

EFFECTIVENESS OF ROCKING CHAIR EXERCISE ON RESUMPTION OF GASTROINTESTINAL FUNCTION

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ABSTRACT

The gastrointestinal system is responsible for the breakdown, digestion and absorption of various foods and liquids needed to sustain life, and also responsible for elimination of solid waste. One of the most common causes of extended length of hospital stay following abdominal surgery is postoperative ileus (POI), which is temporary impairment of gastrointestinal motility characterized by abdominal distension, pain, delayed passage of gas and stool, nausea, vomiting, and diminished appetite. The condition may delay patients ambulation, increasing the risk for pulmonary and thromboembolic complications, and it may delay enteral feedings or resumption of a solid diet, resulting in poor nutrition with delayed wound healing. The use of opioid analgesics for postoperative pain relief often exacerbates POI.

The Objective was to determine the effectiveness of rocking chair exercise on resumption of gastrointestinal function among patients subjected to abdominal surgery. 2. Associate the resumption of gastrointestinal function with selected background variable among patients subjected to abdominal surgery.

An experimental posttest only study design was used in this study. The patients (n=15) who received routine care with rocking chair exercise were referred as study group and the patients (n=15) who received routine care for three days were referred to as a control group.

In regard to the percentage distribution of flatus passed day by the patients after practicing rocking chair exercise, eight patients (53.3%) passed flatus on the third day, six patients (40%) passed flatus on the fourth day in the study group and whereas in the control group, nine patients (60.0%) passed flatus on the fourth day, two patients (13.3%) passed flatus on the fifth day. Considering the day of discharge from postoperative unit after the rocking chair exercise nine patients (60.0%) got discharged on the fourth day and three patients (20.0%) got discharged on the fifth day in the study group. Among the patients in the control group who received routine care, nine patients (60.0%) got discharged on the fourth day and six (40.0%) got discharged on the fifth day. But these findings were statistically non significant. The independent t test was estimated by Brief pain inventory's level of pain and level of pain interference among the study and control groups. The difference in level of pain showed a statistical significant reduction in pain at the level of $p < 0.001$ (t-value 9.318) and level of pain interference showed a highly statistical significant in reduction of interference at the level of $p < 0.001$ (t-value 12.291).

This study attempted to explore a method to resolve POI in postoperative abdominal surgery patients using randomized assignment of patients to either the standard of care group or the rocking motion group. The goal of this study was to explore the effects of an alternative and complementary intervention, "rocking chair exercise," on POI, based on premises of stress response theories that purport that relaxation techniques can mediate stress.

Key Words: Rocking chair exercise, postoperative ileus, resumption of gastrointestinal function, pain.

INTRODUCTION

Most people say the heart and the brain are the most important organ in the body, completely overlooking the gastrointestinal tract (GI tract). Though definitely they are not the most attractive organs in the body, they are certainly among the most important. The 30+ foot long tube that goes from the mouth to the anus is responsible for the many different body functions. The GI tract is imperative for our well being and our life-long health.

A non-functioning or poorly functioning GI tract can be the source of many chronic health problems that can interfere

with our quality of life. In many instances the death of a person begins in the intestines.

Postoperative ileus (POI) is a predictable delay in gastrointestinal (GI) motility that occurs after abdominal surgery. Probable mechanisms include disruption of the Sympathetic/parasympathetic pathways to the GI tract, inflammatory changes mediated over multiple pathways, and the use of opioids for the management of postoperative pain. Current management strategies consist of careful selection of anaesthetic and analgesic choices before, during, and

after surgery, along with the avoidance of nasogastric tube feedings and the use of supportive therapies. One common non-invasive postoperative standard of care intervention that

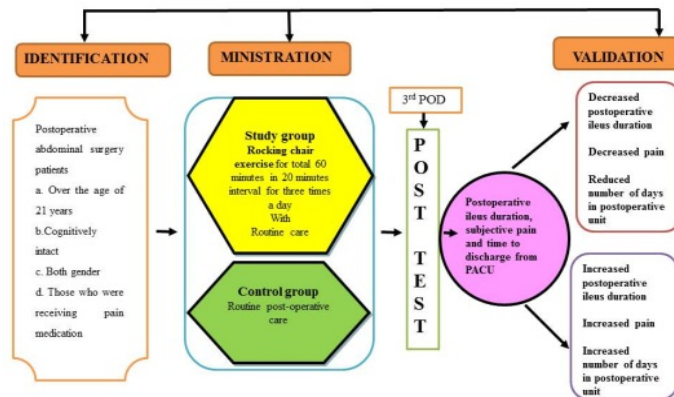


FIGURE 1. CONCEPTUAL FRAMEWORK BASED ON MODIFIED WIDENBACH'S HELPING ART OF CLINICAL NURSING THEORY (1964)

is believed to prevent and resolve POI is early ambulation of the patient followed by orders to increase the time spent sitting in a chair and walking (Waldhausen & Schirmer, 1990). Evidence to support the effectiveness of these interventions remain unchallenged and unconvincing (Brieger, 1983; Holte & Kehlet, 2002; Schuster & Montie, 2002). The need for controlled studies of other interventions using randomized comparison treatment groups set into motion the design and conduct of this study.

Objective:

1. Determine the effect of Rocking-chair exercise on resumption of gastrointestinal function among patients subjected to abdominal surgery.
2. Associate the resumption of gastrointestinal function with selected background variable among patients subjected to abdominal surgery.

MATERIALS AND METHODS

The research design selected for this study is experimental post test only design. This study was conducted in male and female surgical wards which are in the second floor of Sri Ramachandra Hospital with the bed strength of 90 beds in male surgical ward and 90 beds in female surgical ward. Everyday an average of two or three patients will be subjected to abdominal surgery at Sri Ramachandra Hospital. Accessible populations were both male and female patients subjected to abdominal surgery in both male and female surgical wards of Sri Ramachandra Hospital, Chennai, India. The sample size consisted of 30 patients (study group 15 & control group 15) subjected to abdominal surgery. The subjects were randomly assigned to study and control group based on simple random sampling lottery technique who fulfilled the inclusion criteria. Postoperative abdominal surgery patients with over the age of 21 years, Cognitively

intact, and both gender. The tool consists of section A and section B. Background variables include age, gender, education, marital status, income, pain medication route and type of abdominal surgery. **Gastrointestinal Resumption Indicators (GRI)** includes three components namely bowel sounds heard, flatus passed day and day of discharge from postoperative unit which will be observed everyday for the patient before exercise session begins for the study group and before routine care for the control group. The Brief Pain Inventory (BPI) allows patients to rate the severity of their pain and the degree to which their pain interferes with common dimensions of feeling and function. The BPI has shown to be an appropriate measure for pain caused by a wide range of clinical conditions. The BPI contains two scales Level of pain and Level of pain interference. The values on the pain scale correspond to level of pain as follows (1 – 3) Mild pain, (4 – 6) Moderate pain, (7 –10) Severe pain. The values on the level of pain interference correspond to interference levels as follows (1 – 3) Mild interference, (4 – 6) Moderate interference, (7 –10) Complete interference. Validity was obtained from nursing experts. Reliability of the tool Gastrointestinal Resumption Indicators (GRI) was evaluated by inter-rater method ($r=0.89$) and the tool Brief Pain Inventory was evaluated by the coefficient alpha ($r = 0.97$), both showed high degree of reliability. The pilot study was conducted in the male and female surgical wards of Sri Ramachandra Hospital, from 20.04.2011 to 25.04.2011. The study was conducted with 8 samples, 4 in each group who satisfied the inclusion criteria. The study was found to be feasible by the investigator.

Procedure of study:

A written permission to conduct the study was obtained from the Chairman, Nursing Education; Ethical Committee and Departmental heads of surgery. Main study was conducted from 10th June 2011 to 10th July 2011.

Data collection format was formulated and it comprised of background variables and the tool. According to inclusion and exclusion criteria, patients were selected. The patients were explained about the research and informed consent was obtained. They were assigned randomly either to the study group or to the control group depending on the lot selected from the box. Rocking chair exercise was given to the study group patients along with routine care till their discharge from the immediate postoperative unit, whereas the control group received only the routine care. Posttest was assessed on the third postoperative day for both the study and the control group using the tools Gastrointestinal Resumption Indicators (GRI) and The Brief Pain Inventory (BPI) short form to assess the effectiveness of rocking chair exercise on resumption of gastrointestinal function.

RESULTS

Table 1. Frequency and percentage distribution of background variables among patients subjected to abdominal surgery in the study group and the control group (N=30)

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Background Variables	Study Group (n=15)		Control Group (n=15)		χ^2 p value
	No.	%	No.	%	
1. Age in years					2.619
a. 21 - 40	08	53.3	04	26.7	0.270 (N.S)
b. 41 - 60	06	40.0	08	53.3	
e. >60	01	06.7	03	20.0	
2. Gender					2.222
a. Male	11	73.3	07	46.7	0.136 (N.S)
b. Female	04	26.7	08	53.3	
3. Educational status					6.200
a. Not educated	03	20.0	02	13.3	0.185 (N.S)
b. Primary school	04	26.7	02	13.3	
c. High school / SSLC	07	46.7	05	33.3	
d. Pre university course (PUC)	00	00.0	05	33.3	
e. Degree and above	01	06.6	01	06.8	
4. Marital status					0.844
a. Married	08	53.3	07	46.7	0.839 (N.S)
b. Unmarried	04	26.7	05	33.3	
c. Divorced	02	13.3	01	06.7	
d. Widowed	01	06.7	02	13.3	
5. Income (Monthly in Rupees)					10.694
a. <3000	05	33.3	00	00.0	0.005 (N.S)
b. 3001 – 6000	01	06.7	08	53.3	
c. >6000	09	60.0	07	46.7	
6. Pain medication route					1.333
a. Intra venous	13	86.7	13	86.7	0.513 (N.S)
b. Intra muscular	02	13.3	01	06.6	
c. Epidural	00	0.00	01	06.7	
7. Type of abdominal surgery					0.833
a. Laparotomy	13	86.7	11	73.3	0.361 (N.S)
b. Appendectomy	02	13.3	04	26.7	

Table 1 depicts the frequency and percentage distribution of background variables among patients subjected to abdominal surgery in the study group and control group.

NS – Non significant.

Table 2. Frequency and percentage distribution of Gastrointestinal Resumption Indicators (GRI) among patients subjected to abdominal surgery in the study and the control group (N=30)

Clinical variables	Study group (n=15)		Control group (n=15)		χ^2 p value
	No.	%	No.	%	
1. Bowel sound heard					3.175 0.365 (N.S)
a. Second day	02	13.3	02	13.3	
b. Third day	11	73.4	07	46.7	
c. Fourth day	02	13.3	05	33.3	
d. Fifth day	00	00.0	01	06.7	
2. Flatus passed day					4.933 0.177 (N.S)
a. Second day	01	06.7	00	00.0	
b. Third day	08	53.3	04	26.7	
c. Fourth day	06	40.0	09	60.0	
d. Fifth day	00	00.0	02	13.3	
3. Day of discharge from postoperative unit					4.000 0.135 (N.S)
a. Third day	03	20.0	00	00.0	
b. Fourth day	09	60.0	09	60.0	
c. Fifth day	03	20.0	06	40.0	

NS – Non significant.

Table 3 depicts the frequency and percentage distribution of resumption of postoperative ileus among patients subjected to abdominal surgery in the study group and the control group.

Table 3. Frequency and percentage distribution of level of pain among patients subjected to abdominal surgery in the study and control groups (N=30)

Level of pain	Study group (n=15)		Control group (n=15)	
	Posttest		Posttest	
	No	%	No	%
Mild pain	05	33.3	00	0.0
Moderate pain	10	66.7	02	13.3
Severe pain	00	0.0	13	86.7

Table 3 shows the level of pain the study group and the control group during the posttest 5 (33.3%) had mild pain, 10 (66.7%) had moderate pain and no severe pain, whereas in the control group none of the patients had mild pain, 2 (13.3%) had moderate pain and 13 (86.7%) had severe pain.

Table 4. Frequency and percentage distribution of level of interference among patients subjected to abdominal surgery in the study and the control groups (N=30)

Level of interference	Study group (n=15)		Control group (n=15)	
	No.	%	No.	%
No interference	01	6.7	00	0.0
Mild interference	08	53.3	00	0.0
Moderate interference	06	40.0	05	33.3
Complete interference	00	0.0	10	66.7

Table 4 illustrates that the study and the control groups during the posttest one (6.7%) had no interference, 8 (53.3%) had mild interference, 6 (40.0) had moderate interference and no complete interference, whereas in the control group, 5 (33.3%) had moderate interference and 10 (66.7) had complete interference.

Table 5. Mean, Standard deviation, Independent t and p value of Brief Pain Inventory among patients subjected to abdominal surgery in the study and control groups (N=30).

Variables BPI	Study Group (n=15)		Control Group (n=15)		MD	Independent t test & P value
	Mean	SD	Mean	SD		
Level of pain	3.26	1.162	7.46	1.302	4.20	9.318 0.000***
Level of pain interference	3.53	0.915	8.00	1.069	4.46	12.291 0.000***

Table 5 shows that in the level of pain and level of pain interference there was a highly significant difference ($p < 0.001$) in the score between the study and the control groups.

The association of selected background variables with the Gastrointestinal Resumption Indicators (GRI) and Brief Pain Inventory among the study and control groups revealed that there was no statistically significant difference existed.

DISCUSSION

The study was conducted to assess the resumption of gastrointestinal functions among patients subjected to abdominal surgery who practiced rocking chair exercise for three days; the data were collected on the end of the third day using the background variables Gastrointestinal Resumption Indicators (GRI) and the brief pain inventory tool. Table 1 depicts the frequency and percentage distribution of Gastrointestinal Resumption Indicators (GRI) among patients subjected to abdominal surgery. With regard to the percentage distribution of flatus passed day by the patients after practicing rocking chair exercise, one patient (6.7%) passed flatus on the second day, eight patients (53.3%) passed flatus on the third day, six patients (40%) passed flatus on the fourth day in the study group and whereas the control group received only routine care and four patients (26.7%) passed flatus on the third day, nine patients (60.0%) passed flatus on the fourth day and two patients (13.3%) passed flatus on the fifth day.

Considering the day of discharge from postoperative unit after the rocking chair exercise three patients (20.0%) got discharged on the third day, nine patients (60.0%) got discharged on the fourth day and three patients (20.0%) got discharged on the fifth day in the study group. Among the patients in the control group who received routine care, nine patients (60.0%) got discharged on the fourth day and six patients (40.0%) got discharged on the fifth day. These findings were found statistically non significant.

The effect of rocking chair exercise on level of pain estimated by Brief pain inventory during posttest (table. 5) showed that the mean value of pain was lower in the study group (3.26) than in the control group (7.46). This difference showed a statistical significance at the level of $p < 0.000$ *** which was highly significant.

The findings revealed that there was a significant decrease in post operative ileus duration, the level of pain and the time to discharge among patients in the study group who received routine care with rocking chair exercise compared to patients in the control group who received routine care. These findings were similar to the study conducted by Massey RL. (2010) to evaluate the effects of a rocking intervention in cancer patients undergoing surgery. Massey enrolled 66 surgical oncology patients randomizing 34 patients to get rocking chairs placed by their beds and 32 who had standard non rocking chairs. There were no differences in the rocking and non rocking groups in age, gender, ethnicity, marital status, or diagnosis. Surgical procedures included colectomy, liver resection, small bowel resection, and exploratory laparotomy. A majority of patients had undergone previous abdominal surgery. Patients who used the rocking chairs after their procedures passed flatus on an average of 16.8 hours sooner than non rocking patients. Although patients in the non rocking group, on an average, used more pain medication, the difference between group was not significant (36.48 mg versus 29.35 mg, $p=0.604$). Unlike previous studies, time of discharge was not significantly different either, being 7.69 days for the rocking group and 7.89 days for the non rocking group ($p=0.837$). However, the intervention was readily accepted by the intervention group, and although relaxation was not measured, patients consistently reported that rocking relaxed them. In general, patients in both the groups spent similar amount of time in the chairs and walking. This study contributes new evidence to support the use of rocking-chair motion as a modulator of [postoperative ileus] duration in patients with cancer who had abdominal surgery.

The association of selected background variables with the Gastrointestinal Resumption Indicators (GRI) and Brief Pain Inventory among the study and control groups revealed that there was no statistically significant difference that existed.

CONCLUSIONS : This study attempted to explore a method to resolve POI in postoperative abdominal surgery patients using randomized assignment of patients to either the standard of care group or the rocking motion group. The goal of this study was to explore the effects of an alternative and complementary intervention, "rocking chair exercise," on POI, based on premises of stress response theories that purport that relaxation techniques can mediate stress.

More research is needed to investigate these premises and interventions further to determine the effectiveness of relaxation and its ability to moderate the sympathetic effects of the surgical stress and alter the duration of POI. All in all, this investigator thinks that this initial study will provide the fuel for future research by nurses regarding this and other clinical issues faced by our postoperative patients.

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