



## EFFECTIVENESS OF PREOPERATIVE TEACHING ON POSTOPERATIVE EXERCISES IN PREVENTING SELECTED POST OPERATIVE COMPLICATIONS AMONG ABDOMINAL SURGERY PATIENTS IN SELECTED HOSPITALS AT MANGALORE

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### ABSTRACT

Surgical intervention is carried out with the intention of either a cure that is elimination or repair of pathology or an improvement in the patient's quality of life. Postoperative complications can be minimized by the preoperative care that the patient receives and the amount of information and education given to the patient preoperatively. The research was carried out to assess the effectiveness of preoperative teaching on post operative exercises in preventing selected post operative complications. Time series design was used for the study. Using the purposive sampling technique, 40 abdominal surgery patients were selected and data was collected using demographic profile, tool for assessing the respiratory status, Bates Jensen Wound Assessment Tool and an opinionnaire. There was a significant difference between the pre test and post-test respiratory status scores of general appearance ( $F_{(3,76)}=9.393$ ), respiratory pattern ( $F_{(3,76)}=34.18$ ), respiratory rate ( $F_{(3,76)}=96.64$ ),  $SpO_2$  ( $F_{(3,76)}=49.42$ ) and heart rate ( $F_{(3,76)}=6.76$ ) at 0.05 level of significance. There was a significant difference between the different post-test wound status scores in the experimental group ( $F_{(2,57)}=92.15$ ,  $p<0.05$ ). The mean post-test wound status scores of experimental group ( $22.3\pm 2.36$ ,  $18.4\pm 1.85$ ,  $14.35\pm 1.108$ ) was also significantly lower than the mean post-test scores of the control group ( $29.95\pm 3.89$ ,  $26.45\pm 1.83$ ,  $24.25\pm 2.233$ ) in post-test 1, 2, and 3, respectively (post-test 1- $t_{(39)}=8.404$ , post-test 2- $t_{(39)}=14.02$ , post-test 3- $t_{(39)}=17.74$ ) at 0.05 level of significance.

**Key words:** Effectiveness, Preoperative teaching, Post operative exercises, Post operative complications, Abdominal surgery patients.

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### INTRODUCTION

Surgery whether elective or emergent is a stressful and a complex event. Certain factors may predispose the patient to postoperative complications, depending upon the type of surgery they undergo [1]. Postoperative complications can range from minor, self limiting problems to major life threatening ones depending on the nature of the surgery and the organ operated upon. Complication can be due to anaesthesia or surgery or a reaction to the stress of surgery itself. Some complications are general and apply to all procedures and some are specific that apply to only that procedure. Common complications include fever, chest infection,

pneumonia, wound infection, bleeding or deep vein thrombosis. Most of the complications manifests after the first few days of surgery—usually 1 to 3 days [2].

Pulmonary complications have a significant impact on morbidity and mortality after major abdominal surgery. The causes of pulmonary dysfunction after such surgery are multi-factorial and include effects of anaesthesia, abdominal distension, restricted breathing due to pain and diaphragmatic dysfunction, obesity, prolonged supine position, postoperative narcotic analgesia etc. Another risk of abdominal surgery is infection. The infection can come from the outside



through the incision and can come from skin organisms or airborne organisms. An infection can also come from within the abdomen. If the bowels are punctured, bacteria can flood the abdominal cavity, resulting in peritonitis (infection of the peritoneum) and sepsis (blood borne infection) [3].

Recent statistics indicate that worldwide almost 2.234 billion major surgical procedures are performed each year<sup>2</sup>. This translates into 1 for every 25 people in the world. Majority of the patients who undergo the procedure get well and go home; however major complications ranges from 3% to 16%, and rates of permanent disability or death range from 0.4% to 0.8%<sup>2,4</sup>. According to National Healthcare Quality (2004) report four in every 10 Indians suffer from postoperative complications after abdominal surgery. In 2006 the NHCQ reported about 2.7% of surgical patients had postoperative pneumonia or a thrombo-embolic event [4].

Postoperative complications can be minimized by the preoperative care that the patient receives and the amount of information and education given to the patient preoperatively. Each patient is taught as an individual, with consideration for any unique concerns or needs, so that a programme of instruction based on the individual's learning needs can be planned and implemented [5].

Preoperative teaching on postoperative exercises is shown to have the highest level of functioning possible among the abdominal surgery patients. Patient education has been known to be the best way to prevent postoperative complications and the nurses have more responsibility in providing patients education. Numerous research studies have supported the value of preoperative instructions in reducing both the incidence of postoperative complications and the length of stay in the hospital [6].

During the clinical experience, the investigator found that preoperative teaching regarding postoperative exercises in the wards was not given more importance in nursing care and many developed some of the postoperative complications. This motivated the investigator to conduct a study on the effectiveness of preoperative teaching on postoperative exercises in preventing selected postoperative complications among patients undergoing abdominal surgery.

### Statement of the Problem

Effectiveness of preoperative teaching on postoperative exercises in preventing selected postoperative complications among abdominal surgery patients in selected hospitals at Mangalore.

### Objectives

1. To determine the respiratory status of the patients undergoing abdominal surgery one day before the surgery and on the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> postoperative day among the

experimental and the control group by the respiratory status assessment tool.

To measure the wound status of the patients undergoing abdominal surgery on the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> postoperative day among the experimental and the control group by the Bates-Jensen Wound Assessment Tool.

To compare the effectiveness of preoperative teaching on postoperative exercises in preventing selected postoperative complications.

To associate the respiratory status and wound status of the patients who have undergone abdominal surgery with selected demographic variables.

To measure the opinion of patients regarding the preoperative teaching on postoperative exercises by an opinionnaire.

### Hypothesis

The hypotheses will be tested at 0.05 level of significance.

H<sub>1</sub>: There will be a significant difference in the respiratory status of patients in pre and postoperative days between the experimental group and the control group.

H<sub>2</sub>: There will be a significant difference in the respiratory status of patients on different postoperative days in the experimental group.

H<sub>3</sub>: There will be a significant difference in the wound status of patients on different postoperative days in the experimental group and the control group.

H<sub>4</sub>: There will be a significant difference in the wound status of the patients in different postoperative days in the experimental group.

H<sub>5</sub>: There will be a significant association between the selected demographic variables and respiratory status and wound status of the patients.

### MATERIALS AND METHODS

Time series research design was used in the study. Purposive sampling technique was used to select the sample. After getting the ethical clearance, the study was conducted in different hospitals at Mangalore. Subjects were selected according to the selection criteria. Informed consent was obtained from the sample. Demographic proforma, respiratory status assessment tool, Bates Jensen Wound Assessment Tool and opinionnaire were administered to 40 patients who had undergone abdominal surgery both preoperatively and postoperatively. Both descriptive and inferential statistics were used for data analysis.

### RESULTS

#### Section 1: Description of Demographic Variables of the Sample

Majority of samples in the experimental group (55%) and the control group (50%) were in the age group



of 41- 50 yrs. Majority of subjects in the experimental group (55%) and the control group (60%) were males. Majority (55%) of subjects in the experimental group and the control group worked as government job holders, private job holders or agriculturists. The highest percentage in the experimental group (20%) and the control group (35%) were smokers. Majority of the subjects in the experimental group (15%) and the control group (25%) were hypertensives. None of the subjects in the experimental and control group had any previous knowledge on postoperative exercises nor any history of previous abdominal surgery.

## **Section 2. Description of physiological parameters and wound status**

Data in Table 1 and Figure 1 shows that: The mean general appearance score is the highest in the period of post-test 3 in the experimental group ( $9.95 \pm 0.91$ ). The mean respiratory pattern score is the highest in the period of post-test 3 in the experimental group ( $8.7 \pm 1.203$ ). The mean respiratory rate score is the highest in the period of post-test 3 in the experimental group ( $25.6 \pm 2.86$ ). The mean SpO<sub>2</sub> score is the highest in the period of post-test 3 in the experimental group ( $98.05 \pm 0.81$ ). The mean temperature score is the highest in the period of post-test 3 in the experimental group ( $98.77 \pm 0.42$ ). The mean heart rate score is the highest in the period of post-test 3 in the experimental group ( $87.1 \pm 4.86$ ).

## **Description of wound status of abdominal surgery patients**

The data in Table 2 and figure 2 show that in post-test 3 the mean post-test score in the control group ( $24.25 \pm 2.23$ ) is higher than the mean post-test score in the experimental group ( $14.35 \pm 1.108$ ) and the maximum mean score of the control group ( $29.95 \pm 3.86$ ) is higher than the maximum mean score of the experimental group ( $22.3 \pm 2.36$ ).

## **Section 3. Effectiveness of intervention on respiratory status and wound status of subjects in the experimental group and the control group.**

### **A. Comparison of respiratory status scores of subjects between the experimental group and the control group**

The data depicted in Table 3 shows that there is significant difference between the pre-test and post-test scores of general appearance ( $F(3,76)=9.393$ ), respiratory pattern ( $F(3,76)=34.18$ ), respiratory rate ( $F(3,76)=96.64$ ), SpO<sub>2</sub> ( $F(3,76)=49.42$ ) and heart rate ( $F(3,76)=6.76$ ) at 0.05 level of significance.

### **Significance of difference between the post-test respiratory status scores of the experimental and the control group**

Data in table 4 show that there is no significant difference in the post-test 1 in the parameters like respiratory rate ( $t=0.35$ ,  $p<0.05$ ), SpO<sub>2</sub> ( $t=0.58$ ,  $p<0.05$ ) and heart rate ( $t=1.36$ ,  $p<0.05$ ) between the experimental group and the control group.

### **Comparison of wound status scores of subjects between the experimental group and the control group**

The data depicted in Table 5 shows that there is a significant difference between the different post-test wound status scores in the experimental group [ $F(2,57)=92.15$ ,  $p<0.05$ ].

### **Significance of difference between post-test wound status score of the experimental group and the control group**

The data in table 6 shows that the mean post-test scores of the experimental group ( $22.3 \pm 2.36$ ,  $18.4 \pm 1.85$ ,  $14.35 \pm 1.108$ ) is significantly lower than the mean post-test scores of the control group ( $29.95 \pm 3.89$ ,  $26.45 \pm 1.83$ ,  $24.25 \pm 2.233$ ) in post-test 1, 2, and 3, respectively (post-test 1:  $t=8.404$ , post-test 2:  $t=14.02$ , post-test 3:  $t=17.74$ ;  $p<0.05$ ).

## **Section 4. Significance of difference between pre-test and post-test in the wound assessment score and respiratory assessment score**

Multiple comparison showing significant difference between different post-test in wound status scores

Data in Table 7 show that there is significant difference on wound assessment score in different post-test scores.

### **Multiple comparison showing significance difference between pre-test and different post-test in respiratory status score by using Bonferroni test**

Data in table 8 show that there is a very high significant difference between the pre-test and post-test 3 general appearance score in the experimental group and between the pre-test and post-test 1; pre-test and post-test 3; post-test 1 and post-test 2; post-test 1 and post-test 3 in control group. Significant difference between the pre-test and post-test 2 is also present in the respiratory pattern score of the control group and the experimental group and very highly significant difference between the different time intervals except post-test 2 and post-test 3 in the experimental group and post-test 1 and post-test 2 in the control group which does not have a significant difference. There is very high significance between the pre-test-post-test 1, pre-test-post-test 2 and post-test 1-post-test 3 respiratory rate score in the experimental group, and between the pre-test-post-test 1, pre-test-post-test 2, pre-test-post-test 3 in the control group.



Data in table 9 show that there is very highly significant difference between the pre-test-post-test 1, pre-test-post-test 2, post-test 1-post-test 2, post-test 1-post-test 3, and post-test 2-post-test 3 SpO<sub>2</sub> score of the experimental group and between the pre-test-post-test 1, pre-test-post-test 3 of the control group. There is very highly significant difference between the pre-test-post-test 2, pre-test-post-test 3 temperature score of the control group and no significant difference in the experimental group. There is very highly significant difference between the pre-test and post-test 1 heart rate score of the experimental group and between the pre-test-post-test 1, pre-test-post-test 2, and pre-test-post-test 3 of the control group.

#### **Section 5. Association of the subjects' respiratory status and wound status with the selected demographic variables**

The data depicted in Table 10 show that there is no significant association of pre-test respiratory status scores with the selected demographic variables of the experimental group and control group.

The data depicted in Table 11 shows that there is no significant association of the post-test wound status scores with the selected demographic variables of the experimental group and the control group.

#### **Section 6. Subject's opinion on the effect of preoperative teaching on postoperative exercises**

Data presented in Table 12 showed that 55% subjects strongly agreed on the statement "preoperative teaching has given me adequate knowledge on postoperative exercises". The highest number of subjects (65%) agreed that they had gained knowledge on postoperative exercises. 30% of the subjects strongly agreed and 55% agreed that they were able to practice the postoperative exercises preoperatively whereas 15% were uncertain about it. Majority of the subjects (70%) gave their opinion as 'agreed' for the statement "This teaching helps to clarify my doubts regarding postoperative exercises". Majority of the subjects (60%) strongly agreed the statement "This teaching helped me to know the importance of postoperative exercises".

#### **LIMITATIONS**

No follow-up was done after the post-test 3.

The study was conducted only in a few hospitals at Mangalore which imposed limits in generalization of findings. Small population limits the generalization of the

study findings.

#### **RECOMMENDATIONS**

A similar study can be replicated with a large sample to validate and generalise the findings.

Measurement of arterial blood gas analysis and evaluation of chest x-ray findings can be used to find out the effectiveness of postoperative exercises in preventing pulmonary complications.

A similar study can be conducted to find out the effectiveness of early ambulation and leg exercises in preventing deep vein thrombosis.

A similar study can be conducted to identify the incidence and risk factors of postoperative pulmonary complications after the abdominal surgery.

A further study can be conducted by measuring physiological changes of respiration by means of spirometer and peak flow meter.

#### **CONCLUSION**

Pulmonary complications after surgery are leading cause of postoperative morbidity and mortality. Thoracic and upper abdominal surgeries carry the risk of postoperative respiratory complications. Surgical site infections and wound and tissue dehiscence are well-known postoperative complications in gastrointestinal surgery. Patients should be taught postoperative exercises they will be required to do and their role in preventing complications. The postoperative exercises include turning, deep breathing, coughing, and extremity movement. Exercises are best taught during the preoperative period which helps in preventing the postoperative complications. Findings of the study showed that preoperative teaching on postoperative exercises was found effective in preventing the postoperative respiratory and wound complications.

#### **CONFLICT OF INTEREST**

There were no conflicts of interest reported.

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