Effect of Early Ambulation on Post Cesarean Section Women's Recovery and Pain

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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. **Aim:** To evaluate the effect of early ambulation on post cesarean section women's recovery and pain. **Design:** A quasi-experimental design was utilized. **Sample:** A purposive sample of a total 178 women was included. **Setting:** At obstetrics and gynecology departments at Benha University Hospital. **Tools:** Structured interviewing questionnaire, Visual analogue scale, structured nursing assessment sheet. **Results:** Findings of this study revealed that there were significant differences between both groups regarding post-cesarean section recovery variables, which included self-void after catheter removal, breast feeding, oral hydration, and first flatus passed after early ambulation as per the independent t-test ($p<0.05$). **Conclusion:** Early ambulation had a positive effective role in promote post cesarean section women's recovery and pain. **Recommendations:** Early ambulation should be encouraged as a routine part of care for women within 1 hour after cesarean section and anaesthesia withdrawn.

Keywords: Cesarean Section, Early ambulation, Recovery.

Introduction

Cesarean birth is a surgical procedure in which the birth is accomplished through an abdominal and uterine incision. The basic aim of cesarean birth is to save the life and health of the mother and fetus. It is performed for a variety of reasons as fetal distress, prolapsed cord, cephalopelvic disproportion and some conditions of women as hypertension or active herpe**s (Walker, 2016).**

Many factors have identified to be associated with CS across the world such as premature rupture of the amniotic membrane, cephalo-pelvic disproportion, fetal distress multiple pregnancy, breech presentation maternal preference, birth weight parity, maternal height and antenatal care use. The main indications for cesarean delivery are previous cesarean delivery, breech presentation, and fetal distress. Although CS is a safe operation, when it is performed without medical need. Some women more likely to have complications include obesity, large infant size, prolonged labor, multiple pregnancy and premature labor. In the absence of a clear medical indication **(W H O, 2019).**

Post cesarean section pain has immediate and long-term negative effects for women and newborn. These effects can interfere with breastfeeding and the care of the newborn. The pain from injection sites is managed by the frequent assessment of the report of pain from the women. Pain can come from possible lacerations, incisions, uterine contractions and sore nipples **(Margarete, 2017).**

Pharmacological and non-pharmacological management may be used during the cesarean section and postoperative period. There are multiple modalities for postoperative pain management. The corner stone of therapy are opioids. Non-pharmacological therapies may help decrease pain or give more control and improve quality of life such as; heat helps decrease pain and muscle spasms. Ice helps decrease swelling and pain also help prevent tissue damage. Massage therapy, physical therapy and mobilization help improve movement and strength, and to decrease pain. Transcutaneous electrical nerve stimulation, spinal cord stimulation, aromatherapy, self-hypnosis, music, and acupuncture: This therapy uses very thin needles to balance energy channels in the body. This is thought to help reduce pain and other symptoms **(Kluwer, 2017).** Ambulation promotes blood flow of oxygen throughout the body while maintaining normal breathing functions. Ambulation stimulates circulation which can help stop the development of stroke-causing blood clots. Ambulation improves blood flow which aids in quicker wound healing. The gastrointestinal, genitourinary, pulmonary and urinary tract functions are all improved by ambulation. Ambulation increases muscle tone and strength, especially those of the abdomen and ankles. Ambulation improves

the women's feelings of independence, mood and self-esteem **(Herman et al., 2020).**

Early mobilization of the postoperative women reduces the catabolic effects of surgery on skeletal muscle improves pulmonary functions and circulation through increased oxygen delivery to tissues and reduces the risk of venous thromboembolism. Postoperative ambulation promotes the return of gut function assisting in the prevention of postoperative ileus **(Majumdar and Saleh, 2018).**

Ambulation is a crucial element in the results of postoperative women's. Early mobilization is an intercession is the most crucial popular nursing degree within the avoid complication. Less the complication rates, introduced torment and period of stay while early ambulation is started. In spite of this evidence, early mobilization as a great practice preferred is actualized conflictingly **(Chatterley, 2017).**

Post cesarean women must be cared for immediately postoperatively and not limited to specific recovery room, the following information should be recorded (level of consciousness, blood pressure, respiratory rate, and rhythm, pain intensity, intravenous fluid infusion and drug administered). Other parameters depending on circumstances (temperature, urinary output, and surgical drainage for all women) **(Leifer, 2017).**

The nurse played an important role during preoperative, operative and post-operative periods as assessing maternal and fetal health through taking a competent history and finally performing implement physical examinations then plan then identify women needs according to implement appropriate nursing intervention; considering nursing ethics, infection prevention method

which consequentially reflected upon healthy and satisfied safe CS experience **(Roger, 2018) .**

Aim of the study
The aim of this study was to evaluate the effect of early ambulation on post cesarean section women's recovery also sense from pain.

Research hypothesis
Cesarean section women who do early ambulation after cesarean section will experience lower pain score than those who don't.

Cesarean section women who do early ambulation after cesarean section will experience speed recovery.

Subjects also Methods
Research design:
Quasi experimental design was utilized to fulfill a aim from thwas study.

Setting from a study:
A study was conducted from after partum unit at obstetrics also gynecological department at Benha University Hospital. This department was located in a ground floor which including five rooms each room contains three beds to receive women's after cesarean sections to provided services care for women also her newborn baby.

Sampling:
Sample type:
A purposive sample
Sample size &technique:
A sample size included 178 women was determined according a following formula.

$$N= N$$

$$1+N (e) 2$$

Annual rate from women in Benha University Hospital in 2017 (women undergoing cesarean section) =1400 case. A sample was calculated utilizing a following equation: - Where n (was sample size), N (total population) also e was a (margin error) = 0.07. So a sample size was (178 women).

A sample was divided into two equal groups:-

- Control group, cesarean section women with inclusion criteria also attended a recovery room after cesarean section operation, a women received routine hospital care (89 women) in the first three months.

- Study group, cesarean section women with inclusion criteria also attended a recovery room after cesarean section operation, during the second three months, a woman applied ambulation technique also included from 89 women.

Inclusion criteria:

A woman selected according a following:

-Primiparous women
-Women free from medical also obstetric problem
-Women who had delivered a wellbeing neonate
-Conscious woman
-Women with no contraindicated also free from rheumatoid arthritis, musculoskeletal problems, cardiovascular and respiratory disease.
-Women agree to participate in a study.

Tools from Data collection:
Three main tools were utilized for data collection
Tool (I) - Structured interviewing questionnaire.

This tool was designed by a researcher after reviewing from literature (It was written in simple Arabic language. This included three parts.

First part; Socio-demographic characteristics from a studied women included (age, educational level, occupation, family income, residence).

Second part: Obstetrical profile (number from gravity, number from abortion, parity, duration from gestational age from current pregnancy per weeks) also data about type from (cesarean section) such as (indications, complications, labor outcomes also neonatal condition).

Third part: Data from cesarean section operation (current, time, duration, causes from cesarean section). Type from anesthesia also type from surgical incision, type of analgesic used during operation).

Tool (II)-Visual analogue scale :

This tool was adopted from **Gillian, (2015),** to assess severity from sense from pain after cesarean section at before ambulation also after 1, 2, 3 also 4hr after ambulation. It is a standard tool having ratings from (0-10) for evaluating severity from sense from pain. A total scoring calculated also interpreted as following: This divided into four levels:

     (0) means no sense from pain,

     (1-3) means mild.

     (4-7) means moderate.

     (8-10) means severe.

Tool (III) - Structured nursing assessment sheet :

This tool was adapted from) also translated to Arabic to assess after - operative recovery after cesarean section. It included ten category (vital signs , use from analgesic needed after ambulation, duration from

catheraization, total urine output, self-void after removal from catheter, breast feeding initiation, oral hydration after ambulation, holding baby independently, passage from first flatus, time from hospital stay).

Tools Validity also reliability;

Content validity from tools study was reviewed by a three expertise from professor in obstetric also women wellbeing nursing to assess content validity. A experts reviewed a tool for clarity from sentences, consistency, appropriateness from content, a sequence from items, accuracy, also relevance, comprehensiveness, simplicity, also applicability, from tool. Relability from tools was assessed by visual analogue scale (0.76) also structured nursing assessment sheet (0.81).

Ethical considerations:

Ethical aspects were considered before implementation of the study as the following-:

-The aim of study was explained to each woman before applying early ambulation to gain confidence and trust.

-An oral consent was obtained from each woman to participate in the study.

-Women was assured that there is no any physical, psychological or social harm during intervention.

-Each participant women has the freedom to withdraw from participation at any time.

Pilot Study:

A pilot study was carried out on (10%) of total sample (18) women each group 89 of women to assess the applicability and clarity of the tools, to detect any possible obstacles that might face the researcher, as well as to estimate the time needed to fill tools. Necessary modifications were done based on

the pilot study findings. The samples of women involved in the pilot study were excluded from the main study sample.

Field work:

The study was carried out from the beginning of March, 2019 and completed at the end of December, 2019 covering ten months. The researcher visited previously mentioned setting three days /weeks, (Sunday, Tuesday, Thursday) from 9 .00 Am to 2.oo Pm. Approximately 6 cases /weeks

(1) Interviewing and assessment phase:

In both group

Interviewing and assessment phase was conducted in both groups and starting with the control group. Immediately after approval for conduction the study the researcher visited the previously mentioned setting 3 days/week until the predetermined size is obtained. At the beginning of the interview the researcher greeted each woman. Introduce her to the women, explained the purpose of the study and duration to gain confidence and trust for participating in the study. Initial assessment pretest was done in both groups included assessment of structured interview questionnaire sheet (Appendix I), visual analogue scale (Appendix II), structured nursing assessment sheet for recovery (Appendix III) the average time required for completion of this phase was around (30-40 minute).

In control group :

Start first to prevent bias and data contamination

-After with drown of anaesthesia. Interviewing questionnaire using tool number 1 by demographic characteristics, obstetric history and anthropometric measurements.

-The researcher assessment of pain using VAS. Pain score was assessed two times only first assessment was taken before ambulation. The second was taken immediately after walking the distance of 50 meters. Assessment 1, 2, 3 hours and 4 hours.

-After ambulation women were evaluated with the help of structured assessment questionnaire for recovery to evaluate intensity of post cesarean section pain, use of analgesics after ambulation, duration of catheterization, self-void after removal of the catheter, passage of first flatus, initiation of oral hydration, initiation of breastfeeding after ambulation.

2- Implementation phase:

In study group:

-Researcher took data as personal data, obstetric profile, observations within the first 1hours after C. S.

-After with drown of anaesthesia. Interviewing questionnaire using tool number 1 by demographic characteristics, obstetric history and anthropometric measurements.

-The researcher did assessment of pain using VAS. Pain score was assessed two times only first assessment was taken before ambulation. The second was taken immediately after walking the distance of 50 meters. Assessment 1, 2, 3 hours and 4 hours.

-Ambulation 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 legs hanging down, standing,. Also walking in and outside the room with the support from the researchers or relatives from a distance of 50 meters.

-After ambulation women were evaluated with the help of structured assessment questionnaire for recovery to evaluate intensity of post cesarean section pain, use of analgesics after ambulation, duration of catheterization, self-void after removal of the catheter, passage of first flatus, initiation of oral hydration, initiation of breastfeeding after ambulation.

-Assess duration of hospital stay.

-Evaluate degree of pain using the same previous tools for both groups as (study and control) posttest will be recovery assessment 1, 2, 3 hours and 4 hours in both groups.

- All women (study &control group) were kept under observation throughout the procedure and monitored for any discomfort.

Statistical Design:

Data was verified prior to computerized entry. A statistical package for social sciences (SPSS version 20) was used for that purpose, followed by a data tabulation also analysis. Descriptive statistics were applied (e.g., mean, standared deviation, frequency also percentages). Test from significance (Independent t-test, chi-square also Fisher exact test), Pearson correlation coefficients were used. A significant level value was considered when P ≤ 0.05, also a highly significant level value was considered when P < 0.001.

Results:

Table (1) shows that about less than half 43.8 and 49.5 of the study and control were in age group 25 < 30 years old respectively, with mean age 28.21±2.97 and 28.95±2.19 years in the study and control group respectively. Regarding educational level 42.7% and 46.0% in the study and control group more than one third of studied women had secondary education respectively. Regarding occupation more than three quarter of women were housewives' in study and control group 78.7% and 84.3%. While the majority of the studied women more than half 61.8% and 67.4% were living in urban area .There is no statistically significant difference between both groups regarding demographic characteristics (P> 0.05).

Table (2) indicates the mean weight was 78.58±14.28 kg and 79.05±14.45 kg in the study and control group respectively. The mean height was 164.56± 6.52cm and 163.47± 7.03 cm in the study and control group respectively. The mean was body mass index 28.95± 5.24 kg/m² and 29.46± 5.13 kg/m² in the study and control group respectively. There was no statistically significant difference between two groups according to anthropometric measurements in both groups (P >0.05).

Table (3) presents current obstetric history in both groups, 92.1% and 88.8% have non abortion of study and control group respectively. The mean of gestational age was 37.98 ± 1.18 and 38.10 ± 1.21 weeks respectively. There is no statistically significant difference between two groups according to number of abortion and gestational age (p>0.05).

Table (4) clarifies that the causes of cesarean section were placenta praevia in 19.1% of the study group, 14.6% in control group the main causes of cesarean section were Oligohydramnios. There was no statistically significant difference between both group regarding causes of cesarean section. All of studied women have transverse incision type (100.0%).

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Figure (1) illustrates that elective cesarean section was in 93.3% and 97.8% in the study and control groups respectively.

Figure (2) illustrates that 76.4% and 71.9% in the study and control group respectively have spinal anesthesia.

Table (5): reveals that the mean of pain score was 7.38 ± 1.68 and 7.24 ± 0.72 in the study and control groups respectively before ambulation. There was no statistically significant difference between two groups regarding pain score before ambulation (P >0.05). While the mean pain score in the study group versus after the control group after 1.2.3 and 4 hours of ambulation were (5.29 ± 1.89 versus 6.43 ± 1.14), (4.82 ± 2.05 versus 5.31 ± 1.13),(4.25 ± 1.18 versus 5.20 ± 1.35) and(3.53 ± 2.24 versus 4.55 ± 1.69) respectively .

Table (6): Regarding to post cesarean section recovery the vital signs is normal (100.0%) in both groups, while more than one third it was 36.0% versus more than one tenth it was 11.2% of women had total urine out put 150- 300 ml in the study and control group. while passed first flatus within one hour of ambulation more than two fifth it was 41.6% in study compared to control group it was around one quarter 23.6% only. More than two fifth of study group it was 42.7% no need required for number of analgesics compared to control group less more one third it was 30.3%. While duration of catheterization after cesarean section in study it was around one quarter 24.7% compared to control group more than one tenth it was 11.2% in 1-2 hours. One third 33.7% in study group self-voided ≤ 3 hour after removal of catheter while only more than one tenth 16.9% in control group. Less more one third 32.6% initiated breast feeding at ≤ 1 hour in study group whereas in control group it was only less than tenth 9.0%. While in study group started oral intake within 1 hour it was less than half 46.1% compared to control group it was less than one quarter 20.2%. While holding the baby independently at ≤ 3 hours it was more than one third 37.1% compared to control group it was less than one quarter 23.6%. There was highly statistically significant between both groups to all items of recovery (P≤ 0.001).

Figure (3): illustrate that the mean duration of hospital stay was shorter in the study group 3.57 hours compared to control group 4.86 hours.

Table (7): There was no statistically significant relation between pains score at various interval and type of cesarean section in the both groups (P> 0.05).

Table (8): Clarifies that there was no statistically significant relation between type of anaesthesia before and after ambulation for both groups (P>0.05).

Table (1): Distribution of the studied women according to demographic characteristics (n = 178)

Demographic characteristics	Study group n=89		Control group n =89		x^2/ FET	p-value
	No	%	No	%		
Age (years)						
20<25	15	16.9	5	5.6	5.857$^£$	0.119
25 < 30	39	43.8	44	49.5		
30< 35	34	38.2	38	42.7		
≥ 35	1	1.1	2	2.2		
Mean ± SD	28.21 ± 2.97		28.95 ± 2.19		t=1.886	0.061
Educational level						
Read and write	18	20.2	13	14.6	3.041	0.385
Primary education	17	19.1	24	27.0		
Secondary education	38	42.7	41	46.0		
University education	16	18.0	11	12.4		
Occupation						
Working	19	21.3	14	15.7	0.930	0.335
Housewife	70	78.7	75	84.3		
Residence						
Rural	34	38.2	29	32.6	0.614	0.433
Urban	55	61.8	60	67.4		

t= indepent t test   £ FET=Fisher Exact Test

Table (2): Distribution of the studied women according to anthropometric measurements (n=178).

Anthropometric measurements	Study group n=89	Control group n =89	independent t test	P-value
	Mean ± SD	Mean ± SD		
Weight (kg)	78.58 ± 14.28	79.05 ± 14.45	0.219	0.827
Height (cm)	164.56 ± 6.52	163.47 ± 7.03	1.072	0.285
Body Mass Index (kg/m^2)	28.95 ± 5.24	29.46 ± 5.13	0.673	0.502

Table (3): Distribution of the studied women according to current obstetric history (n = 178).

Obstetric history	Study group n=89		Control group n =89		x^2/ FET	p-value
	No	%	No	%		
Number of abortion						
Non	82	92.1	79	88.8	0.599$^£$	0.741
One	4	4.5	6	6.7		
Two	3	3.4	4	4.5		
Gestational age (weeks)						
Mean ± SD	37.98±1.18		38.10 ± 1.21		t=0.628	0.531

t= indepent t test   £ FET=Fisher Exact Test

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Table (4): Distribution of the studied women in both groups according to causes and type of incision of current cesarean section (n =178).

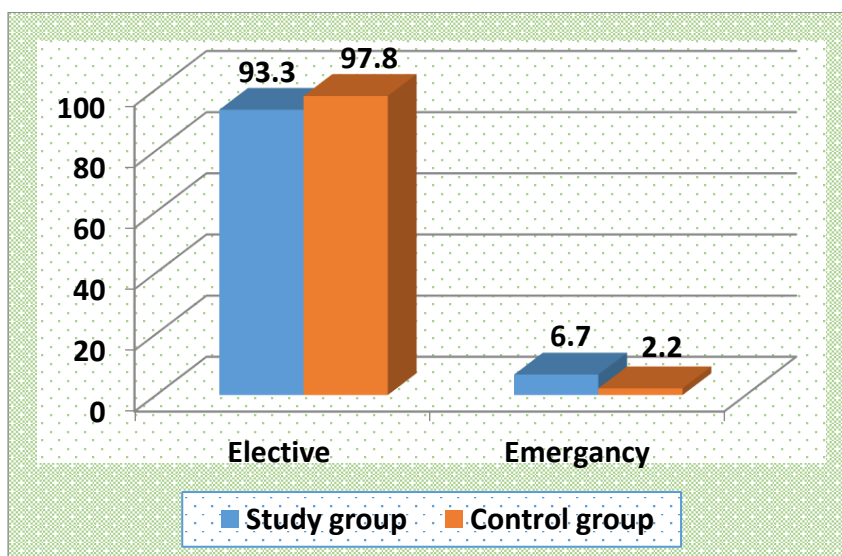| Variables	Study group n =89		Control group n =89		FET	p-value
	No	%	No	%		
Causes of Cesarean section						
Fetal distress	12	13.5	9	10.2		
Fetal malpresentation	4	4.5	7	7.9		
Placenta praevia	17	19.1	11	12.4		
Oligohydramnios	10	11.2	13	14.6	4.348$^{£}$	0.734
Cephalopelvic disproportion	5	5.6	6	6.7		
Chronic diseases	4	4.5	2	2.2		
Cord prolapse	2	2.2	1	1.1		
Type of incision						
transverse	89	100.0	89	100.0	-	-

Figure (1): Distribution of the studied women in both groups according to type of cesarean section (n = 178).
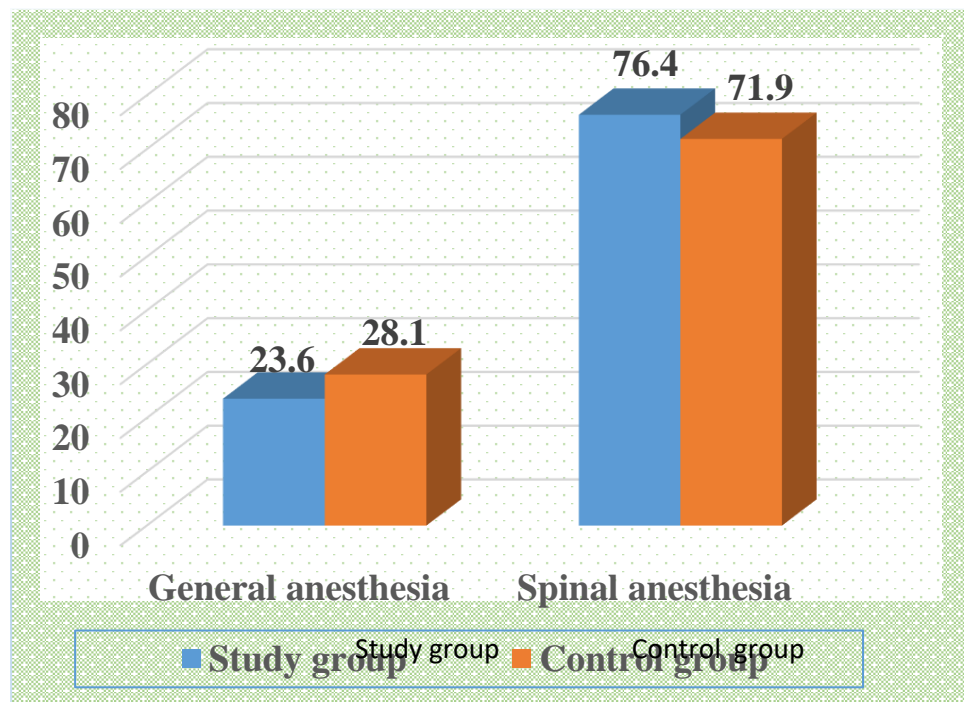
Figure (2): Distribution of the studied women in both groups according to type of anesthesia (n = 178).

Table (5): Comparison of the severity of pain between study and control groups before and after various interval of ambulation (n =178)

Pain score at various interval	Study group N = 89	Control group N = 89	independent t test	P-value
	Mean± SD	Mean± SD		
Before ambulation	7.38 ± 1.68	7.24 ± 0.72	0.753	0.453
After 1 hour of ambulation	5.29 ± 1.89	6.43 ± 1.14	4.901	0.000**
After 2 hours of ambulation	4.82 ± 2.05	5.31 ± 1.13	1.992	0.048*
After 3 hours of ambulation	4.25 ± 1.18	5.20 ± 1.35	5.025	0.000**
After 4 hours of ambulation	3.53 ± 2.24	4.55 ± 1.69	3.434	0.001**

*A statistically significant at (P≤ 0.05)   **A highly statistically significant at (P≤ 0.001).

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Table (6): Comparison of the post caesarean section recovery between study and control groups before and after ambulation (n =178)

Items	Study group n=89		Control group n=89		$x^2/$ FET	p-value
	No	%	No	%		
Vital signs						
Normal	89	100.0	89	100.0	-	-
Total urine output (ml)						
150- 300	32	36.0	10	11.2	22.915	0.000**
300-450	27	30.3	19	21.3		
≥ 450	30	33.7	60	67.5		
Passed flatus						
Within 1 hour	37	41.6	21	23.6	6.547	0.011*
After 1 hour	52	58.4	68	76.4		
Number of analgesic required after ambulation						
No	38	42.7	27	30.3	5.316	0.021*
1	35	39.3	33	37.1		
2-3	16	18.0	29	32.6		
Duration of catheraization after caesarean section						
1-2 hour	22	24.7	10	11.2	5.897	0.049*
2-3 hour	55	61.8	62	69.7		
≥ 4 hour	12	13.5	17	19.1		
Self-void after removal of catheter						
< 3 hour	30	33.7	15	16.9	7.111	0.029*
3-4 hour	41	46.1	48	53.9		
≥ 5 hour	18	20.2	26	29.2		
Inition of breastfeeding after caesarean section						
≤ 1 hour	29	32.6	8	9.0	20.945	0.000**
1-2 hour	36	40.4	34	38.2		
≥ 3 hour	24	27.0	47	52.8		
Start of oral intake after ambulation						
Within 1 hour	41	46.1	18	20.2	23.951£	0.000**
1- 2 hour	46	51.7	51	57.3		
≥ 3 hour	2	2.2	20	22.5		
Holding baby indepently						
< 3 hour	33	37.1	21	23.6	22.802	0.000**
3- 4 hour	43	48.3	50	56.2		
≥ 5 hour	13	14.6	18	20.2		

*A statistically significant at (P≤ 0.05)   **A highly statistically significant at (P≤ 0.001)
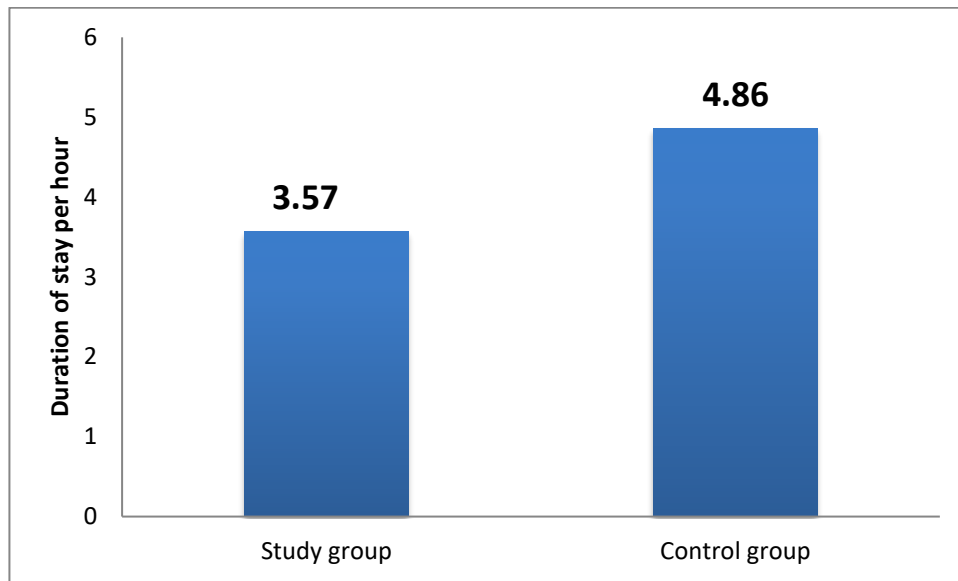
£ FET=Fisher Exact Test

Figure (3): Mean duration of hospital stay in both groups after ambulation per hour (n = 178).

Table (7): Relation between the severity of pain between study and control groups and type of cesarean section before and after ambulation (n =178)

Pain score at various interval	Group	Elective Mean± SD	Emergency Mean± SD	independent t test	P-value
Before ambulation	Study group N =89	5.50 ±2.12	5.67±2.07	0.117	0.925
	Control group N = 89	5.42±2.14	6.83±0.98	1.596	0.114
After 1 hour of ambulation	Study group N =89	4.44±2.15	4.50±3.53	0.236	0.974
	Control group N = 89	4.80±1.95	5.66±2.06	1.034	0.304
After 2 hours of ambulation	Study group N =89	4.11±2.11	4.50±3.53	0.812	0.252
	Control group N = 89	4.75±1.96	6.33±1.86	1.993	0.095
After 3 hours of ambulation	Study group N =89	3.73±1.76	3.98 ± 0.56	1.794	0.076
	Control group N = 89	4.10±1.77	4.00±1.54	0.164	0.875
After 4 hours of ambulation	Study group N =89	3.22±1.96	2.50±0.70	1.345	0.357
	Control group N = 89	3.90±1.99	4.16±1.16	0.318	0.752

*A statistically significant at (P≤ 0.05)   **A highly statistically significant at (P≤ 0.001).

Table (8): Relation between the severity of pain between study and control groups and type of anaesthesia before and after ambulation (n =178)

Pain score at various interval	Group	Spinal	General	independent t test	P-value
		Mean± SD	Mean± SD		
Before ambulation	Study group N =89	5.32±1.94	6.03±2.00	0.709	0.718
	Control group N = 89	5.52±2.24	5.51±2.08	0.316	0.876
After 1 hour of ambulation	Study group N =89	4.72±1.72	4.34±2.31	0.735	0.464
	Control group N = 89	4.85±2.03	4.86±1.96	0.021	0.983
After 2 hours of ambulation	Study group N =89	4.56±1.75	3.95±2.24	1.214	0.228
	Control group N = 89	4.52±2.27	4.97±1.89	0.818	0.420
After 3 hours of ambulation	Study group N =89	3.67±1.88	4.08±1.49	0.968	0.336
	Control group N = 89	3.61±1.56	4.25±1.79	1.452	0.150
After 4 hours of ambulation	Study group N =89	3.18±1.35	3.65±1.96	1.672	0.123**
	Control group N = 89	3.57±1.74	4.02±2.00	1.012	0.318

*A statistically significant at (P≤ 0.05)   **A highly statistically significant at (P≤ 0.001)

Discussion

Cesarean section is the most common abdominal surgery procedure, performed around the world, The World Health Organization suggests a cesarean rate between 5% and 15%; a rate above 15% implies an unnecessary and unjustified use of surgical delivery. Some factors contribute to the increased use of cesarean section as the improvement of surgical and anesthetic techniques, reduction of the postoperative complications and the perception of greater safety during the procedure **(Soto et al., 2017)**,

Pain management with nonpharmacological techniques is the main capital convenience. The use of nonpharmacological management is more economical and there are no side effects when compared to the use of pharmacological management **(Novalia and Mahdiyah, 2017).**

Early mobilization in postoperative period is the key to achieving rapid and maximum muscle function and restoring maternal health. Ambulation helps reduce most of the complications by ensuring good blood circulation, promoting gastric motility, enhancing respiration, reducing the risk of thrombophlebitis, preventing orthostatic hypotension, improving the physical strength etc. A complete ambulation program done at this time can prevent complications in later life **(Nydahl et al., 2016).**

The present study was aimed to evaluate the effect of early ambulation on post cesarean section women's recovery and pain. It will be discussed under four main sections:

characteristics of studied women, severity of pain between both groups, post cesarean section recovery, relation and correlation of the study variables.

According to demographic characteristics of the studied women, the results of the current study showed that about less than half of the both groups were in age group 25 < 30 years old, with mean age 28.21±2.97 and 28.95±2.19 years in the study and control group respectively. This is supported with **Mohsub and El Shourbagy, (2015),** who studied comparison between the analgesic effects of Ketoprofen use for reliving post cesarean pain, who found that age of both group was ranged from 25-30 years.

Regarding educational level more than two fifth in the both study and control groups had secondary education respectively. This is supported with **sobhy, (2017)** who studied assessment quality of life for women in elective and emergency cesarean section, and found that 83.7% the majority of both groups had secondary education.

Also supported with **Barai and Vahitha (2019)** who studied effectiveness of early ambulation on post-operative recovery among primiparous post cesarean mothers- a randomized control trial, revealed that more than one third 38.7% and 33.9% in the study and control groups had secondary education respectively.

Regarding occupation in the present study more than three quarters of women were housewives in study and control groups. These findings are in accordance with **(Abd El Ghany, (2017)** who studied Effect of two reliving strategies on post cesarean pain among delivered mother at El- Manial Hospital, Cairo University. Revealed that 79.7% in both study and control groups were housewives. There is no statistically significant difference between both groups regarding occupation.

Moreover, the result of the present study indicated more than half of the both

groups were living in urban area. This finding was supported with **Diana and Tipandjan, (2016)** Who studied emergency and elective cesarean section comparison of maternal and fetal outcomes in a suburban tertiary care hospital in Puduchery, and reported that most of the both groups were living in urban area .

According to anthropometric measurements in both groups, the current study revealed there was no statistically significant difference between two groups regarding height and weight and body mass index. This findings agreed with **Kakoma et al., (2016)** who studied height, weight, external pelvic diameters and cesarean section: A cohort study in southern province of Rwanda and revealed that there was no statistically significant difference between two groups according to height p value =0.412 and weight p value = 0.211.

Regarding to current obstetric history, as regards to number of abortion, the present study revealed that the vast majority had no history of abortion of study and control group. This finding was in accordance with **Desokey, (2015)** who stated that maternal and neonatal outcome in elective versus emergency cesarean section master thesis faculty of nursing, Zagazige University, who found that the majority of women in both groups had no history of abortion.

Regarding to current obstetric history, the present study revealed that there was no statistically significant difference between two groups according to gestational age. This result was agreed with. This findings agreed with **Jalilian et al., (2017)** who studied A randomized clinical trial to compare the post-operative outcomes of early versus late oral feeding after cesarean section they clarified that the mean of gestational age was 38.9 ± 1.6 and 38.6 ± 1 weeks and there was no statistically significant difference between two groups according to gestational age illustrates that elective cesarean section was

in 93.3% and 97.8% in the study and control groups.

According to cause of cesarean section, the present study clarifies that less than one quarter and less than one fifth in the study and control group had maternal cause. This finding was agreed with **Youness and Ibrahim, (2017)** who studied " the effect of early and progressive exercises on C.S recovery among post cesarean women for women attending Women's Health Hospital, Assiut University, Egypt" and showed that the primary indication of cesarean section was maternal indication placenta praevia more than half 56.5% in study group and 63% in control group.

According to type of cesarean section in the present results of the current study showed that, elective cesarean section was done of the majority of the study and control groups. There was no statistically significant difference between two groups according to causes of cesarean section. So it allows higher maternal satisfaction and women prefer that type of cesarean section.

According to type of cesarean section, this study illustrated that the majority of both groups were elective cesarean section in the study and control groups. This results disagreed with **Dube and Kshirsagar, (2015)** who studied effect of planned early recommended ambulation technique on selected post caesarean biophysiological health parameters, and confirmed that elective cesarean section was less than one quarter 22.4 % and 19.6 in the study and control groups.

According to type of anesthesia the present study illustrated that more than three quarters and less than three quarters in the study and control group had spinal anesthesia respectively. This findings was agreed with **Suvarna and Salunkhe, (2016)** who studied the effectiveness of early ambulation on selected aspects of post-operative recovery among the women who have undergone lower surgical cesarean section at Krishna hospital, and showed that 100% of post cesarean section women in both experimental and control group had received spinal anaesthesia. That due to spinal anaesthesia is better at preventing persistent postoperative pain 3 to 8 months after cesarean section. spinal anesthesia is preferred for elective C-section, due to its simplicity, ability to provide adequate surgical anesthesia, ease of administration, faster onset of action, and safety and early skin-to-skin contact .

In the present study, there was no statistically significant difference between two groups regarding type of ceaseran section before and after ambulation. There was no statistically significant difference between two groups regarding type of aneasthesia before and after ambulation except after 4 hours of ambulation spinal aneasthesia was lower in pain score than general aneasthesia with statistically significant difference.

Regarding to severity of pain between study and control groups before and after various interval of ambulation, the present study revealed that the mean of pain score was slightly similar in both groups before ambulation, while the mean pain score in the study group versus after the control group after 1 hour of ambulation was decreased. This results was consistent with **El-Sayed et al., (2020)** who studied "Effect of Early Progressive Bed Exercise and Movement on Recovery after Cesarean Section" revealed that revealed that the mean of pain score was 8.66 ± 1.35 and 8.48 ± 1.05 in the study and control groups before ambulation, while the mean pain score in the study group versus after the control group after ambulation was 6.68 ± 1.54 versus 7.52 ± 1.54. This may be due to the positive effect of early ambulation .

After 1,2,3 and 4 hours the study finding lower pain score in study group compared to control group this results was consistent with **Kaur et al., (2015)** who

stated A quasi-experimental study to assess the effectiveness of early ambulation in post-operative recovery among post-cesarean mothers admitted in selected areas of nehru hospital, pgimer, chandigarh and revealed that the mean of pain score was 5.30 ± 1.34 and 6.00 ± 1.31 after 1,2 hour in the study than control group. That indicated early ambulation had a positive effect on reduction of post-operative pain.

Results of the present study revealed that there was a significant difference in reducing pain before and after the ambulation with reduction of pain among study group was more than the control group and need for analgesic was less among study group than control group. This result was supported by a study by. In same line **Barai and Vahitha (2019)** who reported that there was a significant difference between the mean postoperative pain score after ambulation among experimental and control group p-value <0.001. This indicated the beneficial effect of early ambulation on post cesarean section women's pain.

Regarding to post cesarean section recovery between study and control groups all both study and control groups was normal vital signs. This results was agreed with Kaur et al., (2015) who found that vital signs was normal (100.0%) in both study and control groups.

As regards total urine output , the result of the present study indicated more than one third in the study group compared to more than one tenth in the control group total urine output having more than 150-300 ml. this finding disagree with **Paul et al., (2019)** who studied Effectiveness of early ambulation on post operative recovery among the women with cesarean section and showed that most of participants regarding total urine output (100%) all participants in both group having more than 450 ml urine output .

Regarding to passed flatus, the result of the present study indicated more than two fifth in the study group compared around one quarter in the control group within 1 hour. There was highly statisticaly significant differences between both groups in passed flatus, This findings was supported with **El-Sayed et al., (2020),** who showed that there was significant differences between study and control groups in passed flatus, after ambulation in favor of the study group. This is due to early ambulation that cause belching by which flatulence and abdominal distension are relived due to an upward gas pass through the esophagus and stomach and removal of gas via the mouth .

Regarding to number of analgesics required after ambulation, the result of the present study indicated more than two fifth in the study group compared less more one third in control group no required analgesics after ambulation In same line **Barai and Vahitha (2019)** reported that the higher percentage of control group required more number of analgesics injection than experiment group. Which indicated that early ambulation has a positive effect on promote circulation and reduction of post-operative pain after cesarean section.

As regarding of the duration of catheteraization after cesarean section in both groups, this study results showed that around one quarter in the study compared to more than one tenth in control group duration of catheteraization after cesarean section in 1 -2 hours. This was in agreement with **Youness and Ibrahim, (2017)** who found that majority of the duration of catheteraization after cesarean section in 2nd hour in experimental group where as in control group the majority of the women were not removed catheter till 3rd post operative day. This may be due to ambulation promotes the flow of oxygen throughout the body and strengthens muscle tone.

However, unlike with **Kaur et al., (2015)** who observed that the duration of catheterization was not affected by early ambulation and no difference between both groups. This difference was due to the hospital's policy of removing catheters among most women after CS at the same time each morning for women who performed CS in the afternoon in the middle of the night without taking into account the walking ability of women and obtain a self-void .

According to self-void after removal of catheter, the current study revealed that more than one third in study group compared to more than one tenth in control group having self-void after catheter removal in 3 hours there were significant differences between both groups. These findings were agreed with **Hassan et al., (2019)** Effect of three different nursing interventions on intestinal motility and women's satisfaction post-cesarean section birth p-value < 0.001, who found that early ambulation had an obvious effect to improve self-void after removal of catheter.

Regarding to initiation of breast-feeding after cesarean section in both groups, the finding of present study showed that there were a significant difference between both groups study and control group. About less more one quarter of the study group compared less than one tenth in control group initiate breast feeding in 1 hour. In agreed with **Andrade and Mathias (2017)** who studied "assess the impact of early and late ambulation on maternal outcome of mothers with cesarean birth in a selected hospital in Mangalore" and found that 72% of the mothers in early ambulation group had initiated breast feeding between 2-6 hours and 34% of the mothers in late ambulation group had initiated breast feeding between 6-12 hours after cesarean section. This due to early ambulation significantly improved all health parameters after cesarean section, including breast-feeding and ability to holding the baby.

With regards to start of oral intake after ambulation, this study presented that less than half in study compared to less than one quarter in control groups start of oral intake after ambulation within 1 hour. This was in agreement with **Al-Ghareeb et al., (2016)** who studied effect of early oral hydration on post cesarean outcomes, who found that early ambulation encouraged women to hydrate early within 4-6 hours. This duo to start of oral intake after ambulation reduced the rate of body protein depletion, improves circulation and has positive impact on psychological status of women's after cesarean section .

Regarding to holding baby indepently, the finding of present study showed that more than one third in study group compared to less one quarter in control group holding baby indepentaly in 3 hours. This was in agreement with Andrade and Mathias (2017) who found that 72% of the mothers in early ambulation group had holding baby indepentaly between 2-6 hours of the surgery and more than one third 36% of the mothers in late ambulation group had holding baby indepentaly between 6-12 hours. This is due to early ambulation helps strengthen the bond between the baby and mother contact with the newborn .

According to hospital stay in the present study, the mean duration of hospital stay was shorter in the study group compared to control group. These finding were in agreement with **Abd-El-Maeboud et al.,(2019)** who studied gum chewing stimulates early return of bowel motility after cesarean section, the study showed durations of hospital stay and discharge was determined to be shorter in both groups 6-12 hours. This due to early ambulation help in recovery women faster than who don't ambulate.

The result showed that highly statistically significant difference in the post cesarean section recovery between the both study and control groups before and after ambulation. This indicated the beneficial effect of planned early ambulation on resumption of activities of post caesarean women's.

Conclusion

Based on the results the present study, it concluded that:

On the light of the current study it was concluded that early ambulation after cesarean section has a positive effect on lowering post cesarean pain score and speed women's recovery compared to control group. Pain scores in study group were decreased than control group after 1, 2, 3 and 4 hours of ambulation with a statistically significant difference. Early ambulation on post cesarean section enhances recovery of the women and reduces hospital stay in terms(vital signs, use of analgesic needed after ambulation, duration of catheterization, total urine output, self-void after removal of catheter, breast feeding initiation, oral hydration after ambulation, holding baby independently, passage of first flatus). Finally, the study aim was achieved and was accepted study hypotheses.

Recommendations

In the light of the current study finding, the following recommendations are suggested-:

-Non pharmacological measures as early ambulation should be utilized to relieve post cesarean section pain and speed women's recovery.
-Designing and disseminating brochures about the importance of early ambulation on post cesarean section women's recovery and pain at post-partum unites   .
-                              Raising awareness among women about the importance of effect early ambulation on post cesarean section recovery and pain.
-Disseminated the present study findings to all Ministry of Health Hospitals and University Hospitals all over Egypt.   .

Further studies need to be performed:

•Applying the same study in large sample of women in other settings.
•   Applying educational programs for improving nurse's knowledge about the effect of early ambulation on post cesarean section recovery and pain.

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