Effect of Intervention Guidelines on Enhanced Postpartum Recovery after Cesarean Section

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Abstract:Background: Having a good intervention guideline based on women's needs enhances women's recovery, so when being immediate and effective, the recovery after the caesarean section is faster and reduces the health problems that occur during the postpartum period. ***The Aim:***of the present study was to evaluate the effect of an intervention guideline on enhanced postpartum recovery after caesarean section. *Design:* A quasi-experimental (comparative group) design was utilized to accomplish the aim of the study**. *Sample:***A purposive sample of 100 women after a caesarean section included in the present study. *Setting:* The present study conducted at the postnatal ward and outpatient clinic in Obstetrics &Gynaecological Department at Benha University Hospital. *Tools:* Three tools used in this study. They were structured interviewing questionnaire sheet, Indicators of enhanced postpartum recovery sheet and reported practice scale. *The results* of the study signify enhanced recovery after caesarean section asthere was statistically different between both groups regarding total immediate postpartum recovery indicators (p<0. 05). Also, there was a highly significant difference between both groups regarding postpartum recovery indicators after one week as (p<0. 001), besides the study group, had satisfactory scores regarding total reported practices in the first week after cesarean section compared to the control group.*Conclusion:*The intervention guideline had a positive effect on enhancing women's postpartum recovery after caesarean section(1st day ,1st week) and higher satisfactory scoresregarding total reported practices at first week of postpartum. *Recommendations:*Disseminate the intervention guidelines to the public and private hospitals to be a guide for the best care given and eliminate unnecessary procedures. Further research, replication of the study on a large representative probability sample is highly recommended to achieve more generalization of the results.

*Keywords:*Intervention guideline, Caesarean section, postpartum recovery.

INTRODUCTION

Although, there are more advances in targeting health care toward improving women's health,postnatal care still one of the neglected sides in women's health care.Recent researches directed toward prenatal and intra-natal care. Although women's health needs in postnatal are various and fatal, it required to be cored, not only to sustain women's recovery but also to enhance the newborn wellness which is caring about and for attaching new family life [1].

A cesarean section (C-section) delivery is a major surgery defined as abdominal and uterus incision toallow the baby, placenta and extra embryonic membranes to be taken out [2].The prevalence of C-section considered one of the first outcomes of technological advances related to childbirth at the moment.C-section accounts for more than 51.8% of all deliveries as women still find C-section a safer mode of delivery, compared to natural birth [3].

Pain in various areas in the body associated with C-section postoperatively might adversely impact caring of newborns and affecting post-partum recovery.Therefore, it is necessary to ensure proper pain management to provide women comfortable and restored health during the postpartum period [4].Tiredness, exhaustion, restlessness, and immobility are the common postpartum physical health problems experienced by more than half of the women, which negatively associated with postpartum

depression,breastfeeding problems and immobility[5].Although these health problems hinder the women's recovery after C-section to restore their health and perform their own basic needs, it also interferes with caring for the new baby. After C-section, women mainly focus on providing care for the new baby [6].

Enhanced recovery(ER) after C-sectionoperation is aconcept that combines various evidence-based aspects of postoperative care to accelerate women's recovery. It standardizes the immediate and late management to enhance women's recovery.Besides, it achieves a reproducible improvement in the quality of care [7].

On the other hand, having interventionsguidelinestoward women's needs enhances postpartum recovery, so when being immediate and effective,the recovery after C-sectionis faster. The health problems occur during the postpartum period affecting women's well-being.The complications may be developed if they are not treated immediately and efficaciously, leading to increased women morbidity and mortality. Thus continuous improvements in enhancing early post-partum recovery are an essential strategy for improving maternal, infant, and child health [8].

Intervention guidelineshould include specific information and directive evidence-based procedures toward what to expect after c- section as assessing consciousness, pain management plan, goals for early mobilization, and

breastfeeding. Information should also be provided on breastfeeding, including lactation support services available, diet requirements, warning signs of complications, length of hospital stay, and the criteria for discharge. Women can be given guidelines with actions and goals which they can use to keep track of their progress in the recovery process [9].

After C-section, women should be observed on a one-to-one basis by a trained obstetric nurse following clinical guideline instructions until they have regained airway control, cardiorespiratory stability, and can communicate. After recovery from anaesthesia, the nurse should prioritize specific observations as (respiratory rate, heart rate, blood pressure, pain, and sedation) every 15 minutes for the first two hours, and then hourly till the women's condition are stable or satisfactory. Therefore, the nurse must be able to identify signs of morbidity during early (first day) postpartum, which require further investigations and discuss future management with the women. Nurses ensure providing vast teaching to women after delivery and before they discharged from the hospital according to women's needs during the first week postpartum based on intervention guideline instructions [10].

Nurses should emphasize women's education and counselling for the successful implementation of such guidelines and the active participation of the women in the recovery process with its positive impact on recovery outcomes. Also, providing home educational guideline materials is allowing women to be acquainted with the intervention guideline to enhance the postpartum recovery period [11].

Significance of the study:

Studies have indicated that postpartum is a critical period in women's life due to the occurrence of various physiological and psychological changes and the development of severe complications that require emergent management.[12] Documented that every day, approximately 830 women die from preventable causes related to pregnancy and childbirth.And 99% of all maternal deaths occur in developing countries due to causes of postpartum complications as severe postpartum haemorrhage or postpartum infections [13].

The concept of enhanced recovery(ER) is not new and rapidly gaining popularity worldwide as it is an essential strategy to increase the wellbeing and energy of women as well as reduce maternal morbidity and mortality. Women can be given intervention guidelines with actions and goals to be in track of their recovery process. Introducing intervention guidelines to enhance postpartum recovery in the regime C-section care is a novel in Egypt. It required be searching and investigating to gain favourablehealth outcomes. So, the present study conducts to evaluate the effect of intervention guidelines on enhanced postpartum recovery after caesarean section.

Aim of the study:

This study aimed to evaluate the effect of an intervention guideline on enhanced postpartum recovery after caesarean section. This aim achieved through the following objectives:
- Assessing women's postpartum recovery after cesarean section.

- Developing and implementing an intervention guideline regarding women`s postpartum recovery after cesarean section.
- Evaluate the outcome of an intervention guideline on enhanced postpartum recovery after cesarean section.

Research hypothesis:

-Women who exposed to the intervention guidelines will have enhanced postpartum recovery compared to the controls.
-Womenwho exposed to the intervention guidelines will have higher satisfactory scores regarding total reported practices at first week of postpartum compared to the controls

SUBJECT AND METHODS

*2.1.Study design:*A quasi-experimental (comparative groups) design has utilized in this study.Participants randomly assigned to either the study or control group.
*2. 2. Setting:*The study conducted at the postpartum ward and outpatient clinic in Obstetrics & Gynecological Department at Benha University Hospital affiliated to Benha city in Qalioubia Governorate, Egypt.

2. 3.Sample:

A purposive sample of 100 postpartum women delivered by C-section (attended at the mentioned setting for six months) recruited in the present study. The sample divided into two main groups study and control, 50 women for each group collected in a period of 3months for each. Women recruited for the study according to the following inclusion criteria;at least read and write, immediately post-section operation,and agreed to participate in the study.Exclusion criteria were a high-risk pregnancy, e.g., women with any medical disorders associated with pregnancy, women who had complications such as pre and post-C-section haemorrhage, and eclampsia.

2. 4. Tool:Three tools were utilized.

I. Structured interview questionnaire sheet:

It was designed by researchers based on various international and local literatures. It was written in an Arabic language and included two parts:
Part one:Demographic characteristics of the studied women such as age, educational level, occupation, and residence.
Part two: Obstetric history of the studied women as no. of pregnancies, parity, newborn's gender, and status.

II: Indicators of enhanced postpartumrecovery sheet:it consists of

A. **Indicators of immediate (first day) postpartum recovery** as vital signs, level of conscious, presence of after pains, pain level, urine output, catheter duration, the passage of flatus, start oral hydration after first 4 hours, early mobilization, initiation of breastfeeding and time of hospital discharge.
B. **Indicators of postpartum recovery at first week** as vital signs, lochia,presence of complications, and wound healing.
Scoring system: each indicator scored as follows:
- Score 1 indicates (good indicator).
- Score o indicates (poor indicator).

- The Total immediate (first day) postpartum recovery scores and total postpartum recovery at first week classified as;
- Recovered if ($\geq 60\%$).
- Unrecovered if (>60%).
- The pain level assigned by a numerical rating scale of pain which was adopted by [14]. The women were given a score according to the level of pain, she felt from 0 to 10. Then, it divided into three levels as following; mild from 0-3, moderate from 4-7, and severe was more than 7.

III- Reported practices scale:

It assessed women reported practices independently at first-week of postpartum recovery. It included six questions toward maintaining a healthy diet, prepared a meal, self-administering prescribed medications, adequate personal hygiene, caring baby independently, and frequent breast feedings.

Scoring: The reported practice scale is a total of the items based on 3- Likert scale rating, from 3 " usually done," 2 "sometimes," and 1 "never done." The total minimum score was 6, and the maximum score was 18. The higher the total score, the higher the satisfactory reported practices.

2.5. Validity& reliability:

The developed tools examined by a panel of three experts in the field of women health nursing and obstetric medicine to determine whether the included items clearly and adequately cover the domain of content addressed. The percentage of consensus among experts regarding the immediate & first-week recovery tools were 0. 89 & 0.91and also the reliability test for the scale of the reported practice was equal to 0.87 which indicated a high internal consistency of tools, according to Cronbach`s Alpha coefficient test.

2.6. Ethical Considerations:

- Approvals of studied women obtained before data collection and after explaining the purpose of the study.
- The studied women ensured that the questionnaire sheet will be used for the study and will be discarded at the end of the study.
- The studied women informed about having the right to withdraw at any time without giving any reason.
- Women informed that the data collected will be confidential.

2.7. Procedure:

Before implementation of the study, official permission obtained from the Dean of the Faculty of Nursing directed to an administrative committee at Benha University hospital, Egypt. The researchers visited the mentioned setting twice/week from 9.00 Am to 1.00 Pm and interviewed each woman at the postpartum unit (after C-section) until the women discharged. The data collected in 6months' duration from the beginning of August 2017 to the end of January 2018. Evaluation of the women's recovery and reported practices hascompleted at the end of the first week of February 2018. The study executed according to the following phases:

2.7.1. Preparatory phase

1- Developing the intervention guideline:

The intervention guideline adaptedfrom [15, 16 &17].to ensure providing evidence-based information and practices to postoperative C-section that enhancing postpartum recovery.It translated by the researchers to simple Arabic language based on the opinion of experts, and according to women`s needs. It included practical procedures applied by the researchers immediately post-caesarean section operation and throughout first day of postpartum recovery to enhance recovery (as routine monitoring of vital signs & level of consciousness, fundus and lochia assessment,pain management,early mobilization, bladder care, nutrition & diet,monitoring for potential complication, medication, and discharge plan). Besides, theoretical content prepared as a visual hand out to be given to the study group as a supportive material before hospital discharge.

2- Pilot study:

After the development of the tools, a pilot study carried out on 10% of the pre-assigned sample size (10 women). The pilot conducted to ascertain clarity, relevance, the applicability of the tools, and the feasibility of the research process. According to the result of the pilot study, no modification has done. Then women involved in the pilot study were included in the primary sample as the study tools were precise.

2.7.2. Implementation phase:

The researchers interviewed the participants,introduced themselves to each womanafter full explanation of the aim of the study, and obtain oral consent. 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. Researchers took data as socio-demographic data, obstetric history for both groups.

Control group:

Women of the control group were assessed by using the designed study questionnaire. It assessed indicators of the immediate first day, first-week postpartum recovery,and reported practices under routine hospital care. Examples for these practices are the routine prescription of analgesic without assessing pain score, mobilization at <5 -12 hours after cesarean section, removal of catheter after 6hours, nothing per mouth until pass stool, delayed breastfeeding until the mother could be able to feed and no discharge plan.

Study group:

Study group women were assessed after implementing the intervention guideline (practical procedures and teaching instructions as soon as women restore their consciousness). The women assessed by the same study questionnaire to assess indicators of immediatepostpartum recovery, indicators at first week, and reported practices.

2.7.3. Evaluation phase:

-During this phase, all women from both groups (control & study asked for coming to the outpatient clinic after one week of caesarean section to evaluate the effect of the implemented guidelines.

-Evaluation of enhanced recovery has done through indicators of postpartum recovery after the first-week (tool

2). The researchers assess vital signs, lochia, after pains assessment, wound healing, and observe for any complications that occurred to them after discharge. The complications diagnosed with the help of the attendant physicians at the postpartum outpatient clinic. Also, evaluate women independently performing daily activity practices by reported practices scale. There were eight missed cases in the control group, and three in the study group.

-Comparison of the findings of the control group and study group to evaluate the effect of implemented intervention guidelines on enhancing postpartum recovery.

2.8. Statistical analysis:

- Analysis of data carried out by the researchers. Data verified before computerized entry, categorized, coded, computerized, tabulated using IBM SPSS (statistical package for social science) statistical software version 22.
- Qualitative data described using numbers and percentages. Quantitative data described using the minimum and maximum, mean, and standard deviation (Mean ±SD).
- A comparison between the groups regarding categorical variables was tested using the Chi-square test. When more than 20% of the cells have expected count less than 5, correction for chi-square (X^2)conducted using Fisher's exact test.
- Multinomial logistic regression used to identify variables that affect immediately on the first day and after week postpartum recovery. Variables tested using odds ratio (OR) with 95% confidence interval (CI) or exact confidence limits (ECL).
- -A significant level value considered when p <0.05, a highly significant level value considered when p < 0.01 and no statistical significance difference when p>0.5.

RESULTS

Table(1):showssocio-demographic characteristics: reveals that mean age ±SD in both groups was (28.24±4.34) years in the study and (27.12±6.53) years in the control group. More than half of both groups lived in rural areas and had secondary education. Their occupation was a housewife. The table also reveals a non-statistical significant difference between both groups regarding socio demographic characteristics as the p- value was > 0.05.

Table (2): Concerning obstetric history, shows that most of the study group were multigravida and multi Para compared to about half of the control group who were primigravida and primipara. More than half of the study group received female babies compared to more than two-thirds of control groups received male babies, and the majority of both groups their new born's status was good.

Table (3): An indicator of enhanced recovery denotes that 96% of the study group, and 92% control group had normal vital signs. It also shows that 68% of the study group were conscious compared to 58% of the control group, and (78.0%) of the study group felt pains after uterine massage

in comparison to (50.0%) of the control group with a significant difference between both groups as the p-value is < 0.05. as more, this table indicates an enhanced recovery in the study group in different indicators as urine output, catheter duration, the passage of flatus, start oral hydration after first 4 hours, early mobilization, initiation of breastfeeding and hospital discharge compared to control group with highly statistical significant difference between both groups as p-value < 0. 001.

Figure (1): highlights that 70.0% of the study group had a moderate pain score compared to 60.0% of the control group at immediate recovery.

Figure (2):reports that the study group attained 74.0% in postpartum recovery scores compared to 60.0% of control ones. There was a statistically significant difference between both groups regarding total immediate postpartum recovery scores as p-value < 0. 05.

Table (4): reports the effect of the intervention guidelines in enhanced postpartum recovery at first week postpartum as there was a significant difference between both groups regarding vital signs as p-value 0.012. Also, there was a highly statistically significant difference between both groups regarding lochia color, presence of complication, and wound healing, as the p-value was< 0. 001.

Table (5):reveals enhanced recovery in all study groups regarding reported practicesindependently as there was a highly significant difference between both groups regarding maintaining a healthy diet, prepared a meal, practice adequate personal hygiene, caring for babies independently, and frequent breastfeeding. Besides, there was a significant difference between both groups regarding self-administering prescribed medications as the p-value was< 0. 001.

Figure (3):reports that the study group attained 96.0% in postpartum recovery scores compared to 88.0% of the control. There was a highly statistically significant difference between both groups regarding total immediate postpartum recovery scores as p-value < 0. 001.

Figure (4):reveals that 88% of the study group had satisfactory scores regarding total reported practices in the first week compared to 64% of the control group.

Based on the pain score, figure (5) illustrated that 76% of the study group had mild pain level compared to 82% of the control group had mild pain assessment scores in the first week.

Table (6):demonstrates that initiation of breastfeeding, early mobilization, and hospital discharge were the highest indicators that are enhanced at immediate recovery in the study group with a highly significant as the p-value < 0. 001.

Table (7):shows that caring for babies independently, was the highest indicator enhanced at first week postpartum recovery in the study groupwith a highly significant difference as p-value< 0.001.

Table (1): Comparison between study and control groups regarding their socio-demographic characteristics(n=100).

Socio-demographic characteristics	Study group (n=50)		Control group (n=50)		X^2	p-value
Age	No	%	No	%		
18- <25	9	18.0	22	44.0	10.57	0.071
25- <34	23	46.0	10	20.0		
More than 35 years	18	36.0	18	36.0		
Mean ±SD	28.24±4.34		27.12±6.53			
Residence						
Urban	23	46.0	15	30.0	5.91	0.11
Rural	27	54.0	35	70.0		
Level of education						
Basic education	2	4.0	3	6.0	2.56	0.27
Secondary education	29	58.0	26	52.0		
higher education	19	38.0	21	42.0		
Occupation						
housewife	27	54.0	26	52.0	0.16	0.68
worked	23	46.0	24	48.0		

Table (2): Comparison between study and control groups regarding their obstetric history (n=100).

Obstetric profile	Study group (n=50)		Control group (n=50)		X^2	p-value
	No	%	No	%		
No of pregnancies						
Primigravida	5	10.0	24	48.0	24.27	0.08
2nd times	19	38.0	18	36.0		
3rd or more times	26	52.0	8	16.0		
Parity						
Primipara	5	10.0	24	48.0	1.51	0.67
2nd para	19	38.0	18	36.0		
3rd para or more	26	52.0	8	16.0		
Newborn's gender						
Female	26	52.0	19	38.0	1.98	0.15
Male	24	48.0	31	62.0		
Status of the newborn						
not good	5	10.0	10	20.0	1.96	0.16
good	45	90.0	40	80.0		

Table (3): Comparison between study and control groups regarding their immediate postpartum recovery indicators(n=100).

Indicators	Study group (n=50)		Control group (n=50)		X^2	p-value
	No	%	No	%		
vital signs						
Normal	48	96.0	46	92.0	0.70	0.40
Abnormal	2	4.0	4	8.0		
Level of conscious						
Conscious	34	68.0	29	58.0	6.82	0.009*
Semi-conscious	16	32.0	21	42.0		
Presence of afterpainsafter a uterine message						
Yes	39	78.0	25	50	5.47	0.019*
No	11	22.0	25	50.0		
Urine output (every hour In the first 4 hours)						
< 350 ml	5	10.0	34	68.0	36.24	0.000**
350-500	`18	36.0	4	8.0		
>500 ml	27	54.0	12	24.0		
Catheter duration						
4 hours	42	84.0	15	30.0	32.9	0.000**
6hours	8	16.0	20	40.0		
6hours or more	0	0	15	30.0		

Passage of flatus						
Yes	46	92.0	28	56.0	26.47	0.000**
No	4	8.0	22	44.0		
Start oral hydration after1st 4hours						
Yes	46	92.0	6	12.0	64.10	0.000**
No	4	8.0	44	88.0		
Early mobilization						
Yes	46	92.0	26	52.0	19.8	0.000**
No	4	8.0	24	48.0		
Initiation of breastfeeding						
Yes	47	94.0	25	50.0	24.0	0.000**
No	3	6.0	25	50.0		
Hospital discharge						
Within 24hours	48	96.0	30	60.0	39.5	0.000**
After 24hours	2	4.0	20	40.0		

(*Statistical significant difference at P -value< 0.05 & ** A highly statistical significant difference at P-value < 0. 001).
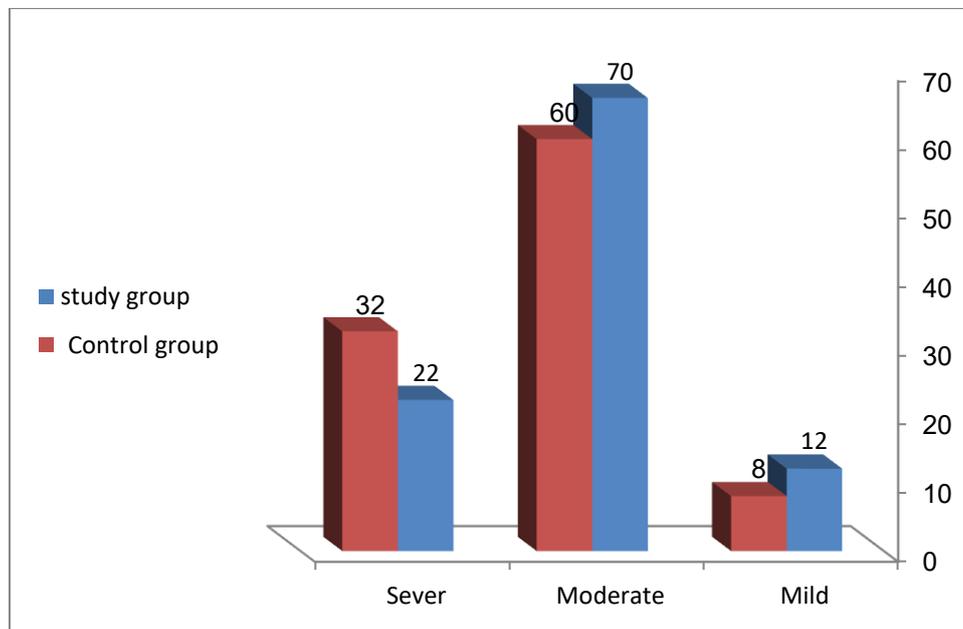

Figure (1): Pain level at immediate postpartum recovery (study &control).
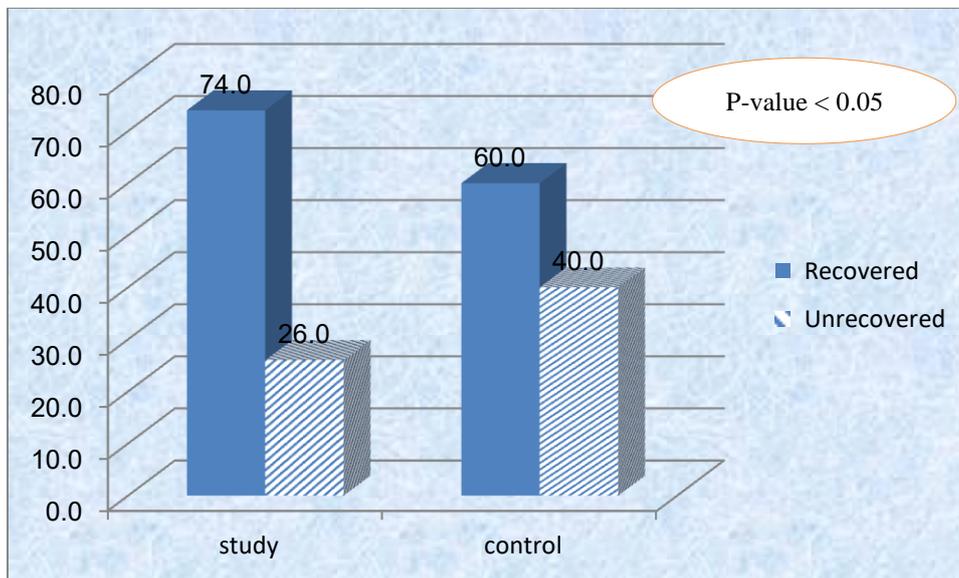
Figure (2): Total immediate postpartum recovery scores of the studied women (study &control).

Table (4): Comparison between study and control groups regarding indicators of postpartum recovery in the first week(n=100).

Indicators	Study group (N=50)		Control group (N=50)		X^2	p-value
	No	%	No	%		
Vital signs						
Normal	50	100.0	44	88.0	6.38	0.012*
Abnormal	….	….	6	12.0		
Lochia						
Small amount	13	26.0	6	12.0	4.30	0.11
Moderate amount	16	32.0	14	28.0		
Heavy amount	21	42.0	30	60.0		
Color						
Rubra	31	62.0	48	96.0	17.42	0.000**
Serosa	19	38.0	2	4.0		
Presence of complications after cesarean section						
No	48	96.0	37	74.0	18.2	0.000**
Heavy blood loss	0	0	4	8.0		
Gastro intestinal complication	1	2.0	3	6.0		
Breast complication	1	2.0	6	12.0		
Wound healing						
Healed	50	100.0	38	76.0	13.63	0.000**
Not healed	0	0	12	24.0		

(*Statistical significant difference at P -value< 0.05 & ** A highly statistical significant difference at P-value < 0. 001).

Table (5): Comparison between study and control groups regarding reported practices (n=100).

Practices	Study group (N=50)		Control group (N=50)		X^2	p-value
	No	%	No	%		
Maintaining a healthy diet						
Usually Done	35	70.0	16	32.0		
sometimes	8	16.0	24	48.0	16.02	0.000**
never done	7	14.0	14	28.0		
Prepared a meal						
Usually Done	26	52.0	16	32.0		
sometimes	15	30.0	14	28,0	16.04	0.000**
never done	9	18.0	20	40.0		
Self-administering prescribed medications						
Usually Done	50	100.0	36	72.0		
sometimes	0	0	10	20.0	4.16	0.041*
never done	0	0	4	8.0		
practice adequate personal hygiene						
Usually Done	38	76.0	29	58.0		
sometimes	12	24.0	11	22.0	20.38	0.000**
never done	0	0	10	20.0		
Caring baby independently						
Usually Done	43	86.0	23	46.0		
sometimes	5	10.0	17	14.0	17.82	0.000**
never done	2	4.0	10	20.0		
Frequent breastfeedings						
Usually Done	48	96.0	15	30.0		
sometimes	2	4.0	20	40.0	74.22	0.000**
never done	0	0	15	30.0		

(*Statistical significant difference at P -value< 0.05 & ** A highly statistical significant difference at P-value < 0. 001).
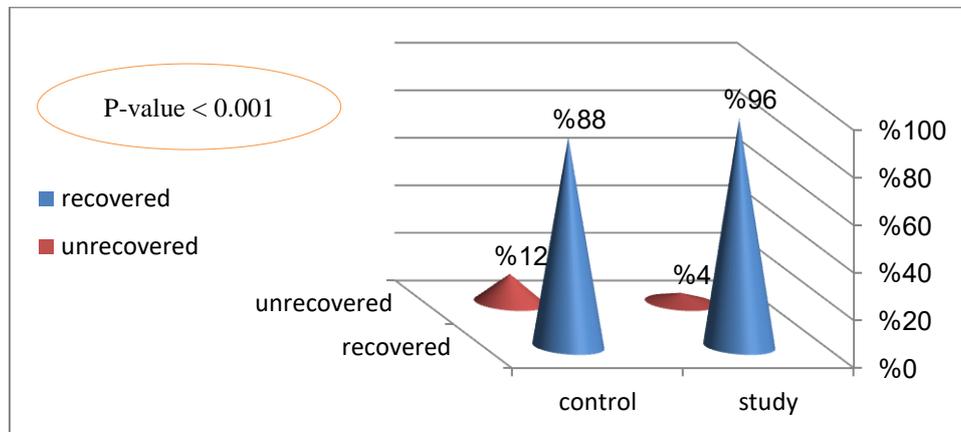

Figure (3): Total postpartum recovery scores in the first week after C-section (study &control).
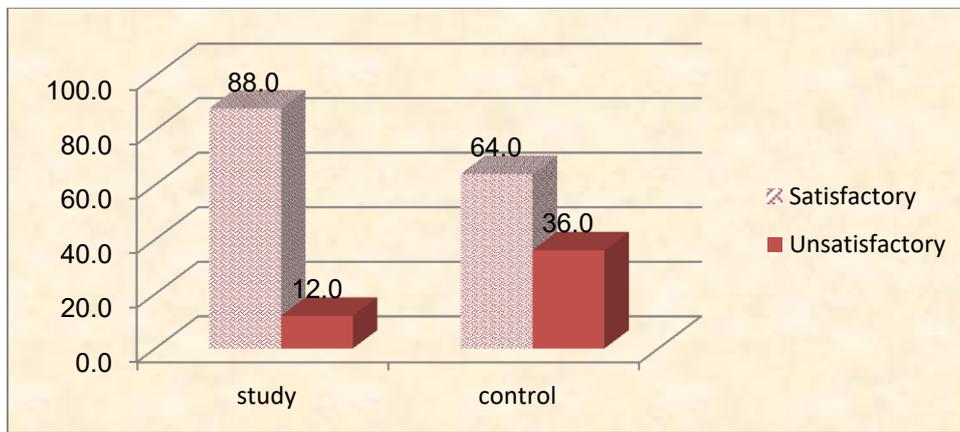
Figure (4): Total reported practice scores of the studied women (study&control).
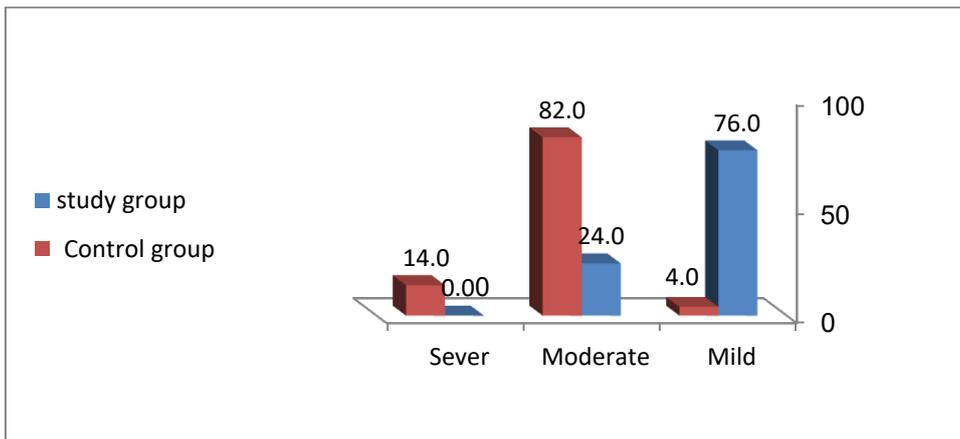

Figure (5): Pain level at first-week postpartum recovery (study &control).

Table 6: Multinomial logistic regression to identify the immediately enhanced recovery indicators of the study group (N=50).

Indicators	Level of consciousness Odds (95%CI)	p-value	Early mobilization Odds (95%CI)	p-value	Initiation of breastfeeding Odds (95%CI)	p-value	hospital discharge Odds (95%CI)	p-value
Age								
18- <25	1(1.09-2.82)	.010**	1(1.47-3.40)	0.021**	1(1.37-3.18)	0.021**	1(1.50-3.67)	0.015**
25- <35	1(1.178-0.84)	.165	1(0.22-1.25)	0.85	1(1.17-1.19)	0.32	1(0.08-1.26)	0.94
≥ 35 years	*Reference		*Reference		*Reference		*Reference	
Address								
Urban	1(0.60- .862)	.157	1(0.85-1.10)	0.19	1(0.81-0.224)	0.78	1(0.95-1.15)	0.22
Rural	*Reference		*Reference		*Reference		*Reference	
Level of education								
primary education	1(1.289-1.45)	.376	1(1.89-2.18)	0.24	1(1.91-3.61)	0.05**	1(0.87-1.89)	0.64
Secondary education	1(0.55-0.633)	.385	1(0.76-0.92)	0.40	1(1.04-0.88)	0.24	1(0.64-1.16)	0.58
higher education	*Reference		*Reference		*Reference		*Reference	
Occupation								
housewife	1(0.71-0.80)	.262	1(1.13-2.00)	0.24	1(1.01-2.17)	0.03**	1(1.39-1.90)	0.17
Worked	*Reference		*Reference		*Reference		*Reference	
No of pregnancy								
Primigravida	1(2.56-53.72.07)	.047**	1(0.00-43.5)	0.98	1(26.8-2.53)	0.000**	1(44.2-1.97)	0.000***
2nd times	1(2.11-)	.079	1(0.00-42.59)	0.98	1(24.3-2.00)	0.000***	1(23.3-0.00)	0.99
3rd times	1(1.88-2.16)	.252	1(22.4-1.30)	0.000***	1(1.27-20.4)	0.000***	1(2.493.55-)	0.155
4th times	1(1.5-61.58)	.311	1(0.00-20.9-)	0.98	1(0.00-20.2)	0.003***	1(0.78-1.92)	0.68
5th times	*Reference		*Reference		*Reference		*Reference	

(* Reference: dependent variable, ** Statistical significant difference at P -value< 0.05 & ** *A highly statistical significant difference at P-value < 0. 001).

Table 7: Multinomial logistic regression to identify the first-week enhanced recovery indicators of the study group (N=50).

Indicators	Adequate personal hygiene Odds (95%CI)	p-value	Maintaining a healthy diet Odds (95%CI)	p-value	Preparing meals Odds (95%CI)	p-value	Caring baby independently Odds (95%CI)	p-value
Age								
18- <25	1(0.96-1.18)	0.41	1(1.021.64-)	0.10	1(-0.83-1.91)	0.66	1(7.7-15.8)	0.000***
25- <34	1(0.36-1.26)	0.77	1(0.89-0.81)	0.27	1(1.97-2.53)	0.43	1(7.7-16.8)	0.000***
More than 35 years	*Reference		*Reference		*Reference		*Reference	
Address								
Urban	1(0.98-0.74)	0.18	1(0.25-0.57)	0.65	1(-0.79-1.77)	0.65	1(0.44-1.10)	0.68
Rural	*Reference		*Reference		*Reference		*Reference	
Level of education								
primary education	1(1.16-1.86)	0.53	1(1.55-1.50)	0.03**	1(14.9-4.5)	0.99	1(19.3-3.3)	0.99
Secondary education	1(0.008-0.82)	0.99	1(0.71-0.62)	0.25	1(16.1-2.2)	0.99	1(0.47-1.24)	0.19
Higher education	*Reference		*Reference		*Reference		*Reference	
Occupation								
housewife	1(0.32-0.90)	0.13	1(0.97-0.73)	0.18	1(-15.3-2.2)	0.99	1(-1.70-1.30)	0.19
Worked	*Reference		*Reference		*Reference		*Reference	

(* Reference: dependent variable, ** Statistical significant difference at P -value< 0.05 & ** *A highly statistical significant difference at P-value < 0. 001).

DISCUSSION

Implementing an intervention guideline-directed toward providing women with consistent, evidence-based information and practices enhanced the recovery after C-section. It involves women in making decisions based on needs, preferences, and the best available evidence of potential benefits and harms to ensure consistent quality of care provided to women(*Australian Commission on Safety and Quality in Health Care, 2014*)[18]. Therefore,the present study was conducted to evaluate the effect of an intervention guideline on enhanced postpartum recovery after caesarean section.

Regarding Socio-demographic characteristics of the studied women, the results of the present study showed that the mean age of both groups was (28.24±4.34 years, 27.12±6.53 years), respectively.More than half of the studied sample lived in rural areas and, more than half of both groups had secondary education. Their occupation was a housewife. These results are similar to*Miovech, et al., (2013)* [19]who studied the major concerns of women after caesarean delivery and found that the mean age of the mothers was 28.7 years, 58.0% of the mother had secondary education, and more than half of mothers were housewives. Also, similar to thosereported by*Timilsina & Dhakal, (2015)* [20]in a study conducted in Emirates and found the studied women's age between (20-30 years), had a secondary education level and were housewife. From the researchers' point of view, the demographic characteristics of the present study probably facilitating women engagement in the study as they considered the applied intervention guidelines instructions are so essential to be followed.

As regarding assessment of immediate (first day) postpartum recovery, the results of the present study indicated an enhanced recovery in different early indicators as most of both groups had typical vital signs. Besides, more than two-thirds of the study group were conscious compared to more than half of the control group and there were a highly statistically significant difference between both

groups regarding urine output, catheter duration, passage of flatus, start oral hydration after first 4hours, early mobilization and initiation of breastfeeding compared to control group (p-value < 0.001).

These study findings supported the research hypothesisandwere similar to *Youness & Ibrahim (2017)*[21], who studied the effect of early and progressive exercises on post-caesarean section among women attending women's health hospital in Egypt and documented the typical vital signs in 97.4 % of both studied groups in the sample,more than half of the both groups were conscious and there werehighly significant differences between both groups in total urine output, passed flatus, and initiation of breastfeeding (p-values< 0.001) after applying exercises. These similarities with our results emphasize the value of establishing early intervention guidelines to promote after caesarean section recovery as early as possible as long as the women's condition is stable, and there are no health problems.

Besides, the present study noted that more than three-quarters of the study group reported the presence of after pains compared to half of the control group with a significant difference between both groups (the p-value <0.05). This finding may be referred to as the presence of uterine contraction due to the frequency of uterine massage and initiation of early breastfeeding before the implementation of intervention guidelines. This finding goes in the context with *Petrenko,(2012)* [22],who stated that the afterpains are uterine cramps that occur intermittently for approximately two or three days after caesarean section, the study also indicated that the uterine tone is good to return to its normal involuted condition. Also*, Tafazoli & Khadem (2014)* [23], documented, "it is a significant that after pain isnormal postpartum physiology, and it is established when breastfeeding increases to be more frequent in first days."

Regarding hospital discharge, the present result showed that most of the study group discharged within the first24 hours compared to two-thirds of the control group, which is

supported byAl-Ghareeb, et al., (2013) [24],who found the study group had shortened hospital stay compared to the control group post-intervention. This similarity was as a result of applyingplanned and directive postnatal careto enhance the early recovery of women and subsequently discharge early from the hospital.

Concerning the level of pain in the first day, the present study reported near three-quarters of the study group has moderate pain assessment in comparison to two-thirds of the control group, which valued the benefit of pain management procedures as early mobilization, emptying the bladder and warm fluids in reducing the level of pain. This finding is supported by a quasi-experimental study ofHarmanjyot et al., (2015) [25].Whofound that early ambulation and warm dehydration had a vital role in decreasing the severity of pain post-operativecaesarean section in the intervention group.

Also, the present study portrayed that near three-quarters of the study group had improved the total immediate postpartum recovery scores compared to two-thirds of the control group. This finding was in the same line withAl-Ghareeb, et al., (2013) [24]results, wherestated in a comparative study after caesarean section in Egypt andshowed a significant difference between both groups regarding improved overall maternal outcomes as the initiation of ambulation, early hearing of bowel sound, mobility, breastfeeding, and resuming a regular diet. This agreement with our results was because of enhanced immediate postpartum indicators and positively improved the total immediate postpartum recovery scores.

Regarding the evaluation of the impact of intervention guidelines on promoting recovery after the first week, there were significant improvements in various recovery indicators as there was a significant statistical difference between both groups regarding normal vital signs, (p-value<0.01), besides there was a highly statistical significant improvements between both groups regarding lochia color, presence of complications and wound healing (p-value <0.000). These findings emphasized the study hypothesis and valued the effect of intervention guidelines on enhanced postpartum recovery after C-section. These results were similar to *Youness & Ibrahim, (2017)* [21]findings thatdocumenteda significant improvements of the intervention group in the lochia color and no complication developed after the cesarean compared to the control group. Besides, the wound healed for the intervention group was (92.9%)in compare to (81.8%) of the control group .Also*, Bouhours, et al., (2011)* [26]were reported in their study on ‘‘effect of postnatal home visits on maternal/infant outcomes in Syria’’ that the interventions aimed to educate, support and counsel women who had recently given birth has significant improvements in managing postpartum discomforts, especially after pain and constipation. This similarity of results emphasizing the importance of such interventions in enhanced postpartum recovery.

Concerning the comparison of the studied women reported practices independently after the first week; there was a highly significant difference between both groups (p-value <0.001), the reported differences were regarding maintaining a healthy diet, prepared a meal, practice adequate personal hygiene, caring for the baby independently, and frequent breast feedings. Besides, there was a significant difference between both groups regarding self-administering prescribed medications (p-value <0.05). These findings were in the same line with *Ying, et al., (2018)* [27] who found the postnatal women, adapt a better return to physical activity after the cesarean section after clinical pathway instructions. While the present findings dissimilartoHobbs, (2016) [28] results, which revealed the negative impact of caesarean section on breastfeeding initiation, duration, and difficulties in the first four months postpartum and found 44.9% of postnatal women expressed difficulties in caring for their babies. Also, this study disagreed withKalaga, (2011) [29]who studied the major physiological, psychological, and lifestyle concern after C-sectionand found only 7% of postnatal women performed baby care dependently, 20% of them perform personal hygiene without helping of others and only3% done frequent breastfeeding because of presence of nipple problems. These disagreements with our results emphasized the positive effect of applying early and directive guidelines toward enhancing women's postpartum recovery as early as possible and consequently help restore their physical and psychological health to care for themselves and babies independently.

Moreover, the current study reported thatmore than three-quarters of the study group had mild levels of pain scores after the first week in comparison to the majority of the control group have a moderate level of pain. These results are incongruent with *Dash, (2016)* [30]ina study conducted on effectiveness of nursing interventions to reduce of after C–sectionpains among 60 postnatal mothers and showed a highly statistically significant decrease in the level of pain following nursing interventions (P<0.001)), in comparison to the pre-assessment level of pain.

The present study showed that the initiation of breastfeeding, early mobilization, and hospital discharge were the highest indicators enhanced at immediate recovery after implementation of the intervention guideline and caring baby independently was the highest indicators enhanced at first week with a highly significant difference (p-value <0.001). These findings werefollowing *Al-Ghareeb et al., (2013)* [24]thatprovedthe early ambulation and breastfeeding after C-section were significantly improved in immediate postoperative recovery andHarmanjyot, et al., (2015) [25]added that earlier mobility after recovery of cesarean section lessened hospital stays to 1.14 day among post-cesarean mothers admitted in selected areas of PGIMER, Chandigarhand facilitate earlier hospital discharge. Besides*, Youness & Ibrahim (2017)* [21] portrayed that frequent breastfeeding denotes holding the baby more independently. Hence womenwere more longing to care for their babies and *Corso, et al.,(2017)*[31]concluded that enhanced recovery protocols for post-operative cesarean sectionrepresented quality improvements in women immediate or late recovery as resuming routine activities independently and not associated with more infant or maternal readmissions.

Finally, from the above results of the present study denoted thatthe intervention guideline which aiming to enhance postpartum recovery after the C-section had significantimprovements in immediate and at the first week postpartum recovery of the studied women.

CONCLUSION

Based on the findings of the present study, it could be concluded that there were highly statistically significant difference between both groups regarding immediate postpartum recovery indicators. Also, there was a highly significant difference between both groups regarding postpartum recovery indicators after one week. The majority of study group had satisfactory reported practices scores Finally;the intervention guideline had a positive effect on enhancing women's postpartum recovery after caesarean section (1st day, 1st week) and higher satisfactory scores regarding total reported practices at first week of postpartum.

RECOMMENDATIONS

Based on the findings of the current study, the following recommendations are suggested:

- Disseminate the intervention guideline to the public and private hospitals to be used as a guide for the best care given and eliminate unnecessary procedures.
- Nurses' orientation programs should be conducted on the postpartum recovery to decrease maternal mortality and morbidity rates due to postpartum complications.

Further research:

- Future research on the facilitators and barriers to the implementation of intervention guidelines post-cesarean section for improvement in the quality of care.

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