Investigating the Effects of Pain Management Training on the Amount of Pre-surgery Anxiety and Post-surgery Pain Intensity after Abdominal Surgery

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ABSTRACT: Today, one of the varieties of therapeutic methods for patients is surgery, which is a stressful experience and causes many mental reactions including anxiety. This study aimed at determining investigating the effects of pain management training on the amount of pre-surgery anxiety and post-surgery pain Intensity after abdominal surgery. In this semi-empirical study 80 patients 40 patients formed test experiment group and 40 patients formed control group were selected through random and constant sampling from among the candidate patients for abdomen surgeries in men's and women's surgery wards of Dezful Ganjavian hospital. The tools used to collect data were the questionnaire of personal and disease specifications, Johnson's numerical pain scale, visual and numerical scale of anxiety level, and the kind of intervention of face to face education regarding pain management. The anxiety levels in two groups before the surgery were measured through using numerical–visual self–report criterion of anxiety level. In order to analyses data, descriptive and inferential statistics and spss software were used. In this study the average score of anxiety before surgery was 6.80 in control group, with a standard deviation of 2.8, and the average score of pain Severity before surgery was 9.87 in control group, with a standard deviation of 1.5. Education before the surgery decreases the anxiety level and pain in patients. This method can be used as a supplementary medical treatment in clinical medicine.

Key words: Education, Anxiety, Pain, Abdomen Surgeries.

INTRODUCTION

Today, surgery is a common therapeutic method for many diseases which causes pain and anxiety in patients (Rohy et al. 2006). Each year, more than one hundred billions of people all over the world are being operated (Zakerimoghaddam et al. 2009). Surgical operation is a crucial and potential risk that endangers the patient's health (Mollah 2009). Surgery is a stressful experience for patient and she/he has a little physical and mental control on its situation and consequences. Hence, most of the patients who are waiting for surgery, experience some level of stress (Potter & Perry 2008). Only in the U.S. 23 billions patients are being operated each year, and most of them experience anxiety before surgical operation (Rezai & Abbaszadeh 2010). Anxiety before operation causes an increase in heart-beat and blood pressure and these cause bleeding and post-surgery side effects. Continuation of anxiety increases the amount of the body metabolism and oxygen consumption. Further, the body responds to anxiety by the increase in depth of breathing (Taylor 2010). Anxiety as an effective factor influences the body health before surgical operations, and effects Physiological and Neuro-Endocrine reactions and causes undesired consequences during the surgery and in recovery period after surgery (Zakerimoghaddam et al. 2010). When taking care of patient before surgical operation, patient's anxiety should be taken into consideration. Nurse should be able examine the patient's anxiety and take care of him/her in order to prevent and reduce the side effects through appropriate measures (Diez – Alvarez et al. 2012). Through
controlling the patient's anxiety level, the nurse maintains patient's energy and causes his/her recovery and tissue improvement (Hardwick et al. 2012). If patient's fear and anxiety are not controlled, they will be appeared in different organs of the body, including stimulation of autonomic system, muscular tension, and increase in production of corticosteroids which cause severe pain after surgery, atelectasis, and hypoventilation vasectomy myocardial (Robert & Miller 2012). Not relieving the patient's anxiety causes heart, liver, digestion, endocrine glands and immunity side effects and effective control of patient's pain and anxiety causes increase of the speed of recovery and his/her faster returning to the former activities (Smeltzer & Brenda 2010). Also, anxiety during the period before surgical operation causes stomach ulcer, and decrease of the patient's satisfaction of the manner of treatment and nursing care (Hong & Oh 2009). There are useful therapeutic techniques to decrease physical and mental symptoms of anxiety including medicinal and non-medicinal methods (Phipps et al. 2010). In order to cure anxiety, various medicinal and non-medicinal methods are used. From among common anti-anxiety medicinal we can refer to benzodiazepines, tri loop and antidepressants, mono- amino oxidize inhibitors, non-benzodiazepine anti-anxiety medicines Buspirone, Carbamazepine, Propranolol and Hydroxyzine. Anxiety reductive medicines have various physiological physical and mental conditions and further have the risk of medicinal addiction.

On one hand, these medicines have side effects such as low blood pressure, weakening of vital activities like breathing and heart beat, sleepiness, nausea, vomit, constipation, and sometimes allergic reactions and even high shock, which impose high expenses on health and cure system of the country (Twiss et al. 2007). Considering numerous side effects of medicines, the necessity of presenting an appropriate non-medicinal method is felt (Zakerimoghaddam et al. 2009). Among common and suitable non-medicinal treatments, not having high expenses and side effects as well, we can refer to prayer, massage-therapy, exercise, muscle relaxation, cognition-therapy, meditation, music-therapy, breath-therapy, guided visualization, and education (Morton 2005). Patient's education should be planned in their curative program like other treatment activities, and after being applied, it should be assessed, because through proper understanding of anxiety by patient, we can minimize the side effects before, during and after surgical operation (Rahmani Anarak et al. 2009). Since nurses, compared with other members of treatment team in clinical centers, spend more time with patients, are in the best position regarding relieving the patient's anxiety and can easily use non-medicinal treatments such as education to decrease the level of patient's pre-operative anxiety (Rezai & Abbaszadeh 2010). Today, patient's education is one of the main and most crucial curative programs in treatment systems and is recognized as the center of responsibilities of all health-related occupations. Reduction of anxiety and avoiding behaviors related to it require Knowledge about shortage of skills and a program for teaching special skills (Mohammad Aliha et al. 2009). Provision of patients' recovery is possible through the increase of knowledge and this purpose is achievable through education. Patients need information about conditions of disease and their recovery and their participation in educational programs has positive impacts (Momeni 2007). Sjosted and et al (2011) believe that patients need to get some information about surgical operation, the used technique, medicines and duration of surgery prior to the operation, so that they feel comfortable and experience less pain after surgery. Nurses' knowledge, strong communication, and complete support of the patients and understanding of their feelings make patients feel comfortable and reduce their pre-operative anxiety. Considering the related works, teaching the patients can reduce pre-operative anxiety, but it is not adequate in our country, because it is not implemented, or implemented incompletely (Zakerimoghaddam et al. 2009). Therefore, this study aimed at determining investigating the effects of pain management training on the amount of pre-surgery anxiety and post-surgery pain intensity after abdominal surgery.

METHODS

The present study is semi-empirical the samples of it were selected using a constant method. Researchers referred to the study site Dr. Ganjavian hospital of Dezfoul every evening to do sampling from among qualified people who had input criteria. Population of the study included bedridden patients candidate for abdomen surgery in surgical wards of Dezfoul Ganjavian hospital. Considering the following formula, with a reliability coefficient of 95 percent, and a test power of 95 percent, 40 people were put in each group.

\[
 n = \frac{\left( Z_{1-\alpha} \right)^2 (S_1^2 + S_2^2)}{\left( \bar{X}_1 - \bar{X}_2 \right)^2} = \frac{(1.96 + 1.64)^2(2.62 + 2.1)}{(5.6 - 7.5)^2} = 40
\]

In order to collect data, researchers filled the questionnaires of demographic information and information related to patients through studying the patients' files and interviewing them, and anxiety levels of the studied units before surgical operation were measured and recorded by patients using visual-numerical self-report scale of anxiety level. Post-surgery pain intensity was measured using Johnson's numerical pain scale, which was scaled from 1 to 3 for mild pain, 4 to 6 for moderate pain and 7 to 10 for severe pain.
In order to analyze data, spss software was used, and for classifying and summarizing the findings, descriptive statistics like absolute (Total) and relative frequency tables (Charts) and distribution of central (Median and Mean) indexes and variance and goals of research, descriptive statistics and statistical tests such as Mann-Whitney, Wilcoxon on into consideration, were used. Inferential findings related to hypothesis of the study include Pearson correlation test and independent T-Test which have been presented with an error level \( P = 0.05 \) for all variables studied in this research. Criteria to inter study included: Age between 18-65, being bedridden one day before surgical operation, not having a known mental disease, not being addicted to drugs or powerful tranquillizers, not having cancer, having complete proficiency in Persian language, optional (not urgent) abdominal surgery, not having sight problem to select the proper location of visual-numerical scale (criterion) of anxiety level, not being educated in medical sciences fields, not consuming anti-anxiety medicines and being operated in a time interval between 8 A.M. - 4 P.M., and criteria to exit from the study included: To experience acute post-operative side effects such as bleeding, shock and transfer to intensive care unit (ICU) after surgical operation, none of the studied units were omitted from the after preparation of collecting data tools and having in hand a permit from research deputy of Islamic Azad university of dezful, researchers referred to dezful Ganjavian hospital and qualified samples for research were selected from among men's and women's wards of the hospital. It should be mentioned that sampling was carried out according to age, gender in two test and control groups, and with getting the agreement of studied units, questionnaires were filled. The questions were read for patients and the answers were inserted in questionnaires, and then education began. The content of education included explanations about the kind of surgical operation, explanations of the factors that cause pain and annoying feelings after surgical operation, the manner of controlling the pain after operation, and untimely start of out-of-bed activities, education of the way to reduce pain and improve the condition of sleep using non-medicinal tranquillizing methods, in reduction of some non-medicinal tranquillizing methods such as music therapy, meditation, read Quran verses and prayer recitation meantime, patients were encouraged to request for tranquilizer after surgical operation in the case of having pain and also to express their feelings and anxiety. The patients' questions were answered and along the explanations, an education, an educational pamphlet including a summary of the verbal conversations was presented to recall the materials. In the morning of doing surgical operation, being present at patient's bedside, researcher reviewed the content of materials presented the day before and answered the questions put by patients in intervention group and again the anxiety level was measured in both control and intervention groups using visual. Numerical self-report criterion (scale) and the obtained data were analyzed. It should be mentioned that the control group received all standard pre-operative nursing cares except education.

**Ethical considerations**

This study abided by the Helsinki Declaration at all stages of its running and has been by the authorized Hospital and University ethics committee.

**RESULTS**

The findings indicated that from among, 13 individuals of the studied sample (32.5%) were male and 67 ones (67.5%) were female. Further the average age of the studied sample was 20-29. Regarding the married life status, the highest frequency was related to the married group. About the education level, 45% of people in the intervention group had high school education, and 32.5% of people in control group were illiterate or had high school education. Regarding the income status, 47.5% of people in intervention group and 52.5% of people in control group had average income. Place of residence in both (92.5%) and control (42.5%) groups was city and both groups (82.5%) of people in intervention group and 92.5% of people in control group had medical (health) insurance. In both participant groups the highest frequency was related to housekeepers (82.5% in intervention group and 72.5% in control group). As seen in table (1), in the control group, low anxiety (with the score 1 to 30) has the highest frequency, that is 42.5%, and the average anxiety (with the score 4 to 6) has the lowest frequency, that is 17.5% of the sample. In the intervention group, low anxiety (with the score 1 to 3) has the highest frequency, which is 62.5%, and high anxiety (with the score 7 to 10) has the lowest frequency, which is 17.5% of the sample.

Considering the results of table 2, there is a significant difference between average score of patients' pre-operative anxiety in two control (6.80) and test (4.30) groups. This difference indicates that the patients' pre-operative anxiety in control group is higher in comparison with that of intervention group. A significant difference is observed between pain intensity of the patients in intervention and control groups after surgery (7.80 for the intervention group as compared to 9.87 for control group) which shows high pain intensity in control group after surgery compared to that of the intervention group. The results of table 3 shows that the calculate t-test, 4.27, in significance level of 0.001 is less than error level of 0.05; therefore, the null hypothesis is rejected and the test is significant. Thus, It can be occluded that there is a significant difference between the average scores of patients' anxiety before the surgical operation in both control and intervention groups, that this difference is indicative of
the increase of the anxiety level of control group, that is the patients’ anxiety in control group before the surgical operation is more than that of the intervention group. So the hypothesis of research (there is a significant difference between anxiety level before surgical operation in both control and intervention groups) is accepted. The results of table 4 show that the calculate t-test, 4.74, in significance level of 0.001 is less than error level of 0.05; therefore, the null hypothesis is rejected and the test is significant. Thus, it could be concluded that there is a significant difference between the mean of post-surgery pain intensity scores in intervention and control group which is not in favor of intervention group, that is, post-surgery pain intensity of the patients in control group is more than that of patients in intervention group.

As table 5 indicates, Pearson's correlation test (r =0.146) between patients’ post-surgery pain intensity and pre-surgery anxiety in intervention group is not in the significance level of 0.05; therefore, the null hypothesis is not rejected and there is no statistical relationship between pre-surgery anxiety and post-surgery pain intensity in patients.

DISCUSSION

The results of statistical analysis using independent T-test indicates that both control and intervention groups have an average 2.5 grade difference in the score of anxiety which indicates that the intervention of education can reduce the average anxiety of intervention group up to 2.5 group. This difference is significant in level P=0.01. Considering the results of the present study, Diaz-Alvaerez , et al (2012) conducted a study in Europe indicated that overt and covert patients' anxiety in intervention group were less than those of control group, and overt anxiety level in intervention group had a significant decrease of covert anxiety level in both studied groups was not significant the researcher believes that this result may be because of different kinds of anesthesia and the kind of surgical operation. Other reasons in clued higher anxiety of woman in surgical operation than men and higher levels of ASA in patients with higher anxiety (Diez – Alvarez et al .2012).Another study by sjosted and et al (2011) with title patients’ educational needs before colon surgical operation indicated that before surgical operation, patients need to have some information about surgical operation, procedure, medicines, and duration of surgical operation, so that their anxiety is reduced and they feel comfortable, and experience less pain and side effects. In this study, nurses' strong communication and perfect support of patients and understanding of their feeling made patients feel comfortable and decreased their anxiety level before surgical operation. Further, in most other studies like the study conducted by Zakeri Moghadam, et al (2010) with title the effect of patient's education regarding the pain control on pre-operative anxiety level in patients under abdomen surgeries in Ayatollah Mosavi Hospital connected with Zanjan medical sciences university, anxiety level of intervention group decreased in comparison whit the control group (P<0.001) and with the intervention group before being educated (P<0.001).

The findings show that within 4-6 first hours after surgery, the most percentage of the units under study in experimental group (67.5%) had mild pain and 45% of the control group had severe pain. Independent t-test shows a significant statistical difference between pain intensity within 4-6 first hours after surgery in both groups. Since the units of the study are homogenous, it could be stated that pain management training of the patients in experimental group in comparison with the control group was able to change the pain intensity of study units significantly. This could verify the effects of training the patients in order to decrease the pain after surgery.

Heglem and Carlson (2009) in their research, “the effects of informing patients under venous pyelography”, found a significant difference between pain intensity in 4 hours after surgery in control and experimental groups in which pain intensity in 4 hours after surgery in experimental group was less than that of control group. The results of Lin and Wang (2008), “nursery interventions, pain and anxiety of abdomen surgery”, also showed that nurses’ familiarity with non-medicinal pain-decreasing interventions decreases patients’ pain intensity. They found a significant difference between the control and intervention groups where pain intensity in experimental group decreases which matches the results of the present study. The obtained results verifies the suggestion that using instruction intervention for the patients waiting for surgery decreases post-surgery pain intensity, while, in control group, despite supplying standard nursery services, pain management instructions were not given to the patients and therefore, their post-surgery pain intensity was reported high (8-10 scores). Severe pain affects all the body systems severely and influences the surgery results, too. However, effective measures could be done to control and decrease post-surgery pain intensity which removes or strongly decreases the undesirable side effects of pain and facilitates the surgical techniques which will offer suitable results.

Due to introduction of non-medicinal pain-relief methods such as enchanting Holy Quran, paying, listening to Quran, music, thought deviation, mental imagination and muscular relaxation to the units being studied in intervention group, 100 percent of the patients in this group used the instructed methods simultaneously and the highest amount of pain-relief effects were observed when several interventions were utilized. It seems like that the proper education of nurses and consulting the patients by them will reduce their pain and anxiety. Of course, pre-operative education
should be performed at an appropriate time, because the time immediately before the surgical operation is not suitable for education, and increases the patient's anxiety. The most important cause which leads to pre-operative anxiety in patients is disease and surgical operation. This important task can be undertaken by nurses who have more communications with patients compared with other members of medical team, and in addition to decrease the pre-operative anxiety, will reduce the intensity of post-operative side effects.

In this study, the effect of education on patient's pre-operative anxiety level was examined, so it is recommended that in next studies anxiety level after operation is measured and further other non-medicinal methods such as hydrotherapy, laugh therapy, breath – therapy, and so on are used. Also it is recommended that the effect of each variable on decrease of anxiety level in patients candidate for surgical operation is measured and the results of which is compared with the present study.

CONCLUSION

Pain management training decreased pre-surgical anxiety and post-surgery pain in patients and it could be stated, with 95% of certainty, that pain management training may decrease pre-surgical anxiety and post-surgery pain in patients who are to undergo abdomen surgery which verifies the effects of intervention used in experimental group. Researchers obtained useful results in this study. It is hoped that these are implemented in clinical units by nursing authorities practically, and improve the patients’ physical and mental conditions and quality of nursing services. Findings of this study can be used for education of nursing, nursing services and nursing management. Considering that patients’ face to face educating by nurses does not require any cost or means and improves the relations and increases patients’ trust in nurses, it is recommended that this useful and cost-effective method is used in surgical departments.

Table 1. Frequency Distribution of the Studied Samples According to Anxiety before the Operation

<table>
<thead>
<tr>
<th>Measure of Anxiety</th>
<th>Mild</th>
<th>Average</th>
<th>Severe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>16(40.0%)</td>
<td>7(17.5%)</td>
<td>6(15.0%)</td>
<td>30</td>
</tr>
<tr>
<td>Intervention</td>
<td>8(20.0%)</td>
<td>3(20.0%)</td>
<td>9(22.5%)</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 2. Central and indices distribution of the pain intensity scores and the amount of the subjects’ anxiety in intervention and control groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Measure of Anxiety</td>
<td>6.80</td>
<td>2.8</td>
</tr>
<tr>
<td>Intensity of pain</td>
<td>9.87</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Table 3. Independent t-test for mean difference significance of the scores for the patients’ pre-surgery anxiety levels in both control and intervention groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Control</td>
<td>6.80</td>
<td>2.82/50</td>
</tr>
<tr>
<td>Intervention</td>
<td>4.30</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Table 4. Independent t-test for mean difference significance of the scores for the patients’ post-surgery pain intensity in both control and intervention groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensity of Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Control</td>
<td>57</td>
<td>2/4/74</td>
</tr>
<tr>
<td>Intervention</td>
<td>7</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Table 5. Pearson’s correlation coefficient between patients’ post-surgery pain intensity and pre-surgery anxiety in intervention group

<table>
<thead>
<tr>
<th>Variables</th>
<th>patients’ pre-surgery anxiety significance level</th>
<th>error level</th>
<th>frequency</th>
<th>test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>post-surgery pain intensity</td>
<td>0.147</td>
<td>0.3</td>
<td>0.05</td>
<td>40</td>
</tr>
</tbody>
</table>

Figure 1. Comparison of pain intensity, anxiety level, and sleeping quality of the patients in both control and intervention groups
ACKNOWLEDGEMENT

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REFERENCES


