decreasing pain intensity. Patients' knowledge and beliefs regarding pain and its treatment are important issues for cancer pain management. Patients and their family members commonly have negative feelings about cancer pain and opioid usage. Misconceptions about pain control can lead to inadequate pain management. It is reported that educational programs have been documented as being effective in reducing barriers and increasing the compliance of cancer patients with pain.[28] In the caring program of our research study patients also talked a lot about their misconceptions as nurses interacted with them. However, more attention needs to be paid to misconceptions and misunderstandings so that more pain control is achieved.

Berge,[29] in his clinical trial on patients chosen for total hip placement found that patients who had completed the pain management program reported significantly less pain intensity but after the surgery there was no difference between the 2 groups. Pain relief is reliably achieved as early as 1 week after surgery. However, it was emphasized that pain-controlling program is very important and should be paid particular attention.

In a quasi-experimental research done by Reynolds,[22] on patients under different surgeries, there was no significant difference between control and experimental groups on

the awareness of the pain intensity after surgery and interference of pain with daily life activities. However, those who received intervention did have slightly better managed pain and experienced little interference between pain and daily activities. Reynolds indicated that a pain educational intervention can be useful even though the results were not statistically significant.

In the study done by Wells,[28] with cancer patients, continuing access to information following a baseline pain education program increased knowledge and positive beliefs about cancer pain management. But the intervention did not affect long-term outcomes, such as interference of pain with activities of daily living and amount of analgesics used for pain relief.

Opposite to our research findings, in Wong's study,[27] on patients with musculoskeletal trauma and consequent orthopedic surgery over time, findings showed that pain scores differed significantly between groups across 4 time periods ($P = 0.008$) and the experimental group reached better control over pain through 7 days after surgery. Aspects of this research study, such as the length of training session (30 min), the content of training session, application of relaxation is the same as our research. Wong mentioned that the better pain control observed in the experimental group could be related to the practice of breathing and relaxation exercises. In the present study, a caring program with breathing relaxation practices was used by patients to cope with pain. According to Wincher's opinion prescribing drug should not be the first step used by nurses for pain relief. Using a caring method to relieve pain does not contradict using medical standards. A basic method for pain relief is using nonpharmacologic nursing interventions. Teaching nurses and encouraging them to use these methods might limit drug usage with different side effects. These methods can be learnt rapidly by the patients and cause patients control over pain and decrease stress. However, some studies, for example, Hosseinrezaei,[31] indicated that the most frequent route for pain relief by nurses is drug prescription.

In Van der peet's study,[16] an intensive home-based education program given by nurses did not make any differences in pain intensity between the intervention and control groups at the baseline. But performing this intervention in a 4-week period made significant pain reduction in the experimental group compared with the control group. No significant long-term effect was seen. In our study pain intensity in the experimental group before the surgery was 1.3 and in the control group was 1.8. Based on the numerical measurement scale used, pain intensity of 0-3 shows low pain. If patients in the baseline had higher pain intensity, the program would be more effective. In the randomized clinical trial of Van der peet *et al*.,[16] an intensive pain intervention program presented by nurses resulted in short-term pain reduction in patients with moderate pain at baseline. In the long term, patients with severe pain at baseline achieved most benefit from the intervention. In our study, we could not study the possibility of pain intensity in a long time as patients were discharged from the hospital. However, cancer patients who underwent surgeries, such as Mastectomy, Lumpectomy, and Thoracotomy experience chronic pain syndromes and the caring program could be effective for them in the long term.

Similarly, in Vallieres's,[17] study on cancer patients under radiation therapy in the baseline and after 2 weeks there was no significant difference between the experimental and control pain groups about the intensity they experienced. However, in 3 weeks time, the pain intensity was significantly decreased in the experimental group compared with the control group.

Conclusion

According to the research studies that conducted including the current research, there isn't a complete agreement on the effect of nonpharmacologic pain-controlling programs on pain intensity of patients. However, having patients free of pain is a very important and valuable nursing activity. Pain control after surgery might decrease complications caused by unrelieved pain and facilitate patient's improvement. It is very important to do more comprehensive research studies about the degree that nonpharmacologic pain-controlling programs might be beneficial for patients. If they were helpful, we could use them more in clinical settings. It is recommended to perform this research with a larger sample and in a longer period of time with different populations of cancer patients.

References

1. Madineh H, Rajaie Esfahani M, Ghaheri H, Akhlagi M, Gangi F. Efficacy of low-dose Ketamine on postoperative pain. J Shahrekord Univ Med Sci 2005;7:29-34.
2. Kearney N, Richardson A. Nursing patients with cancer principles and practice. Edinburgh: Elsevier, Churchill Livingstone; 2006.
3. Imanipoor Masumeh. Principles of oncology nursing. Tehran: Tohfeh and Boshra; 2009.
4. Beck SL, Towsley GL, Berry PH, Lindau K, Field RB, Jensen S. Core aspects of satisfaction with pain management: Cancer patients' perspectives. J Pain Symptom Manage 2010;39:100-15.
5. Yarbro CH, Froggem H, Goodman M. Cancer nursing principles and practice. 6th ed. United States: Jones and Bartlett; 2005.
6. Fitzgibbon DR, Loeser JD. Cancer pain assessment, diagnosis and management. United States: Lippincott Williams and

Wilkins; 2010.
7. MacLellan K. Postoperative pain: Strategy for improving patient experiences. J Adv Nurs 2004;46:179-85.
8. Martin CG, Turkelson SL. Nursing care of the patient undergoing coronary artery bypass grafting. J Cardiovasc Nurs 2006;21:109-17.
9. Asilioglu K, Celik SS. The effect of preoperative education on anxiety of open cardiac surgery patients. Patient Educ Couns 2004;53:65-70.
10. Moemeni L, Najaf yarandi A, Haghani H. Comparative study of the effects of education using VCD and Booklet in two different times on pre-operative anxiety. Iran J Nurs 2009;21:81-93.
11. Black JM, Hawks JH. Medical surgical nursing: Clinical management for positive outcomes. 7th ed. St-Louis: Saunders/ Elsevier; 2005.
12. Cheung LH, Callaghan P, Chang AM. Controlled trial of psycho-educational interventions in preparing Chinese women for elective hysterectomy. Int J Nurs Stud 2003;40:207-16.
13. Pain society, 2003. Pain society, recommendations for nursing practice in pain management. London: Pain society; 2003.
14. Yildirim YK, Cicek F, Uyar M. Effects of pain education program on pain intensity, pain treatment satisfaction and barriers in Turkish cancer patients. Pain Manag Nurs 2009;10:220-8.
15. Smith MY, Duhamel KN, Egert J, Winkel G. Impact of a brief intervention on patient communication and barriers to pain management: results from a randomized controlled trial. Patient Educ Couns 2010;81:79-88.
16. Van der peet EH, Van den Beuken-van Everdingen MHJ, Patijn J, Schouten HC, Van kleef M . Randomized clinical trial of an intensive nursing-based pain education program for cancer outpatients suffering from pain. Support Care Cancer 2009;1:1089-99.
17. Vallieres L, Aubin M, Blondeau L, Simard S, Giguere A. Effectiveness of a clinical intervention in improving pain control in outpatients with cancer treated by radiation therapy. Int J Radiat Oncol 2006;66:234-7.
18. Rustoen T, Gaardsrud T, Leegaard M, Wahl AK. Nursing pain management qualitative interview study of patients with pain hospitalized for cancer treatment. Pain Manag Nurs 2009;10:48-55.
19. Panteli V, Patistea E. Assessing patient satisfaction and intensity of pain as outcomes in the management of cancer- related pain. Eur J Oncol Nurs 2007;11:424-33.
20. Dawson R, Spross JA, Jablonski ES, Hoyer DR, Sellers DE, Solomon MZ. Probing the paradox of patients satisfaction with inadequate pain management. J Pain Symptom Manage 2002;23:211-20.
21. Kelly AM. Patient satisfaction with pain management dose not correlate with initial or discharge VAS pain score, verbal pain rating at discharge or change in VAS score in the emergency department. J Emerg Med 2000;19: 113-6.
22. Reynolds MA. Postoperative pain management discharge teaching in a rural population. Pain Manag Nurs 2009;10:76-84.
23. Hansson E, Fridlund B, Hallström I. Effects of a quality improvement program in acute care evaluated by patients, nurses and physicians. Pain Manag Nurs 2006;7:93-108.
24. Yates P, Edwards H, Nash R, Avandu S, Purdie D, Najman J, *et al*. A randomized controlled trial of a nurse-administered educational intervention for improving cancer pain management in ambulatory settings. Patient Educ Couns 2004;53:227-37.
25. Watt-Watson J, Stevens B, Katz J, Costelo J, Reid GJ, David T. Impact of preoperative education on pain outcomes after CABG surgery. Pain 2004;109:73-85.
26. Vakilzadeh P, Nakhai N. The validation of the Brief pain inventory –BPI in cancer patient. J Rafsanjan Univ Med Sci 2006;5:153-8.
27. Wong EM, Chan SW, Chair SY. Effectiveness of an educational intervention on levels of pain, anxiety and self-efficacy for patients with musculoskeletal trauma. J Adv Nurs 2010;66:1120-31.
28. Wells N, Hepworth JT, Murphy BA, Wujcik D, Johnson R. Improving cancer pain management through patient and family education. J Pain Symptom Manage 2003;25:344-56.
29. Berge DJ, Dolin SJ, Williams AC, Herman R. Pre-operative and post-operative of a pain management programme prior to total hip replacement: A randomized controlled trial. Pain 2004;110:33-9.
30. Innis J, Bikaunieks N, Petryshen P, Zellermeyer V, Ciccarelli L. Patient satisfaction and pain management :An educational approach. J Nurs Care Qual 2004;19:322-7.
31. Hosseinrezaee H, Abbaszadeh A. Assessment of implications of pain relief methods by nurses working in medical surgical wards of hospitals affiliated to Kerman University of Medical sciences, Shahed Sadoge University of Medical Sciences: Yazd; 2002;10:16-20.

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