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Research paper

Effect of early and progressive exercises on post-caesarean section recovery among women attending women's heath hospital

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Abstract

Background: Cesarean section is the oldest surgery performed in obstetrics. Time needed for recovery of post cesarean section woman is more than those needed for vaginal delivery. The nursing role is to make women after C. S more independent in resuming their daily activities as soon as possible. This can be achieved by early exercises to faster her recovery and reduce complications associated with prolonged bed rest after C.S.
The study aimed to assess the effect of early and progressive exercises on C. S recovery among post caesarean women for women attending Women's Health Hospital, Assiut University, Egypt.
Methods: A study and control quasi-experimental design used on 340 posts cesarean section women divided into two groups, study and control, each group contained 170 postpartum women. A structured interviewing questionnaire used as a tool which included Sociodemographic, Obstetric characteristics and follow-up data.
Results: Findings of this study revealed that there were significant differences between both groups regarding post-cesarean section recovery variables, which included analgesics required, self-void after catheter removal, breast feeding, oral hydration, and first flatus passed after exercises as per the independent t-test ($p<0.05$).
Conclusion: Early and progressive exercises had an effective role in improving post cesarean section women recovery.
Recommendations: Early and progressive exercises should be encouraged as a routine part of care for women within 2 hours after cesarean section.

Keywords: *Progressive Exercises; Caesarean Section; Recovery.*

1. Introduction

Surgical incisions made through abdominal and uterine wall to deliver the fetus through caesarean section. Although it is done to save the lives of thousands of women and fetuses, it carries a risk of immediate and potentially long-term complications (Ricochet, 2016).
About 32.2% of women in 2014 gave birth by cesarean section in the United States (Hedwige, 2016). The rate of caesarean section in Egypt increased from 4.6% in 1990 to 51.8% in 2014 (Ana Pilar et. al, 2016). Some possible reasons for increasing CS rates are fear of pain; concerns about genital repairs after vaginal delivery; misconception that CS is safer for the baby; the convenience for health professionals and also for the mother and family; fear of medical litigation and lower tolerance to any complications or outcomes other than the perfect baby (Abdel-Aleem et. al, 2013).
Approximately two-fold increase in maternal mortality and morbidity with cesarean delivery than in a vaginal delivery. Although saving the lives of thousands of women and fetuses may do through cesarean section, there were different complications than women may face, which included infection of wound and urinary tract infection, cardiovascular as postural hypotension and deep venous thrombosis, and gastrointestinal as constipation (American College of Obstetricians & Gynecologists, 2014).
In the recovery room after CS vital sign was taken every 15 minutes for the first 1-2 hours by the nurse, also she assesses urine output every hour, palpates the fundus for firmness, pays alert to the amount of lochia, and assesses the level of pain and need for analgesic (Julie, 2016). One of the important aspects of comprehensive nursing care post-surgically is progressive exercises, which included exercising in bed, sitting out of bed, standing, walking in the room, or walking outside the room (Feldheiser et. al, 2015).
Immobility after cesarean section has a different effect of the women physically and mentally, the physical effect may include urinary tract infection, deep venous thrombosis, bowel obstruction, increased pain intensity and pressure ulcer. Mental effect appears in the presence of different levels of depression. On the other hand, early exercises have various benefits as it improved functional mobility, muscle tone strengthens as it alleviates pain intensity, involution of the uterus, lochial drainage, gastrointestinal and urinary tract function, resumption and enhancement of wound healing (Harmanjyot et. al, 2015).
There are criteria to help the nurse to determine if the women ready to exercise and ambulate early, which included stable vital signs, ability to recognize time, place, and person, adequate pain control, and sufficient treatment of nausea and vomiting (Frank and Greg, 2012). Women walking as a part of exercises, firstly, may need help from nurse or their relatives post cesarean section,

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especially when they begin to walk. These finally improved women outcomes and fast their recovery (Mikkelsen et. al, 2014)
Moreover, after C. S the average duration of hospital stay for most postpartum women was two to three days. Encouragement of women to get up and walk after C. S soon after C. S plays an important role in, speeding women's recovery and reduce the duration of hospital stay (Berghella, 2015).

2. Aim of the study

To assess the effect of early and progressive exercises on post caesarean section recovery among women attending Women's Health Hospital, Assiut University, Egypt.

3. Subjects and methods

Study design was a study and control quasi-experimental design. This study was conducted at postpartum ward of Women's Health Hospital at Assiut University, Egypt. According to sample size equation, the sample included 340 women. The sample divided into two main groups study and control, 170 women for each group. Women who excluded from the study included high-risk pregnancy (women with any medical disorders associated with pregnancy, and women who had complications as intra and post caesarean section hemorrhage and eclampsia)

3.1. Tools of data collection

An interview questionnaire was designed by researchers based on various international and local literatures. This was reviewed by a panel of 3 experts within the field of Obstetrics and Gynecological nursing and medical staff to ensure validity and reliability of the questionnaire before using it.
Parts of the questionnaire:
Part one: which included data related to socio demographic characteristics as age, occupation, educational level, and residence.
Part two: included data related to obstetric characteristics of the participant women as parity, and previous caesarean section, duration of current pregnancy.
Part three: included data after caesarean section as time of exercises after C. S, and vital signs and post- caesarean section recovery as total urine output, passage of flatus, initiation of breastfeeding after caesarean section, and duration of hospital stay.
Part four: pain assessment scale which determined by using a numerical rating scale of pain, which was developed by national comprehensive cancer network 2007, as women were given a score to the level of pain, she felt from 0 to 10. This divided into three levels mild from 0-3, moderate from 4-7, and severe than was more than 7. Pain was assessed before exercises and immediately after walking as a part of exercises.
Part five: included data related to follow up women in both groups.

3.2. Procedure

Researchers interviewed each woman at postpartum ward (after C. S) and collected the data recorded in the questionnaire for both groups. This occurred after full explanation the nature of the study and took written consent to be included in the study.
Intervention phase:
Before implementation of the study, an official permission was obtained from the Dean of the Faculty of Nursing directed to the director of Women's Health Hospital, Assiut University, Egypt, after full explanation of the aim of the study. The pilot study was carried out on 10% (34) of women before implementation of the study to test the clarity and feasibility of the tools.
The necessary modifications were done based on the results from the pilot study. Women who participated in the pilot study were not included in the main a study. Data were collected in 7 months duration from 1/5/2016 to 30/11/2016, Follow-up of the women end in 20/12/2016.researchers Researchers started the intervention phase with women of the control group first then implement the study intervention with women of the study group to consider ethical issues of distributing care of the women.
For control group:
Researchers took data as personal data, obstetric profile, observations within the first 5 hours after C. S as assess catheter for amount of urine output, and data regarding Post C. S recovery. To assess the women's recovery, the study tool used to assess analgesics needed after exercises, catheter duration, self-void after catheter removal, breast feeding, oral hydration, passage of first flatus after exercises, and duration of hospital stay. Women of the control group were assessed with the normal routine care, i.e. walking at <5 -12 hours after caesarean section as usually practical.
For study group:
Women in this group were assessed by using the study questionnaire that was designed by researchers to implement the early and progressive exercises for post C. S women. Researchers assessed the vital signs within the first 5hours as the following every 15 minutes for the first 1-2 hours and then hourly. Progressive exercise was applied to the post CS women under the direction of the researchers within 2 hours and began by exercising in bed for the extremities, then took the semi sitting position for 30 minutes, then sitting beside the bed for 10 minutes while her legs were hanging down, standing, according to Royal Australian and New Zealand College guidelines. Also walking in and outside the room with the support from the researchers or their relatives from a distance of 50 meters when they completed five-hour post CS (Royal Australian and New Zealand College, 2012).
Pain score was assessed two times only first assessment was taken before exercises. The second was taken immediately after walking the distance of 50 meters by using a numerical rating scale, which was developed by national comprehensive cancer network. All women (study &control group) were kept under observation throughout the procedure and monitored for any discomfort. After exercises, women were evaluated with the help of structured assessment questionnaire for intensity of post cesarean section pain, use of analgesics after exercises, duration of catheterization, self-void after removal of the catheter, passage of first flatus, initiation of oral hydration, initiation of breastfeeding after exercises, and duration of hospital stay...
Follow up:
All women from both groups (study &control) groups were asked for coming into the outpatient clinic after ten days of cesarean section for follow up. In this phase, researchers assessed wound healing and observe for any complications occurred to them after discharge, which were diagnosed by the help of the attendant physicians at the postpartum outpatient clinic. There were 9 missed cases in control group and 4 in the study group.
Ethical consideration
The study protocol was approved by pertinent research and ethics committees. No harmful procedure was affected in the condition of the mother. Oral informed consent was taken from every woman before inclusion in the study.

3.4. Statistical analysis

Data entry and statistical analysis were done using Statistical Package for the Social Sciences (SPSS, version 18). Comparison between the groups was done using Student's t-test to compare the mean values between groups in scale variables. For analysis $P<0.05$ was considered significant.

4. Results

Table 1: Distribution of the Studied Women According to Their Socio Demographic Characteristics

Sociodemographic characteristics	Type of group Study N=(170) No	(%)	Control N=(170) No	(%)	P-value
1) Age/years					
• 15-less than 20 years	16	9.4	12	7.1	0.708
• 20-35 years	136	80	141	82.9	
• More than 35 years	18	10.6	17	10	
2) Occupation					
• Housewife	164	96.5	163	95.9	0.777
• Employed	6	3.5	7	4.1	
3) Residence					
• Urban areas	45	26.5	34	20.0	
• Semi urban	52	30.6	52	30.6	0.316
• Rural areas	73	42.9	84	49.4	
4) Educational level					
• Illiterate	38	22.4	38	22.4	
• Read and write	13	7.6	15	8.8	
• Primary and elementary	43	25.3	38	22.4	
• Secondary	47	27.6	56	32.9	0.749
• University	29	17.1	23	13.5	

Table 2: Distribution of the Studied Women According to Their Obstetric Characteristics

Obstetric profile	Type of group Study N=(170) No	(%)	Control N=(170) No	(%)	P-value
1) Number of Parity					
• Primi para	37	21.8	48	28.2	0.168
• Multi para	133	78.2	122	71.8	
2) Previous C.S					
• This is first CS	70	41.2	87	51.2	
• Previous 1	50	29.4	38	22.4	0.154
• Previous 2 or more	50	29.4	45	26.5	
3) Duration of pregnancy / Weeks					
• Pre term	26	15.3	37	21.7	
• Full term	136	80	130	76.5	0.115
• Post term	8	4.7	3	1.8	
4) The primary indication for caesarean					
• Maternal	96	56.5	107	63	
• Fetal	48	28.2	48	28.2	0.170
• Maternal &fetal	26	15.3	15	8.8	
5) Type of C.S					
• Elective	111	65.3	106	62.4	0.573
• Selective	59	34.7	64	37.6	

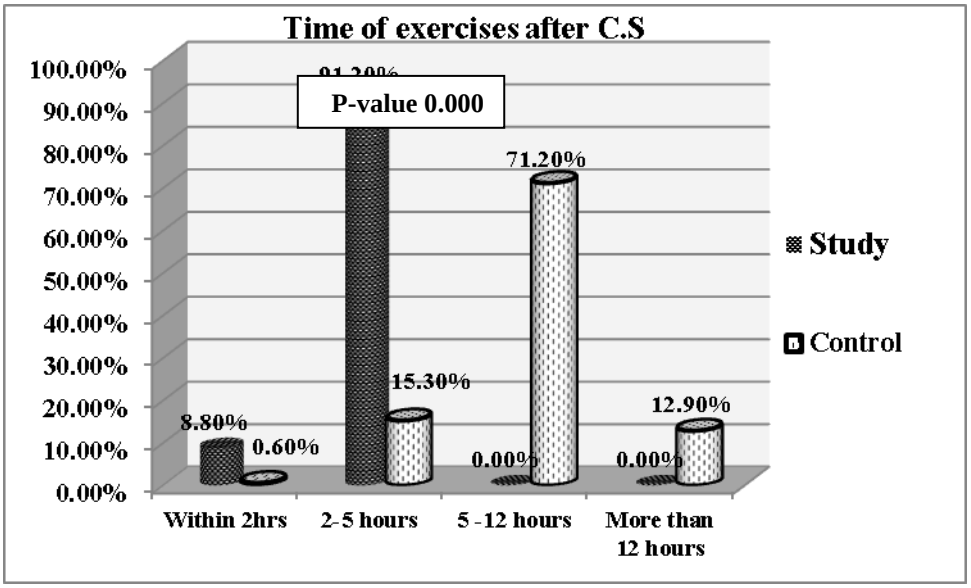

Fig. 1: Time of Exercises after C.S for Both Groups.

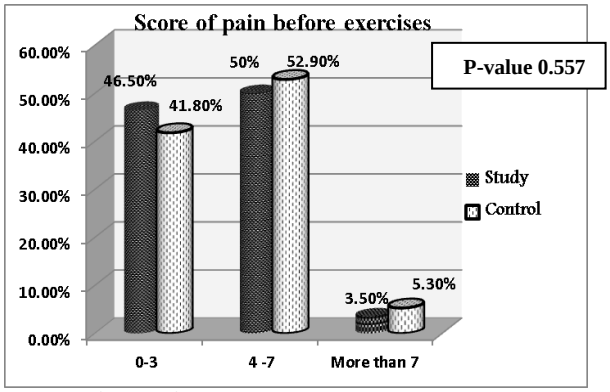

Fig. 2: Score of Pain before Exercises According to Numerical Rating Scale.

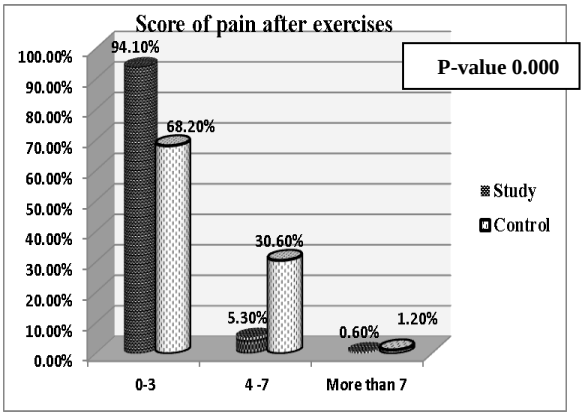

Fig. 3: Score of Pain after Exercises According to Numerical Rating Scale.

Table 3: Distribution of the Studied Women According to Their Baseline Data within First 5 Hours after Caesarean Section

Variables	Type of group Study N=(170) No	(%)	Control N=(170) No	(%)	P-value
1) Vital signs					
• Normal	169	99.4	165	97.1	0.099
• Abnormal	1	0.6	5	2.9	
2) Total Urine Output					
• Less than 350 ml	7	4.1	5	2.9	
• 351-500 ml	81	47.6	50	29.5	0.001
• >500 ml	82	48.2	115	67.6	
3) Passed flatus					
• Yes	69	40.6	8	4.7	0.000
• No	101	59.4	162	95.3	
4) Breastfeeding initiation					
• Yes	125	73.5	47	27.6	
• No	31	26.5	123	62.4	0.000

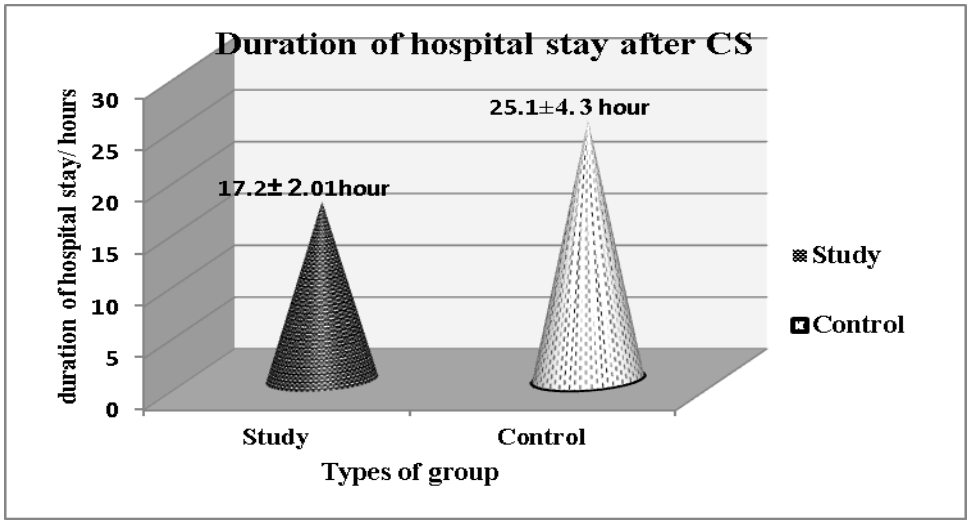

Fig. 4: Mean Duration of Hospital Stay for Women in Both Groups after Caesarean Section.

Table 4: Distribution of the Studied Women According to Their Post- Caesarean Recovery in Both Groups

Variables	Type of group Study N=(170) No	(%)	Control N=(170) No	(%)	P-value
1) Number of analgesics required after exercises					
• No or one injection	163	95.9	138	81.2	.000
• More than one injection	7	4.1	32	18.8	
2) Duration of catheterization after CS					
• 5-10 hours	49	28.8	32	18.8	
• >10-15 hours	84	49.4	73	42.9	.006
• >15-20 hours	33	19.4	60	35.4	
• More than 20 hours	4	2.4	5	2.9	
3) Self-void after removal of catheter					
• Within first hour	87	51.2	60	35.3	
• 1-2 hour	65	38.2	82	48.2	.011
• >2 hour	18	10.6	28	16.5	
4) Breast feeding and Holding baby independently after caesarean section					
• Within the first 5 hour					
• >5 hour	94	55.3	25	14.7	
	76	44.7	145	85.3	.000
5) Start oral hydration after caesarean section					
• Within the first 5 hour	146	85.9	97	57.1	.000
• >5 hour	24	14.1	73	42.9	
6) First flatus passed after exercises					
• Within first hour	100	58.8	37	21.8	.000
• > 1 hour	70	41.2	133	78.2	

Table 5: Post-Operative Complications among Post-Caesarean Women in Both Groups

Variables	Type of group Study N=(170) No	(%)	Control N=(170) No	(%)	P-value
1) Complications after C.S					
• Yes	12	7.1	26	15.3	
• No	154	90.6	135	79.4	.016
• Missed cases	4	2.4	9	5.3	
2) Observation of the wound healing					
• Healed within 10 days	158	92.9	139	81.8	
• Septic wound	8	4.7	22	12.9	.008
• Missed	4	2.4	9	5.3	
3) Type of complications					
• No complications	153	90.6	131	77	
• Wound infection	8	4.7	22	12.9	
• Heavy blood loss	1	.6	----	-----	
• Gastro intestinal complications	-----	----	1	.6	
• Urinary tract infections	3	1.8	5	3	.049
• Breast complications	-----	----	2	1.2	
• Missed cases	4	2.4	9	5.3	

Table 6: Multinomial Logistic Regression to Identify Variable That Affects on Post CS Recovery Variables

	Number of analgesic required after exercises		Duration of catheterization after caesarean section		Self-void after removal of catheter		Breast feeding and Holding baby independently after caesarean section		Start oral intake after caesarean section		First flatus passed after exercises	
	Odds (95%CI)	P. value	Odds (95%CI)	P. value	Odds (95%CI)	P. value	Odds (95%CI)	P. value	Odds (95%CI)	P. value	Odds (95%CI)	P. value
Age												
15-19 year	1(reference)		1(reference)	0.659	1(reference)	0.730	1(reference)	0.860	1(reference)	0.616	1(reference)	0.203
20-35 year	1(0.29-3.46)	1.000	0.71(0.25-2.01)	0.519	0.79(0.33-1.92)	0.609	1.23(0.49-3.11)	0.662	0.94(0.37-2.39)	0.896	2.09(0.86-5.1)	0.104
More than 35 year	1.02(0.19-5.4)	0.980	0.54(0.14-2.04)	0.363	0.63(0.2-1.98)	0.433	1.07(0.33-3.52)	0.911	0.61(0.17-2.15)	0.442	1.53(0.49-4.82)	0.468
Occupation												
House wife	1(reference)		1(reference)		1(reference)		1(reference)		1(reference)		1(reference)	
Employer	0.89(0.1-7.77)	0.919	0.65(0.18-2.32)	0.506	0.45(0.13-1.48)	0.187	0.8(0.24-2.65)	0.713	2.4(0.62-9.24)	0.203	0.94(0.29-3.08)	0.916
Residence												
Urban area	1(reference)	0.977	1(reference)	0.682	1(reference)	0.329	1(reference)	0.783	1(reference)	0.911	1(reference)	0.036*

semi urban	1.11(0.42-2.94)	0.841	0.98(0.47-2.05)	0.968	0.64(0.34-1.2)	0.166	0.79(0.41-1.52)	0.485	1.09(0.53-2.25)	0.807	1.63(0.86-3.11)	0.136
Rural area	1.04(0.42-2.57)	0.940	0.78(0.4-1.54)	0.478	0.87(0.49-1.58)	0.657	0.88(0.47-1.64)	0.681	1.16(0.6-2.25)	0.668	0.79(0.44-1.42)	0.426
Education												
Illiterate	1(reference)	0.495	1(reference)	0.355	1(reference)	0.518	1(reference)	0.564	1(reference)	0.030*	1(reference)	0.719
Read and writes	0.6(0.12-3.01)	0.531	0.68(0.24-1.93)	0.468	1.59(0.62-4.11)	0.334	0.93(0.35-2.45)	0.881	0.82(0.32-2.13)	0.687	1.27(0.47-3.38)	0.639
Basic education	1.21(0.46-3.21)	0.702	0.5(0.23-1.09)	0.081	0.7(0.36-1.37)	0.298	0.8(0.39-1.65)	0.545	1.01(0.5-2.01)	0.989	1.23(0.61-2.47)	0.560
Secondary	1.12(0.44-2.85)	0.819	0.96(0.44-2.07)	0.915	0.97(0.52-1.84)	0.935	0.8(0.4-1.57)	0.514	0.62(0.31-1.22)	0.167	0.92(0.48-1.76)	0.799
University	0.3(0.06-1.62)	0.163	0.76(0.3-1.97)	0.579	0.87(0.39-1.95)	0.739	0.49(0.21-1.14)	0.098	0.17(0.06-0.54)	0.003**	0.71(0.32-1.62)	0.419
Number of Parity												
Prime	1(reference)		1(reference)		1(reference)		1(reference)		1(reference)		1(reference)	
Multi	1.07(0.39-2.93)	0.901	1.31(0.61-2.81)	0.491	2.35(1.2-4.59)	0.013*	0.83(0.41-1.68)	0.598	1.21(0.56-2.58)	0.630	1.11(0.56-2.18)	0.769
Previous C.S												
Previous 1	1(reference)		1(reference)		1(reference)		1(reference)		1(reference)		1(reference)	
Previous 2 or more	0.96(0.4-2.32)	0.934	0.86(0.44-1.7)	0.662	0.59(0.32-1.08)	0.085	0.95(0.51-1.77)	0.868	1(0.52-1.93)	1.000	0.86(0.47-1.58)	0.633
The primary indication for caesarean												
Maternal	1(reference)	0.657	1(reference)	0.759	1(reference)	0.923	1(reference)	0.001**	1(reference)	0.542	1(reference)	0.023*
Fetal	1.09(0.49-2.42)	0.831	0.89(0.47-1.66)	0.706	1.09(0.63-1.89)	0.761	0.89(0.5-1.59)	0.690	0.76(0.41-1.42)	0.398	0.58(0.33-1.01)	0.053
companied	0.58(0.16-2.1)	0.408	1.27(0.53-3.01)	0.595	0.94(0.46-1.91)	0.856	0.22(0.11-0.47)	0.001**	0.69(0.31-1.56)	0.378	1.87(0.82-4.25)	0.137
Type of C.S												
Planned	1(reference)		1(reference)		1(reference)		1(reference)		1(reference)		1(reference)	
Emergency	1.32(0.62-2.8)	0.468	1.06(0.6-1.87)	0.844	1.12(0.68-1.85)	0.643	1.49(0.88-2.53)	0.141	0.8(0.46-1.4)	0.435	1.49(0.89-2.5)	0.125

Regarding socio demographic data table 1 shows that more than three quarters in both groups were in the age group 20-35 years (80% in study and 82.9% in control group), the majority of them were housewives. About 42.9% of women in study and 49.4% in control group were lived in rural areas. The biggest percent in the level of education were secondary education in both group 27.6% in study and 32.9% in control group.

The analytic data in table 2 which illustrates previous and current obstetrics data the present study shows that most of women in both groups were multi para. More than one quarter in both group 29.4% in study and 26.5% in control group had previous 2 or more C.S. As regard duration of pregnancy more than three quarters in both groups were a full term. The primary indication of CS was maternal indication in more than half in both groups 56.5% in study group and 63 in control group. More than 60% in both groups their types of CS were elective.

A part of the researchers work was to ask the women in study group to exercise, which began while the women on their bed after removal the effect of anesthesia. This was done by exercise in bed then took the semi sitting position then to sit on the bed while their legs were hanging down, then to walk with the assistant of their relatives for a distance of 50 meters. So, the data in figure 1 shows that the majority of women in the study group began exercises within 2-5 hours 91.2%, while 71.2% in control group began walking within >5-12 hours with significant difference between both groups p-value is 0.000.

Based on score of pain, which is described in figure 2 and 3, the present study reports that there was no significant difference between both groups regarding score of pain before exercise p-value 0.557. On the other hand, there was significant difference between both groups regarding score of pain after exercise p-value 0.000.

Base line data within 5 hours after CS table3 shows that there was no significant difference between both groups regarding vital signs p-value 0.099, while there were significant differences between both groups in total urine output, passed flatus, and initiations of breast feeding p-values are 0.001, 0.000, 0.000. Figure 4 represents that mean duration of hospital stay in study group is 17.2± 2.01 hours that is less than control group 25.1± 4.3 hours.

The analyzed data in table 4 shows that there is no significant difference between both groups regarding duration of catheterization, p-value was 0.06. While there were significant differences between both groups regarding analgesics required after exercises, p-value 0.000, self-void after removal of catheterization, p-value 0.011, breast-feeding and holding baby independently after CS p-value 0.000, starting oral intake after CS p-value 0.000, and passing first flatus after exercises p-value 0.000. Based on post-operative complications table 5 reveals that there were significant difference between both groups concerning wound healing and other postoperative complications.

Data in table (6) represents the most variable that affects on post CS recovery variables. It is found that emergency as a type of CS is the highest variable effects of the number of analgesic required after exercises as post CS recovery variable odds ratio (1.32), also emergency as a type of CS affects on breast-feeding and holding baby independently after caesarean section. Multi para women have the highest impact on duration of catheterization after cae-

sarean section odd's ratio (1.31) and self-void after removal of catheter odd's ratio (2.35). Employed women carry the highest effect on start oral intake after caesarean section odd's ratio (2.4). Also group of women in the age group (20-35 years) has the highest impact on first flatus passed after exercise's odds ratio (2.09).
It also shows that there is significant difference as regards self-void after removal of catheter and multipara women p-value 0.013. Furthermore, it illustrates that there is significant difference between breast feeding & holding baby independently after caesarean section and maternal& companied indication of CS p-value 0.001. Illiterate & university as a level of education have significant difference with the start oral intake after caesarean section p-value 0.030. It is illustrated that there is significant difference regarding first flatus passed after exercises and women's lives in urban area p-value 0.036.

5. Discussion

Exercising of women soon after cesarean section was a basic part of nursing care. Women exercises as soon as possible after cesarean section is considered a major change in women care, this based on the new evidence of the benefits of exercises and its positive impact on women recovery. Since then, facilitating ambulation has been considered an important part of excellent nursing care, particularly post cesarean section women (Valerie et. al, 2012).
In the present study, women in the study group were exercised progressively under the direction of the researchers within 2 hours after CS. Progressive exercises began by exercising in bed for the extremities, then took the semi sitting position for 30 minutes, then sitting beside the bed for 10 minutes while her legs were hanging down, standing, according to Royal Australian and New Zealand College guidelines. Also walking in and outside the room with the support from the researchers or their relatives from a distance of 50 meters when they completed five-hour post CS. Majority of women in the control group began spontaneous walking without reinforcement or encouraging or according to the hospital policy and routine nursing care at the postpartum ward, which is usually more than 5 hours in the average after caesarean section.
The study subjects regarding socidemographic characteristics were relevant many other as Suvarna & Jyoti who develop a study in 2014 to assess the effectiveness of early ambulation on selected aspects of post-operative recovery among the women who have undergone LSCS at Krishna Hospital, Karad and found that daily living activities and sense of wellbeing were enhanced by early ambulation, also Michelle et. al 2010 who worked on the recovery after caesarean birth in Victoria, Australia, and discovered that advises given to the post cesarean section women should be taking on considerations.
Also it showed that no significant different between both groups as regard obstetrics characteristics. This was agreed with Jyoti et. al (2013), who performed a study on post caesarean women to show the effect of planned early ambulation on selected postnatal activities and concluded that there was an essential effect of early ambulation on improving post CS activities and Jyoti & Kshirsagar (2014) that had a study on the effect of planned early recommended ambulation technique on selected post caesarean biophysiological health parameters, this study illustrated that early ambulation play a role in avoiding posts CS morbidity and enhanced recovery.
Severe degree of pain was one of the important factors that act as a barrier for women exercises after C.S. and exercises could participate in alleviating the level of pain. The finding and present study revealed that there was significant difference concerning score of pain after ambulation. This finding was supported by a question-experimental study by Harmanjyot et al 2015 in which they compare early ambulation group versus routine or control group p-value (0.038) and found that early ambulation had a vital role in enhancement of post cesarean section recovery.
Early exercises as soon as possible after C. S helped in improving the women outcomes. As regard imitation of exercises, this study concluded that there was significantly a difference between both groups p-value (0.000). This finding was in the same line with Sahar et al 2013 who established a comparative study between early versus routine hydration after cesarean section, as they found that there was significant difference between both groups regarding initiation of ambulation p-value (0.001). Sahar et al 2013 concluded that there were many benefits from early oral hydration as early hearing of bowel sound, mobility, breast feeding, resume regular diet, and shorten hospital stay.
Indwelling catheter was inserted routinely during C. S and kept in place for 12-24 hours. The sooner catheter removal, the faster walking of the women inside and outside the recovery room. Concerning duration of catheterization in both groups, this study showed that there was significant difference between both group's p-value (0.006). This finding agreed with Sahar et al, (2013) p-value 0.00. However, disagrees with Harmanjyot et al, 2015 who found that no effect of early ambulation on duration of catheterization between both group's p-value (0.36). This difference result from hospital policy to remove the catheter to the majority of women after CS at the same time every morning for women who performed their C. S at afternoon to mid night without any consideration to the ability of women to walk and had a self-void.
Regarding breast-feeding and oral hydration, the present study presented that there were significant difference between both groups p-value were 0.000, 0.000 respectively. This was in accordance with sahar et. al 2013 and Harmanjyot et al (2015) p-value < 0.001, who found that early ambulation encouraged women early hydration and breast feeding.
According to self-void after catheter removal and passing of first flatus after exercises, the current study revealed that there were significant differences between both groups p-value were 0.001, 0.000. These findings were agreed with Harmanjyot et al (2015) p-value < 0.001, who found that early ambulation had an obvious effect to improve self-void after catheter removal and passing of first flatus.
The finding of present study depicts that there was significant difference regarding post cesarean section wound healing and other complications p-value 0.008 and 0.016.

6. Conclusion

From this study, researchers can be concluded that, early and progressive exercises have an effective role in improving post cesarean section women recovery.

7. Recommendation

Based on the finding of this study early and progressive exercise should be encouraged as a routine part of care for women undergoing cesarean section within 2 hours after C. S, as it enhances women recovery.

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