

Effectiveness of Modified Early Ambulation on Activities of Daily Living, Functional Activity and Psychological Wellbeing among the Patients Undergone Abdominal Surgery

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Abstract: *An experimental study on effectiveness of modified early ambulation on activities of daily living, functional activity and psychological wellbeing among the patients undergone abdominal surgery in Kempagowda Institute of Medical Sciences, Bangalore. Complications due to lack of early ambulation are the main cause for morbidity and mortality in India and all over the world. Many researchers have been done to prove the early ambulation improves postoperative recovery, reduce incidence of postoperative complications and promote early discharge. The investigator has selected only on three aspects of postoperative recovery such as activities of daily living, functional activity and psychological wellbeing. The main objectives of the study were directed to determine the effectiveness of modified early ambulation on activities of daily living, functional activity and psychological wellbeing among the patients undergone abdominal surgery in the both study and control group. Also the study goal was directed to determine the difference between selected demographic variables and activities of daily living, functional activity and psychological wellbeing in the study group and the control group. The collected data were collected and analyzed by using descriptive and inferential statistics (F-test and t-test) was used to evaluate the effectiveness of modified early ambulation. The finding of the study revealed that there was significant difference in modified early ambulation and postoperative scores in the activities of daily living, functional activity and psychological wellbeing in the study group. There is no significant difference in relation to selected demographic variables and activities of daily living, functional activity and psychological wellbeing scores. The conclusion of the study reveals that there is an effectiveness of modified early ambulation on patient's undergone abdominal surgeries.*

Keywords: Modified Early Ambulation, Activities of Daily Living, Functional Activity, and Psychological Wellbeing

1. Introduction

Early ambulation is an important component of postoperative care after abdominal surgery. Its benefits were first reported in 1940's, when early ambulation was observed to hasten recovery and reduce the incidence of postoperative pulmonary complications (Briger 1983). Early ambulation involves an upright position appears to be of great benefits in the early postoperative period with evidence of improvement in pulmonary function (Nielson et al 2003). Upright ambulation assists in the prevention of functional decline and may have a positive effect on depression and anxiety (Brooks- Bruun 1995). Modified early ambulation following abdominal surgery has been measured as the time taken to achieve mobility goals such as sitting out of bed, ambulating with assistance or ambulating independently (Mackay and Ellis 2002, Olsen et al 1997). Ramachandran (1972) conducted an experimental study on the effects of structured and unstructured preoperative teaching on early ambulation during elective abdominal surgery. The study was conducted in Christian Medical College and Hospital, Vellore. The tool used was observation checklist on ability on activities of the patients postoperatively up to the seventh day also Interview guide on early ambulation. The study finally revealed that, there was a significant difference in structured and unstructured preoperative teaching on early ambulation among the study group and the control group.

2. Statement of Problem

Effectiveness of modified early ambulation on activities of daily living, functional activity and psychological wellbeing among patients undergone abdominal surgery in Kempagowda Institute of Medical Sciences, Bangalore, Karnataka.

3. Objectives of the Study

- 1) To find out the effectiveness of modified early ambulation on activities of daily living of the patient undergone abdominal surgery in the study group and control group.
- 2) To assess the effectiveness of modified early ambulation on functional activity of the patient undergone abdominal surgery in the study group and control group.
- 3) To determine the effectiveness of modified early ambulation on psychological wellbeing of the patient undergone abdominal surgery in the study group and control group.
- 4) To determine the difference between selected demographic variables and activities of daily living, functional activity and psychological wellbeing in the study group and control group.

Hypotheses:

Hypothesis 1: H1: There is a significant difference in the activities of daily living among the patients undergone

abdominal surgery who availed the intervention than those who do not.

Hypothesis 2: H2: There is a significant difference in the functional activity among the patients undergone abdominal surgery who availed the intervention than those who do not.

Hypothesis 3: H3: There is a significant difference in the psychological wellbeing among the patients undergone abdominal surgery who availed the intervention than those who do not.

Hypothesis 4: H4: There is no significant difference among selected variables and activities of daily living functional activity, psychological wellbeing among the patients undergone abdominal surgery who availed the intervention than those who do not.

4. Research Methodology

The study design was designed to determine the “effectiveness of modified early ambulation on activities of daily living, functional activity and psychological wellbeing among patient’s undergone abdominal surgery in Kempagowda Institute of Medical Sciences, Bangalore, Karnataka”. Early ambulation procedure done by randomized control experimental design. The schematic representation is as follows

Research design notification:

Group	Pretest (15 th hour after surgery)	Intervention (initiated at 16 th hour after surgery)	Posttest ADL-measured in every 24 hours Functional- measured in every 12 hours Psychological- measured in every 24 hours																														
Study	S1	X Routine care (modified early ambulation intervention on 8 hourly, except 7pm - 7am) The intervention done till the patients walks independently	Activities of daily living <table border="1"> <tr> <td>24hrs</td><td>48hrs</td><td>72hrs</td><td>96hrs</td><td>120</td> </tr> <tr> <td>S2</td><td>S3</td><td>S4</td><td>S5</td><td>S6</td> </tr> </table> Functional activity <table border="1"> <tr> <td>27hrs</td><td>39hrs</td><td>51hrs</td><td>63hrs</td><td>75hrs</td> </tr> <tr> <td>S2</td><td>S3</td><td>S4</td><td>S5</td><td>S6</td> </tr> </table> Psychological wellbeing <table border="1"> <tr> <td>24hrs</td><td>48hrs</td><td>72hrs</td><td>96hrs</td><td>120hrs</td> </tr> <tr> <td>S2</td><td>S3</td><td>S4</td><td>S5</td><td>S6</td> </tr> </table>	24hrs	48hrs	72hrs	96hrs	120	S2	S3	S4	S5	S6	27hrs	39hrs	51hrs	63hrs	75hrs	S2	S3	S4	S5	S6	24hrs	48hrs	72hrs	96hrs	120hrs	S2	S3	S4	S5	S6
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Control	C1	Routine care	Activities of daily living <table border="1"> <tr> <td>24hrs</td><td>48hrs</td><td>72hrs</td><td>96hrs</td><td>120hrs</td> </tr> <tr> <td>C2</td><td>C3</td><td>C4</td><td>C5</td><td>C6</td> </tr> </table> Functional activity <table border="1"> <tr> <td>27hrs</td><td>39hrs</td><td>51hrs</td><td>63hrs</td><td>75hrs</td> </tr> <tr> <td>C2</td><td>C3</td><td>C4</td><td>C5</td><td>C6</td> </tr> </table> psychological wellbeing <table border="1"> <tr> <td>24hrs</td><td>48hrs</td><td>72hrs</td><td>96hrs</td><td>120hrs</td> </tr> <tr> <td>C2</td><td>C3</td><td>C4</td><td>C5</td><td>C6</td> </tr> </table>	24hrs	48hrs	72hrs	96hrs	120hrs	C2	C3	C4	C5	C6	27hrs	39hrs	51hrs	63hrs	75hrs	C2	C3	C4	C5	C6	24hrs	48hrs	72hrs	96hrs	120hrs	C2	C3	C4	C5	C6
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Figure: research design notification

Key:

R: Randomization

X: The intervention by modified early ambulation

S1, C1: Pretest on activities of daily living, functional activity and psychological wellbeing in the study and control group.

S2, S3, S4, S5, S6: Posttest activities of daily living, functional activity and psychological of wellbeing in the study group

Setting of the study: The study was conducted in Kempagowda Institute of Medical Sciences, Bangalore, it is 750 bedded, 300 surgical beds (both male and female) and 5-7 major abdominal surgeries are conducted per day. The study was conducted in male and female surgical wards and surgical intensive care unit in the hospital

Population: The accessible population for the study was patient’s undergone abdominal surgeries in Kempagowda Institute of Medical Sciences, Bangalore.

Sample: The sample for the study is selected randomly for those patients diagnosed to undergone major abdominal surgery. Samples were approached and enrolled in preoperative phase, in order to avoid the dropouts and postoperative exclusions subjects who can be ambulated in the 16th hour is selected for the study group and included in the study. Simultaneously subjects were assigned to be enrolled in for control group.

Sample size: In order to get a comfortable sample size, a total of 150 patients were selected, out of that each 75 were choose for study and control group respectively. In those selected samples were randomly assigned to participate in the study (n = 75 patients) for study group and (n = 75 patients) for control group respectively.

C2, C3, C4, C5, C6: Posttest on activities of daily living, functional activity and psychological wellbeing in control group.

Sample technique: A simple random sampling by using a lottery method was adopted to assign the group. Samples were randomly assigned in study and control group. Equal number of lots (75 chits for the study group and 75 chits for the control group) were made and kept in a box. The lots were picked by the participants from the box. Based on the lot, 75 patients were assigned to the study group and 75 patients were assigned to the control

5. Instrumentation and Scoring Procedure

The study tool consist of four sections

Section- I: Demographic and co-morbidity variables.

Section- II: Observation schedule on restoration of activities of daily living

Section-III: Observation schedule on restoration of functional activities.

Section-IV: Interview guide on psychological wellbeing.

Section: I: Demographic variables such as age, sex, education, exercise, sources of knowledge and co-morbidity. Verbal response was obtained from the patient's undergone abdominal surgery.

Section: II: Consisted of items on activities of daily living among the postoperative patients such as oral hygiene, nutritional needs, elimination needs (Urination and defecation), combing the hair, changing the dress and taking Bath. By observing the patients undergone abdominal surgery, every 24 hours after the surgery.

Scoring and interpretation: Activities of daily living were measured in terms of activities of daily living scores. The minimum score was 7 and maximum score was 21. **Reliability:** The reliability if the tool was established by test-retest method and the calculated correlated coefficient was 0.83

Section: III: Consisted of items on restoration of functional activities such as ambulation (sitting, standing and walking), Respiratory sounds (abnormal and normal sounds), Bowel movements (absent and present), with drawl of IV fluids, with drawl of NG tubes, with drawl of Foley's catheter, starting oral fluids and pain killer administration. The data was obtained by observing the patients undergone abdominal surgery. Every 12 hours after the ambulation.

Scoring and interpretation: Restoration of functional activity was measured in terms of functional activity scores. The minimum score was 0 and maximum score was 10.

Reliability: Calculated inter-rater reliability coefficient score was 0.89.

Section: IV: Consisted of items on psychological wellbeing such as sense of recovery, confidence while walking, importance of walking soon after surgery, abdominal pain reduction after walking, sleep, increase the length of walking soon after surgery, abdominal pain reduction after walking, sleep, increase the length of walking every time, passed flatus, family members happy to watch while walking, ability to control the urine flow and patients opinion about walking after 16 hour of surgery is good. The data was obtained through verbal response from the patient's undergone abdominal surgery in every 24 hours after the surgery.

Scoring and interpretation: Psychological wellbeing was measured in terms of psychological wellbeing scores. The minimum score was 0 and maximum was 10. **Reliability:**

The calculated inter-rater reliability co-efficient showed a score of 0.83.

Data Analysis & Interpretations

The collected data were carefully coded and analyze using the SPSS package (11.5). The modified early ambulation intervention was measured by observational check list and interview schedule at 15th hour (pretest). Modified early ambulation intervention done at 16th hour after surgery for the study group. After modified early ambulation procedures the posttest conducted to measure the effectiveness on activities of daily living (ADL), functional activity and psychological wellbeing. The activities of daily living (ADL) posttest scores measured at 24, 48, 72, 96 and 120 hours. The functional activity posttest scores measured at 27, 39, 51, 63 and 75 hours. The psychological wellbeing posttest scores measured at 24, 48, 72, 96 and 120 hours. At the end, data pertaining to 75 study subjects were included for analysis. Similarly 75 subjects allocated to control group, were included for analysis.

Section: 1: Descriptions of Demographic Variables

Table: Frequency and percentage distribution of demographic variables among study and control group,

n=150						
S.No	Demographic variables	Study Group (n=75)		Control Group (n=75)		χ^2 value and P Value
		No	%	No	%	
1	Age (in Years)					
	a. 41-50	25	33.33	28	37.33	0.36
	b. 51-60	26	34.67	24	32.00	df 2
	c. 61-70	24	32.00	23	30.67	N.S
2	Sex					
	a. Male	42	56.00	44	58.67	0.35
	b. Female	33	44.00	31	41.33	df 1 N.S
3	Education					
	a. Primary School	19	25.33	15	20.00	4.67
	b. High School	17	22.67	21	28.00	df 4
	c. Higher school	17	22.67	20	26.67	N.S
	d. College	14	18.67	13	17.33	p=0.14
	e. Professional	8	10.67	6	8.00	
4	Exercise					
	a. No Practice of Regular exercise	39	52.00	42	56.00	0.89
	b. Regular practice of exercise	36	48.00	33	44.00	df 1 N.S
5	Source of knowledge					
	a. Family members	18	24.00	19	25.33	4.8
	b. Friends	20	26.67	26	34.67	df 4
	c. News paper	21	28.00	17	22.67	N.S
	d. Television	16	21.33	13	17.33	p=0.72
	e. None	0	0.00	0	0.00	
6	Co-Morbidity					
	a. Diabetes	13	17.33	11	14.67	9.07
	b. Hypertension	18	24.00	19	25.33	df 4
	c. Cardiac illness	16	21.33	17	22.67	N.S
	d. Respiratory illness	17	22.67	19	25.33	
	e. Renal illness	11	14.67	9	12.00	

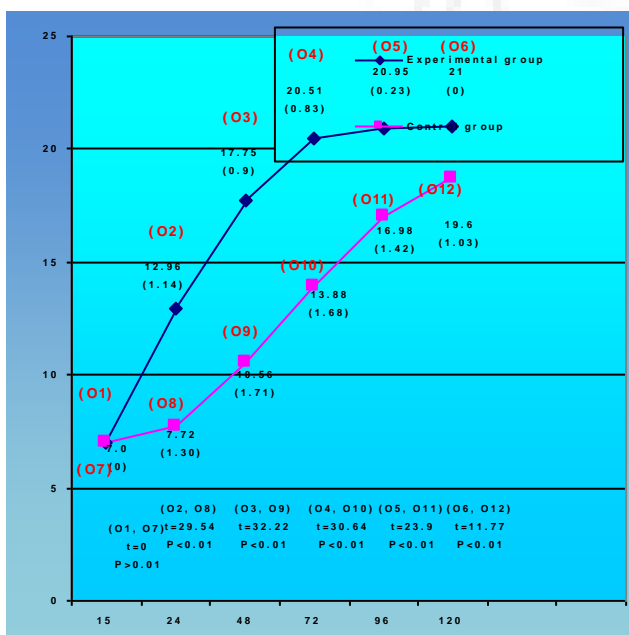
N.S- Not Significant at $p>0.05$
 S- Significant at $P< 0.05$ level

Table-1 Reveals the distribution of patients had undergone abdominal surgeries regarding demographic variables such as age, sex, education, exercise source of knowledge and comorbidity. Regarding age the majority of them 26 (35%) were in the age between 51-60 years in the study group and 28 (37%) of them were in the age between 41-50 years in the control group. 42 (56%) were male in the study group and 44 (57%) of them were male in the control group. 19 (25%) of them were studied primary school in the study group and 21 (28%) of them studied high school in the control group. 39 (52%) were not doing regular practice of exercise in the study group and 42 (56%) were not doing regular practice of exercise in the control group. 20 (27%) were known early ambulation through friends in the study group and 26 (35%) were known about early ambulation through friends in the control group. 18 (24%) were the known case of hypertension in the study group and 19 (25%) were the known case of hypertension and respiratory diseases.

6. Research Findings

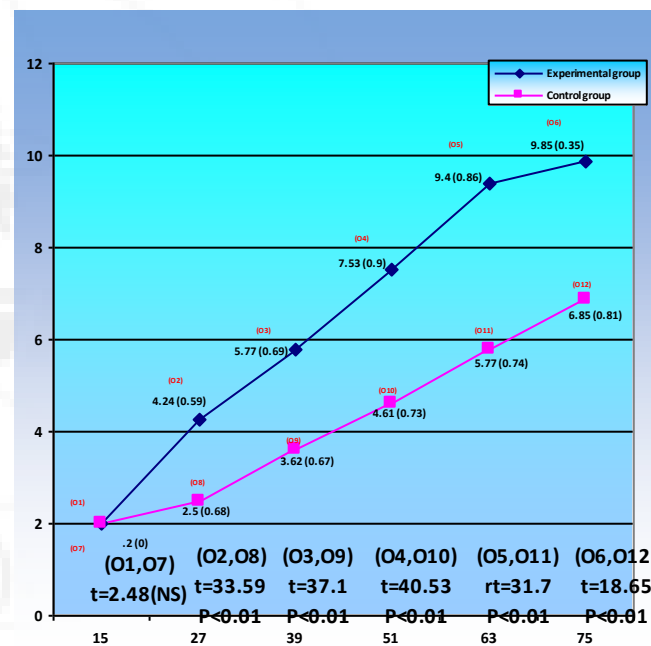
I. Findings on demographic variables of the patients undergone abdominal surgery in study group and control group: Majority of the patients had undergone abdominal surgery in the in the **study group** 26 (35%) were in the age group of 51-60 years, 42 (56%) were male, studied primary school 19 (26%), did not do regular exercises 39 (52%), known about the benefits of early ambulation through friends 20 (27%) and 18 (24%) has hypertension. Majority of patients had abdominal surgery in the **control group** were in the age group of 41-50 years 28 (37%), male 44 (59%), studied high school 21 (28%), did not do regular practice of exercises 42 (56%), known about the benefits of early ambulation through friends 26 (35%) and 19 (25%) also has hypertension.

II. Findings on effectiveness of modified early ambulation on activities of daily living of patients undergone abdominal surgery in the study group and control group:



The posttest mean scores (SD) reported in the study group at regular interval of 24 hours after surgery 12.96 (1.14), 17.75 (0.9), 20.51 (0.83), 20.95 (0.23) and 21 (0) in control group 7.72 (1.03), 10.56 (1.71), 13.88 (1.68), 16.98 (1.42) and 19.6 (1.03) respectively. The obtained t value between study group and control group posttest activities of daily living scores at regular intervals of 24 hours after surgery were t = 29.54 (p<0.01), t = 32.22 (p<0,01), t = 30.64 (p<0.01), t = 23.9 (p<0.01), and t =11.77 (p<0.01) modified early ambulation significantly contributed.

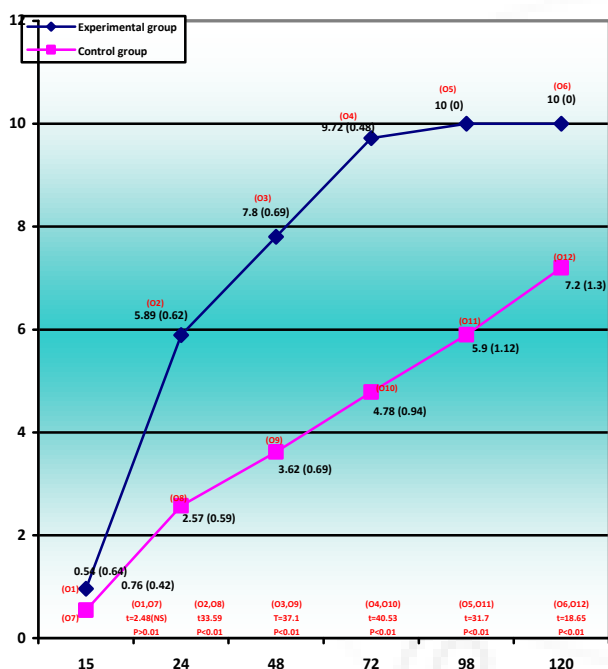
III. Findings on effectiveness of modified early ambulation and functional activity of patients undergone abdominal surgery in the study group and control group: The posttest mean scores (SD) reported in the study group at regular intervals of 12 hour after ambulation 4.24 (0.49), 5.77 (0.69), 7.53 (0.9), 9.4 (0.86) and 9.85 (0.35) and in the control group 2.5 (0.68), 3.62 (0.67), 4.61 (0.73), 5.77 (0.74) and 6.85 (0.81) respectively. The obtained t value between study group and control group posttest functional restoration scores at regular intervals of 12 hours after ambulation were t = 17.98 (p<0.01), 19.36 (p<0.01), 21. 82 (p<0.01), 27.71 (p<0.01) and 29.44 (p<0.01) modified early ambulation significantly contributed.



IV. Findings on effectiveness of modified early ambulation and psychological wellbeing of patients undergone abdominal surgery in the study group and control group: The posttest mean scores (SD) reported in the study group at regular intervals of 24 hours after surgery 5.89 (0.62), 7.8 (0.69), 9.72 (0.48), 10 (0), and 10 (0) and in the control group 2.57 (0.59), 3.62 (0.69), 4.78 (0.94), 5.9 (1.12) and 7.2 (1.3) respectively. The obtained t value between study group and control group posttest psychological wellbeing scores at regular intervals of 12 hours after ambulation were t = 33.59 (p<0.01),t = 37.1 (p<0.01), t = 40.53 (p<0.01), t = 31.7 (p<0.01) and t = 18.65 (p<0.01) modified early ambulation significantly contributed.

V. Findings on difference among selected variables and activities of daily living, functional activity and psychological wellbeing on patients undergone abdominal surgery in the study group and control group:

The obtained F and t values among demographic variables and activities of daily living in the study group were $F=.721$ ($P=.554$), $t=1.13$ ($p=.273$), $F=1.62$ (1.328), $t=1.24$ ($.283$), $F=.731$ ($.564$), $F=.724$ ($p=.543$) and $F=.725$ ($p=.543$). In the control group $F=1.625$ ($.217$), $t=.027$ ($p=.058$), $F=1.752$ ($P=.243$), $t=.29$ ($p=.059$), $F=1.723$ ($P=.224$), $F=.724$ ($p=.543$), $F=1.645$ ($P=.346$) and $F=1.645$ ($P=.346$) regarding activities of daily living and demographic variables like age, sex, education, exercise, source of knowledge and comorbidity were not significant at .05 level in the study group and control group. The demographic variables did not influence the posttest activities of daily living scores in the study group and control group, the effectiveness of modified early ambulation was independent of the demographic variables.



The obtained F and t values among demographic variables and functional activity in the study group were $F=.826$ ($p=.499$), $t=.518$ ($p=.611$), $F=.632$ ($p=.347$), $t=.618$ ($p=.643$), $F=.743$ ($p=.387$) and $F=.639$ ($P=.462$). In the control group $F=1.153$ ($p=.358$), $t=.373$ ($p=.714$), $F=1.075$ ($p=.219$), $t=.328$ ($p=.643$), $F=1.348$ ($p=.475$) and $F=1.462$ ($p=.592$) regarding functional activity and demographic variables like age, sex, education, exercise, source of knowledge and comorbidity were not significant at .05 level in the study group and control group. The demographic variables did not influence the posttest functional activity scores in the study group and control group. The effectiveness of modified early ambulation was independent of the demographic variables.

The obtained F and t values among demographic variables and psychological wellbeing in the study group were $F=.032$ ($p=.992$), $t=.186$ ($.855$), $F=1.64$ ($p=.843$), $t=.543$ ($.684$), $F=.138$ ($p=.993$) and $F=.149$ ($p=.732$). In the control group $F=2.159$ ($p=.133$), $t=.269$ ($p=.943$), $F=2.492$ ($p=.148$), $t=.652$ ($p=.537$), $F=2.243$ ($p=.145$), $F=2.243$ ($p=.145$) and $F=1.746$ ($p=.139$) regarding psychological wellbeing and demographic variables like age, sex, education, exercise, source of knowledge and comorbidity were not significant at .05 level in the study group and control group. The demographic variables did not influence the posttest psychological wellbeing scores in the study group and control group. The effectiveness of modified early ambulation was independent of the demographic variables.

The demographic variables did not influence the posttest psychological wellbeing scores in the study group and control group. The effectiveness of modified early ambulation was independent of the demographic variables.

7. Conclusion

The modified early ambulation intervention shown significant changes in the postoperative recovery, it positively influence and improves the postoperative recovery and also physical, functional and psychological wellbeing after surgery will be of greater advantage to the patient. Moreover it forms a holistic approach that helps to maintain health of patients in study group. In this context, finding of this study that modified early ambulation exhibit greater postoperative recovery and higher performance of activities of daily living than control subjects during the initial period of recovery after surgery is noteworthy. The modified early ambulation intervention has 3 main steps sitting in the bed, standing and limited walking and extended walking. The strong motivation, great support and assistance is very much needed for the patient after abdominal surgery.

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