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Research Article

A Study to Assess the Impact of Modified Early Ambulation on Functional Activity among Patients after Abdominal Surgery in a Selected Hospital of Kashmir

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I N F O

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A B S T R A C T

Background: Lack of early ambulation after abdominal surgery is the main cause of morbidity and mortality in India and all over the world. Many types of research have been done to prove that early ambulation improves postoperative recovery, reduces the incidence of postoperative complications and promotes early discharge. Modified early ambulation is a non-pharmacological method of postoperative management and has the advantage of being cost-effective, easy to provide, and safe.

Methodology: A quasi-experimental post-test-only control group design was adopted for the study. The study was carried out on 50 abdominal surgery patients (25 in the experimental group and 25 in the control group) who were admitted to the surgical wards of the Sher-i-Kashmir Institute of Medical Sciences, Soura Kashmir.

Results: The findings of the study revealed that there was a significant (p=0.05) increase in scores of functional activity of patients in the experimental group than in the control group. At 40 hours, 64 hours and 88 hours, the (Mean ± SD) functional activity scores of experimental group were (5.76 ± 1.508, 2.12 ± 0.927, 8.16 ± 0.624) and control group (5.80 ± 2.121, 8.80 ± 0.500 and 8.16 ± 1.248) with the p-value of 0.00, 0.00 and 0.0213 respectively. There was statistically no significant association between functional activity among patients after abdominal surgery in control group with any of the demographic and clinical variables i.e., age (p = 0.065), Gender (p = 0.132), Pre hospitalization levels of activity (p = 0.588), Previous abdominal surgery (p = 0.692), Previous knowledge about postoperative ambulation (p = 0.692) and Comorbidity (p = 0.238).

Conclusion: Based on the present study it can be concluded that the modified early ambulation intervention in the study group had a significant effect on the functional activity of study subjects.

Keywords: Abdominal Surgery, Modified Early Ambulation, Functional Activity

Introduction

Abdominal surgery is a very common operative procedure. A national survey in the United States reported that operation on the digestive system is one of the three most frequent surgical procedures.[1]Indeed, digestive system problems are one of many reasons for surgeons to enter the abdominal cavity. Prevalence of abdominal surgeries in India is about 29.3%, (adult females = 15.8% and adult males = 12.6%). The prevalence of intra-abdominal surgery among those in the age of 60 yearsis 43.8%. Notably, the rate of abdominal operation increases with age and females are found to have a significantly higher rate than males.[2] Post-operative symptoms occur as the consequences of tissue damage, preoperative manipulations, and post-surgery treatments. Studies reported a wide variance in the prevalence of symptoms following an operation, such as pain (70%), nausea and vomiting (20%-30%), fatigue/tiredness (20%-93%), sleep disturbance (89%), dizziness (16%-21%), and drowsiness (21%-36%). Other recognised symptoms are lack of appetite, dry mouth, and problems with elimination, anxiety, and depression.[3] In addition, the prevalence and intensity of symptoms vary over time, but the most severe period is the first three days after surgery. Nausea and vomiting reach their peak in the first two days; with 66.5% of patients feeling nauseated and 34% actually vomiting.[4] Furthermore, 92% of patients complained about increased fatigue, 11% reported difficulties in urination, and 9.7% described dizziness after surgery.[3] The common problems arising after surgery performed under general anaesthesia are circulatory complications, problems of consciousness, discomfort, and respiratory tract complications. When a patient develops post-operative complications, it leads to an increase in the hospital stay as well as economic loss.

Data from one study showed that 266.2 to 359.5 million operations were performed in the year 2012. This represents an increase of 38% over the previous eight years (since 2004) when the annual volume of major surgery was estimated to be 187-281 million operations. It was also noted from this study that many patients receive surgical care, yet safety and quality of care remain poorly measured and a low priority in many member states.[5]

Globally, in 2010, data monitor estimated that there were 7.4 million major abdominal surgeries done. This number is expected to grow or increase by 8.1 million surgeries in 2020. Out of the 7.4 million surgeries done,about 20,000 patients died in a year following complications of the abdominal surgeries done between 2010 and 2020 in the seven major countries (US, Japan, France, Germany, Italy, Spain, and the UK).

Walking after surgery promotes the flow of oxygen throughout your body and maintains normal breathing function. It also strengthens muscle tone. Gastrointestinal and urinary tract functions are also improved by walking. These body systems are slowed down after surgery. Walking improves blood flow and speeds up wound healing. Failure to walk may cause increased constipation and gas pain, weakness, less power to fight infections, and may put the person at a higher risk for blood clots and lung problems such as pneumonia. Prolonged bed rest may also increase the risk of skin breakdown and pressure sores.[6]

Early ambulation of the post-operative patients reduces the catabolic effects of surgery on skeletal muscle, improves pulmonary function and circulation through increased oxygen delivery to tissues, and reduces the risk of venous thromboembolism. Post-operative ambulation promotes the return of gut function assisting in the prevention of post-operative ileus.[7]

Nurses play an important role in the early ambulation of post-operative patients. The MISSCARE Survey of 1098 nurses in four US hospitals revealed that among 21 elements of nursing care surveyed, ambulation had the highest percentage (86.6%) of being not practised noted by the nurses.[7]

As per a study by Clement I[8] done in 2014 in Kempagowda Institute of Medical Sciences, Bangalore on 150 abdominal surgery patients, it was found that there was a significant difference in the post-test scores of activities of daily living, functional activity, and psychological wellbeing between the study group and control group. It is also noted that early mobilisation was not adequately practised in my study setting due to multiple reasons leading to complications like inadequacy in feeding and elimination, occurrence of complications like gastrointestinal dysfunction or discomfort, and increased dependence onpain killers. So the investigator felt the need for a study that could explore the benefit of early ambulation among patients after abdominal surgery. According to evidence from the study and the investigator's personal experience, it was observed that patients with major abdominal surgeries were having reduced functional activity due to prolonged bed rest and lack of early ambulation which motivated the researcher to take the study project.

Objectives

- To assess the functional activity of the patients after abdominal surgery in the control group and experimental group
- To evaluate the effectiveness of modified early ambulation by comparing the functional activity of patients in the control and experimental groups
- To determine the association between the functional activity of patients in the control group with their demographic/ clinical variables i.e., age, gender, preoperative levels of activity, previous abdominal surgery, previous knowledge regarding post-operative

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ambulation, and co-morbidity

Operational Definitions

Modified early ambulation: It refers to helping the patient to ambulate after abdominal surgery at 16 hours, 24 hours, 40 hours, 48 hours, 64 hours, and 72 hours for 30 minutes twice a day (morning and evening) for 3 days. The modified early ambulation includes various steps such as sitting at the edge of the bed with the support of legs, standing by the bedside and walking around the bed assisted and guided by the investigator.

Functional Activity: It refers to the restoration of the physiological condition of those patients taken in the study who have undergone abdominal surgery as measured at 40 hours, 64 hours, and 88 hours post-operatively by the investigator by the items in the observational checklist.

Abdominal Surgeries: It refers to open surgical approaches made through the abdominal wall irrespective of the type of surgery.

Method

The present study was a quasi-experimental study. Two group post-test only design was used to assess the functional activity of patients after abdominal surgery admitted at SKIMS Soura, Srinagar.

The study subjects were selected through purposive sampling technique. A structured observation schedule was used to collect data from study subjects.

The effectiveness of modified early ambulation was assessed by comparing the scores between control and experimental groups.

Description of Intervention

Standing Operation Procedure: Modified Early Ambulation Procedure Guide.

Preparatory Phase

- Explain the importance of ambulation after 16 hours of surgery
- Check vital signs
- Assess the patient's ability to walk
- Keep the footstool near the bedside if needed
- Keep the chair with a backrest and extra pillows ready for the patient to sit after ambulation
- Ensure the floor is clean and dry
- Check whether the patient is well-groomed and adequately clothed
- Free the drains attached to the bedside andplace the footstool beside the bed
- Loosen the urosac and keep it below the hip level
- Take the help of another person to support the patient while walking

Intervention (Action) Phase

Turning and Sitting

- Raise the head end of the bed by 40-60degree angle
- Assist patient by supporting the back and shoulder
- Bring the patient's legs to the edge of the bed
- Allow feet to rest on the footstool
- Ensure the comfort of patient by checking for dizziness or drowsiness and pain

Standing and limited walking

- Support the patient to slowly stand on the footstool
- Give support with assistance on either side of the patient
- Make the patient climb down from the footstool gradually
- Instruct him to keep his head erect, vertebral column straight, toes persisting forward and elbows slightly flexed
- Instruct the patient to walk with an even gait, and walk at the same speed asthe patient

Standing and Extended Walking

- Check whether the patient wants to stand for a while or sit on a stool
- If no complaints are made, ensure the comfort of the patient
- Instruct him to walk for a few more steps to reach the outside corridor of the ward or inside around the ward
- Help him to sit on the chair provided with extra pillows for a short while (5 min)

Post-Ambulation Phase

- Make sure the drains are connected back in position (NGT, wound drain, urobag)
- Continue/ maintain the patency of IV infusion
- Check the condition of the patient (free from dyspnoea, hypotension, and dizziness)
- Wash hands
- Document the time distance walked, duration of time, and patient'sresponse

Data Collection

In the present study, an observational checklist was used to assess the functional activity of patients after abdominal surgery.

Results

With the intervention of modified early ambulation, scores of functional activity were statistically significant between the control and experimental groups. The mean ± SD values of functional activity scores on day 1, day 2, and day 3of the experimental and control groupswere 5.76 ± 1.508, 8.16 ± 0.624, 8.80 ± 0.500 and 2.12 ± 0.927, 5.80 ± 2.121, and 8.16 ± 1.248 respectively.

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There was statistically no significant association between functional activity among patients after abdominal surgery in the control group with any of the demographic and clinical variables i.e., age(p = 0.065), gender(p = 0.132), pre-hospitalisation levels of activity(p = 0.588), previous abdominal surgery(p = 0.692), previous knowledge about post-operative ambulation (p = 0.692), and co-morbidity (p = 0.238).

As shown in Table 1 majority of study subjects in the control group i.e., 8 (32%) and 10 (40%) study subjects in the experimental group were in the age group of 51-60 years. Most of the study subjects in the control and experimental groups i.e., 15 (60%) in both groups, were females. The majority of study subjects in the control group i.e., 18 (72%), and 11 (44%) study subjects in the experimental group were moderate workers. Almost half of the participants in both groups, i.e., 56% didn't have previous abdominal surgeries.

14 (56%) participants in the control group and 16 (64%) in the experimental group didn't have previous knowledge regarding post-operative ambulation. 16 (64%) participants in the control group and 15 (60%) study subjects in the experimental groupdidn't have any co-morbidities.

Table 1.Distribution of Demographic Variables

Variables	Categories	Control Group f (%)	Experimental Group f (%)
		(n = 25)	(n = 25)
Age (in years)	20-30	7 (28)	7 (28)
	31-40	6 (24)	5 (20)
	41-50	4 (16)	3 (12)
	51-60	8 (32)	10 (40)
Gender	Male	10 (40)	10 (40)
	Female	15 (60)	15 (60)
Pre-hospitalisation levels of activity	Sedentary	0 (0)	7 (28)
	Light	4 (16)	6 (24)
	Moderate work	18 (72)	11 (44)
	Heavy and very heavy work	3 (12)	1 (4)
Previous abdominal surgery	Yes	11 (44)	11 (44)
	No	14 (56)	14 (56)
Previous knowledge regarding post-operative ambulation	Yes	11 (44)	9 (36)
	No	14 (56)	16 (64)
Co-morbidity	Yes	9 (36)	10 (40)
	No	16 (64)	15 (60)

Table 2.Comparison of Functional Activity Scores between Control Group and Experimental Group

Unpaired t Test	Functional Activity					
	40 hours		64 hours		88 hours	
	Experimental group	Control group	Experimental group	Control group	Experimental group	Control group
Mean ± SD	**5.76 ± 1.508**	**2.12 ± 0.927**	**8.16 ± 0.624**	**5.80 ± 2.121**	**8.80 ± 0.500**	**8.16 ± 1.248**
Mean difference	3.64		2.36		0.64	
Maximum	4	8	9	10	9	10
Minimum	1	3	1	7	4	8
Range	3	5	8	3	5	2
Unpaired t test	10.282		5.336		2.381	

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P value	0.0000	0.0000	0.0213
Table value at 0.05	2.01	2.01	2.01
Result	Significant	Significant	Significant

Table 3.Association of Demographic and Clinical Variables with Functional Activity in Control Group

Demographic Variables		Functional Activity			Association (Control)				
Variables		**Low**	**Average**	**High**	**Chi test**	**P value**	**df**	**Table value**	**Result**
Age (years)	20-30	7	0	0	7.244	0.065	3	7.815	NS
	31-40	6	0	0					
	41-50	4	0	0					
	51-60	5	3	0					
Gender	Male	10	0	0	2.273	0.132	1	3.841	NS
	Female	12	3	0					
Pre-hospitalisation levels of activity	Sedentary	0	0	0	1.063	0.588	2	5.991	NS
	Light	3	1	0					
	Moderate work	16	2	0					
	Heavy and very heavy work	3	0	0					
Previous abdominal surgery	Yes	10	1	0	0.157	0.692	1	3.841	NS
	No	12	2	0					
Previous knowledge regarding post-operative ambulation	Yes	10	1	0	0.157	0.692	1	3.841	NS
	No	12	2	0					
Co-morbidity	Yes	7	2	0	1.392	0.238	1	3.841	NS
	No	15	1	0					

Table 2 shows a comparison of functional activity scores between the control group and the experimental group and there is a significant increase in the functional activity scores of the experimental group as compared to the control group due to the effect of modified early ambulation.

As is evident from Table 3 the association of demographic variables with functional activity in the control group was found statistically non-significant.

Discussion

The functional activity (mean ± SD) scores were 2.12 ± 0.927 at 40 hours, 5.80 ± 2.121 at 64 hours and 8.16 ± 1.248 at 88 hours in the control group while the functional activity (mean ± SD) scores were 5.76 ± 1.508 at 40 hours, 8.16 ± 0.624 at 64 hours and 8.80 ± 0.500 at 88 hours in the experimental group. These findings are consistent with the findings of the study conducted by Clement I[8] in 2014 to assess the effectiveness of modified early ambulation on activities of daily living, functional activity, and psychological wellbeing among 150 abdominal surgery patients at Kempagowda Institute of Medical Sciences in Bangalore.

The result of the present study shows a significant increase in the functional activity after abdominal surgery among the patients in the experimental group as compared to the control group at SKIMS Souraat 0.05 level of significance. The findings are consistent with the study conducted by Kaur N[9] in 2007 on 30 patients in Chandigarh, Punjab which shows a statistically significant difference ($p<0.0010$) between post-test functional scores of the experimental and control groups. A similar study conducted by Clement I[8]in 2014 on 150 patients in Bangalorehad consistent findings with the present study.

There was statistically no significant association between

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functional activity among patients after abdominal surgery in the control group with any of the demographic and clinical variables i.e., age (p = 0.065), gender (p = 0.132), pre-hospitalisation levels of activity(p = 0.588), previous abdominal surgery(p = 0.692), previous knowledge about post-operative ambulation (p = 0.692) and comorbidity (p = 0.238). The above findings are consistent with the findings of a study conducted by Clement I[8] on 150 patients in Bangalore. The demographic variables did not influence the post-test functional activity scores in the study and control groups. The effectiveness of modified early ambulation was independent of the demographic variables. Another study done by Kaur N[9] in 2007 on 30 patientsin Chandigarh, Punjab also shows the same result and hence supports the study.

Nursing Implications of the Study

The finding of the present study has implications in the field of nursing education, nursing practice, nursing administration, and nursing research.

Nursing Education

- MEA should be introduced as the standing operating procedure in student's curriculum for teaching procedures as it would benefit the nursing students and they, in turn, could apply it in the clinical practice for the benefit of patients too
- CNE (Continuing nursing educational) programmes may be organised for the faculty and practising nurses to acquire skills in modified early ambulation intervention
- The syllabus of medical and surgical nursing should enable nursing students to domodified early ambulation during the post-operative period as a nursing procedure in the ward
- Nurse educators should provide adequate training and opportunity to the nursing students regarding modified early ambulation

Nursing Practice

- Nurses play a vital role in the hospital care delivery system
- As nurses are first contact care providers, so they need to implement MEA in the immediate post-operative phase to prevent complications
- It is strongly recommended to encourage early ambulation among post-operative patients which facilitates rapid tissue recovery as well as returning tonormal day-to-day function
- The nursing officers should realise that modified early ambulation is a very important tool for post-operative recovery
- The need for early ambulation should be taught to patients in the pre-operative phase and ambulation shouldbe continued at home after discharge
- Nurses are required to make practice changes that are supported by the latest evidence. Changes in practice involve the acceptance of new knowledge and understanding of research and successful implementation strategies
- Therefore, the modified early ambulation intervention after surgery should be established as a norm in the post-operative ward and should be includedin the protocol. The study findings clearly demonstrate better patient outcomes attributable to modified early ambulation

Nursing Research

- Other researchers may utilise the suggestions and recommendations for conducting further studies
- There is a need to have evidence-based research for every researcher. The study will motivate the initial researchers to conduct the same study on a large scale

Nursing Administration

- The modified early ambulation saves time and money and helps in a more rapid turnover of the patients per bed per month
- The administration should take the initiative to organise in-service education programmes for nursing personnel skills in early ambulation
- To reduce complications,thereby reducing hospital stay and costs of hospitalisation
- The hospital protocol may include MEA as a routine procedure for each post-operative patient
- Also, the provision should be made for finance in the budget for various activities like in-service education, advanced training, and conducting research in this field
- In summary, the incorporation of this modified early ambulation intervention can benefit patients and staff, along with reducing hospital care costs

Recommendations

On the basis of the findings of the present study the following recommendations have been made:

- A similar study can be conducted in other surgical post-operative patients such as cardiac thoracic surgery, orthopaedic surgery, and gynaecological surgery
- A comparative study can be conducted on patients undergoing treatment in private set-up and government set-up to find out the effectiveness of the intervention
- A similar study can be conducted with more variables like pre-operative educationand psychological preparedness regarding early ambulation
- Early ambulation should be practised routinely as a part of nursing care
- Pre-test post-test design can also be used in future studies by other researchers
- Video-assisted modified early ambulation guide can

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be used preoperatively in future studies to assess the effectiveness of the intervention

Conclusion

Based on the present study, it can be concluded that the modified early ambulation intervention in the study group had a significant effect on the functional activity and psychological wellbeing of study subjects. The modified early ambulation was found to be effective for patients who had undergone abdominal surgery in the study group because it has a favourable outcome that is restoration in terms of functional activity.

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Conflict of Interest: None

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