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Effect of Enhanced Recovery program for Elective Caesarean Section Through Using Obstetric Quality-of-Recovery Score (ObsQoR-10)

Naglaa Fathy Ahmed [1], Rasha Abdelazim Abdallah[1],Amal hashem Mohamed[1,2], Randa M Abobaker Abdelkhalik[3*], Rania Abd-Elnaby Mohammed Allam[4], Alhassan Mahmoud Shokry[5,6], Yahia Mohamed Sayed Osman [7,8], Amna Nagaty Aboelmagd [7,8],Azza Elsayed Abd Elfattah Arafat[9], Samah Elawady Bassam[10], Hanan Abdelmonem Mohamed [1]

[1]Department of Maternal and Neonatal Health Nursing, Faculty of Nursing, Minia University , Egypt

[2] North Private College of Nursing, Arar City, Saudi Arabia

[3] Department of Maternal and Neonatal Health Nursing, College of Nursing, University of Hafr Al-Batin, Saudi Arabia.

[4] Maternal and child department, College of Nursing, University of Hail, Hail, Saudi Arabia.

[5] Department of Nursing sciences, College of Applied Medical Sciences, Shaqra University, Shaqra, Saudi Arabia.

[6] Department of Adult Nursing, Faculty of Nursing, Minia University, Minia, Egypt

[7] Department of Pediatric Nursing, Faculty of Nursing, Minia University, Minia, Egypt.

[8] Department of Pediatric Nursing, Al-Ghad College for Applied Medical Sciences, Madinah, Saudi Arabia.

[9] Department of Community, Psychiatric, and Mental Health Nursing,College of Nursing, Qassim University, Buraydah,52571, Saudi Arabia. a.arafat@qu.edu.sa.

Department of Psychiatric and mental health nursing, Zagazig University, Egypt.

[10] Department of Maternal and Child Health Nursing, College of Nursing, Qassim University, Buraidah,51452, KSA, s.basam@qu.edu.sa.Nursing Services Department, Qassim University Medical City, Buraydah,Saudi Arabia. Department of Pediatric Nursing , Faculty of Nursing, Zagazig University, Egypt.

* Correspondence author: Randa M Abobaker Abdelkhalik,College of Nursing, University of Hafr Al-Batin, Saudi Arabia, Email: randaabobakre@gmail.com.

ABSTRACT: Background: Caesarean sections are a familiar surgical technique, making up around one-third of all surgical operations in poor- and moderate -income countries. Programs for enhanced recovery after Cesarean section (ERAC) are infrequently used in

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settings with limited resources. **The study aimed to** evaluate the clinical effect of an enhanced recovery program on the postoperative quality of recovery among women undergoing elective cesarean section, utilizing the Obstetric Quality-of-Recovery (ObsQoR-10) score.

Materials and Methods: Quasi- experimental (control and study) research design was utilized. Setting: Study was conducted at postpartum unit, El Minia University Hospital. Sample: Purposive sample formed of 120 women undergoing elective CS that divided into study and control group. Tools: Three tools were used to collect data: A structured interviewing, Obstetric Quality of Recovery-10, and post CS outcomes questionnaire were used.

Results: .A significantly higher proportion of participants in the intervention group achieved good-quality outcomes compared to the control group (61.7% versus 5%, respectively; $p < 0.001$). Furthermore, post-operative complications were less frequent in the study group (3.3%) than in the control group (13.3%).

Conclusion: It was concluded that ERAC implementation can enhance maternal recovery after elective Caesarean section.

Recommendations: Given the steady increase in birth rates, ongoing strain on hospital resources, and rising healthcare costs, implementing an enhanced recovery after surgery (ERAS) protocol for elective cesarean sections has become essential.

1. INTRODUCTION

Caesarean sections (CS) are a familiar surgical technique in the world and their number is rising yearly. Research indicates that women who undergo a C-section recover more slowly than those who give birth vaginally. Inadequate postpartum recovery has far-reaching consequences beyond the individual, impacting societal and economic well-being. It can negatively shape future family planning decisions, maternal caregiving capacity, household dynamics, and the timing of a mother's return to the workforce. (Angolile et al., 2023).

According to United Nations predictions, there will be 134 million births globally in 2021. In contrast to non-obstetric surgery, recovery following childbirth—whether vaginal or Caesarean—is a special experience because mothers are expected to care for their newborns soon after delivery. Returning to the preoperative baseline state or better is the aim of postoperative recovery, which is a complex process involving dynamic changes in several areas (including physical, psychological, physiological, and social) (Guevara et al., 2024).

Optimizing recovery is therefore of utmost importance, and improved recovery after cesarean programs are being utilized more frequently to deal with these problems. Regarding the reporting of ERAC results, there is a notable discrepancy in the literature. Because of this variety, it is challenging to analyze and understand the outcomes and offer suggestions for putting such a program into action. The concept of postpartum healing is multifaceted. However, often reported metrics, including pain scores and length of stay (LOS), are one-dimensional assessments of the healing process and do not accurately represent a patient-centered view of the quality of care (Patel & Zakowski, 2021).

Defining a baseline for postpartum recovery is inherently difficult because the period is marked by unique challenges and adjustments—including chronic sleep deprivation, fatigue, establishing maternal-infant bonding, breastfeeding, and welcoming a new family member. To capture patients' subjective experiences in meeting these challenges, patient-reported outcome measures are considered the gold standard, with the quality of recovery (QoR) serving as a key indicator of that progress (Carrasco et al., 2024).

For women undergoing elective Cesarean birth, the 11-item Obstetric Quality of Recovery (ObsQoR) assessment was developed and validated. The 10-item version (ObsQoR-10) that replaced this one has been verified. Hebrew, Portuguese,

Turkish, Hindi, Arabic, French, and Chinese translations and validations of the ObsQoR have already been completed (Guevara et al., 2024).

Patients who are likely to need a lengthy hospital stay can be identified early with the help of the ObsQoR-10. In a clinical setting, ObsQoR-10 scores can help determine whether a senior review is necessary, evaluate functional recovery, determine whether a patient is ready for discharge on the first postpartum day as part of an enhanced recovery program, and serve as a quality improvement tool to enhance the patient experience after obstetric surgery (Mukarram et al., 2022).

Women-reported outcome measures (PROMs) are a comprehensive but underutilized tool for reporting patient recovery. The PROMs are standardized questionnaires that allow patients to self-report their health state and evaluate various aspects of rehabilitation from their perspective. They are currently acknowledged as the gold standard for measuring postpartum healing (Churruca et al., 2021).

The nurse's role is essential in mitigating difficulties and assessing patient wants within hospitals, given her continuous presence with the patient; hence, she need to be proficient in medical management and nursing care for women in the pre- and post-operative stages. Moreover, the nurse occupies a pivotal role in instructing others and impacting several dimensions of the care delivered to women experiencing cesarean sections and their families (Farag et al., 2023).

Cesarean section (CS) is a surgical procedures worldwide. However, there are few techniques available for determining the quality of recovery in this patient. The Obstetric Quality-of-Recovery Score (ObsQoR-10) was lately developed to assess recovery in the first 24 hours following elective CS. Patient-reported recovery items were initially picked from the QoR-40 scoring instrument, and following expert evaluation, obstetric-specific items were added (Ashok et al., 2022).

Cesarean sections have skyrocketed worldwide in the previous three decades. the world during the previous few decades. The World Health Organization (WHO) states that 21.1% of women globally giving birth via CS is the ideal rate (Betran et al., 2022). Egypt's health minister, Khaled Abdel-Ghaffar, denounced the country's rapidly rising C-section rates, asserting that it leads the world in this regard, accounting for 75–80% of births (El-Gundy, 2023).

Patients who are likely to need a lengthy hospital stay can be identified early with the help of the ObsQoR-10. Clinical decision-making concerning the necessity of senior review, the assessment of functional recovery, readiness for discharge on the first postpartum day as part of an enhanced recovery program, and the application of a quality improvement tool to enhance the patient experience after obstetric surgery may be aided by ObsQoR-10 scores. Thus, the current study used the ObsQoR-10 to assess the impact of the improved recovery program for elective cesarean sections (Akhiwu et al., 2024). The study aimed to evaluate the clinical effect of an enhanced recovery program on the postoperative quality of recovery among women undergoing elective cesarean section, utilizing the Obstetric Quality-of-Recovery (ObsQoR-10) score.

Research Hypotheses:

H1: Women undergoing elective cesarean section exposed to the enhanced recovery program (ERAC) will demonstrate significantly higher post-intervention mean scores across all dimensions of the obstetric quality-of-recovery (ObsQoR-10) scale compared to women receiving conventional perioperative care.

H2: Women undergoing elective cesarean section exposed to the enhanced recovery program (ERAC) will exhibit significantly optimized postoperative maternal and neonatal clinical outcomes—evidenced by accelerated functional milestones, earlier readiness for discharge, and a concurrent reduction in postoperative complications—compared to women receiving conventional perioperative care.

2. MATERIALS AND METHODS

2.1 Research design

The aim of this study was achieved by using a quasi-experimental (control and study) research design.

2.2 Research Setting

The study was conduct at postpartum unit, El Minia University Hospital.

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2.3 Study participants and sampling:

The study included a purposive sample of 120 women undergoing elective CS, who were divided equally into two groups (60 each): study (which used an enhanced recovery program) and control (which received routine care).

Sample Size:

The study carried on 120 women undergoing elective CS. The sample was designed according to the subsequent equation: **$n = [DEFF*Np(1-p)] / [(d^2/Z^2_{1-\alpha/2}*(N-1) + p*(1-p)]$**

DEFF (Design effect) = 1, N (population) = 1900, p (Hypothesized %) = 10%+/-5, d (tolerated margin of error) = 0.05, Z (level of confidence) = 1.96, α (Alpha)= 0.05 with exclusion of diabetic women or having a medical problem, age <18 years, emergency CS, CS performed with or converted to general anesthesia, patient requiring admission to ICU, or BMI >40 kg.

2.4 Tools of the study:

The following tools comprised in the study

Data Collection Tool: A structured interview questionnaire was developed by the researcher for this study. The tool was formulated based on a comprehensive literature review and expert consultations, and it was structured into the following sections:

Part 1: Personal characteristics as: age, residence, educational level, marital status, occupation, weight, height and BMI.

Part 2: Obstetric history: It used to assess obstetric characteristics such as (gravidity, parity, abortion, , and number living children).

Part 3: Data regarding to the last CS: as history of antenatal care , weeks of gestation at CS, main indication of CS, duration of CS, and intraoperative complications.

Tool (II): Obstetric Quality of Recovery-10 (ObsQoR-10) questionnaire: The questionnaire enquired women to rate 10 recovery items with an 10-point numerical Likert scale (from 0=non to 10= Worest imaginable) with 100 being the maximum score.

Obstetric Quality of Recovery-10 (ObsQoR-10) scoring:

10-point numerical Likert scale (from 0=non to 10= Worest imaginable), the total score ranged from 0 t0 100 score less than 50 reported as poor quality of recovery, score from 50-75 reported as moderate quality of recovery, and score more than 75 reported as good quality of recovery **(Guevara et al, 2024).**

Tool (III) post CS outcomes questionnaire: used to assess post CS outcomes for both mother and fetus as (fit for discharge after CS/ hours, time of first liquid, first normal food, catheter removal, first ambulation, and first flatus, occurrence of maternal postoperative complications, if yes type of complication, baby apgar score, and baby weight).

Tools validity:

Content validity was evaluated by a panel of three obstetrics and gynecological nursing specialists. The experts reviewed the instrument to ensure clarity, relevance, comprehensiveness, understandability, applicability, and ease of use, and necessary modifications were made accordingly.

Tools Reliability

The tool scales' internal consistency was determined using Cronbach's Alpha, and the results were 0.681, 0.982, and

0.713 for planned interviews, the Obstetric Quality of Recovery-10, and the post-CS outcomes questionnaire, respectively.

Pilot Study*:*

At the beginning of data collection, a pilot research was carried out on 10% (12) of the women under study in order to evaluate the validity, clarity, and application time of the existing study tools. All essential adjustments were done in accordance with the pilot results.

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Procedure phases:

Preparatory Phase: The study field was thoroughly reviewed, including books, periodicals, scientific journals, electronic dissertations, the internet, and articles.

1. Assessment phase (for the both study and control groups):

- Permission was obtained from El Minia University Hospital and the Faculty of Nursing's Research Ethics Committee. The investigator greeted each woman at the start of the interview, gave her introduction, described the objectives, duration, and activities of the study, and talked about informed consent.
- Informed consent was obtained from all women who met the inclusion criteria. Data on personal characteristics, obstetric history, and last CS data were collected through interviews and questionnaires.

2. Planning phase:

- • In this stage, researchers create instructional strategies, prepare sources, and set study goals and objectives.
  • Women were randomly assigned to one of two groups (control or study).

3. Implementation phase (for study group):

One postnatal ward was the first to use the ERAC technique.
In order to guaranty pathway bundle compliance, the ERAC midwife was also in charge of prospective data collecting and

staff and patient education. Prenatal and postoperative treatment is given at each obstetric team's discretion prior to ERAC.

For study group: A one-on-one educational session with an ERAC midwife was provided to enrolled women who were visited in the prenatal clinic. Enhancing women's comprehension and involvement in their own care is the aim of this session. On the morning of the procedure, women were given a pre-operative carbohydrate drink. There was also an instructive handout for ladies. The following is a breakdown of the entire ERAC program components that were introduced:

The ERAC program focused on antepartum women's pathway education. Meeting with the ERAC midwife. Fasting time: 6 hours for solids, 2 hours for fluids. A carbohydrate-rich drink (400 mL) two hours before surgery, as well as screening and treatment for antepartum anemia.

Standard intra-operative antibiotics are administered during labor in accordance with hospital protocols, 100 μg of neuraxial morphine and prophylactic phenylepinephrine infusion to prevent spinal hypotension. A guideline for preventing nausea and vomiting during and after surgery has been introduced. All patients receive at least one anti-emetic agent; if there are further risk factors, a second anti-emetic agent is administered. Under-patient mattress warmers are used to prevent patient temperature loss in the theatre, and the theatre temperature is maintained at or above 22 degrees Celsius. Uterotonics are administered in accordance with hospital guidelines.

Chewing gum and water were provided to women in the postpartum recovery room. After returning to the ward, the oral diet should be resumed within two hours. Three doses of 100 mg PR diclofenac every 16 hours and 1 g PO paracetamol every 6 hours are recommended for scheduled analgesia. 5–10 mg PO oxycodone every 4–6 hours as needed for analgesia. Early mobilization (within six hours after surgery) after a formal mobility evaluation. Six hours following surgery, the urine catheter might be removed if the formal mobility assessment was satisfactory. Patients were given the ObsQoR-10 survey to fill out 24 hours following CS. Early home discharge (at 48 hours if you're in the Community Midwifery Team's (CMT) service region). 24 hours following discharge, the Community Midwifery Team follows up.Control group received routine care.

4. Evaluation phase:

The ObsQoR10 score was evaluated in this phase 24 hours following CS.Additionally, maternal and fetal outcomes were asse ssed both immediately following CS to detect immediate difficulties and subsequently (within 30 days of CS) to detect late iss ues.

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Statistical Analysis

Statistical analyses were conducted using SPSS for Windows (version 26.0). Continuous variables, all of which followed a normal distribution, are presented as means and standard deviations (SD), whereas categorical variables are summarized using frequencies and percentages. Group comparisons for continuous data were performed using independent samples t-tests, while Chi-square tests were used to analyze categorical data.

Ethics Statement

Official institutional approval and permission to conduct both the pilot and actual studies were secured from the Dean of the Faculty of Nursing at Minia University. Furthermore, formal ethical clearance was granted by the Institutional Review Board and Research Ethics Committee of the Faculty of Nursing, Minia University (Protocol Reference No. REC202591). Before enrollment, all eligible women who agreed to participate provided written or verbal informed consent after a comprehensive clarification of the study's nature, scope, and objectives. Participants were explicitly informed of their unconditional right to refuse participation or withdraw from the study at any given stage without providing any explanation or facing negative consequences. Strict measures were implemented during the data collection period—which spanned six months from May 2025 to November 2025—to ensure absolute participant privacy. Full confidentiality and anonymity were guaranteed; nurses and patients were assigned code numbers instead of personal names to mask identities. Additionally, the research team certified that the study procedures posed no health risks to any of the participants.

3. TABELS AND RESULTS

3.1 Women personal characteristics

Table (1) reported , 58.3% of the control group and 66.7% of the study group were between the ages of 25 and 35. In terms of where they lived, 56.7% and 68.3% of the study and control groups, respectively, were in metropolitan areas. In terms of educational attainment, the research and control groups had secondary education rates of 31.7% and 43.3%, respectively. In terms of employment, 90.0% of the control group and 78.3% of the study group were unemployed. In terms of BMI, 73.3% and 80.0% of the study and control groups, respectively, had normal BMIs. with all of the preceding factors showing no statistically significant difference between the two groups.66.7% in the study group and 58.3% in the control group their age were in the age from 25-35 years. Concerning residence, 56.7% and 68.3% in the study and control groups lived at urban area respectively. Regarding educational level,31.7% and 43.3% the study and control groups had a secondary level of education respectively. As regard occupation, 78.3% in the study group and 90.0% in the control group had no work. Concerning BMI, 73.3% and 80.0% in the study and control groups had a normal BMI respectively. with no statistical significant difference between both groups regarding all previous variables.

Table 1. Women personal characteristics of the studied sample.

Items	Study group		Control group		X^2
	N	%	N	%	P-value
Age/ years					
<25 years	7	11.7	7	11.7	1.140
From 25-35 years	40	66.7	35	58.3	(0.566)
>35 years	13	21.6	18	30.0	
Age/ years(Mean±SD)	30.9333±5.52917		31.4417±5.64614		
Residence					
Urban	34	56.7	41	68.3	1.742
Rural	26	43.3	19	31.7	(0.187)
Educational level					
Illiterate	11	18.3	7	11.7	2.288
Primary	16	26.7	13	21.7	(0.515)
Secondary	19	31.7	26	43.3	
University or higher	14	23.3	14	23.3	

Occupation					3.064 (0.080)
No work	47	78.3	54	90.0	
Employed	13	21.7	6	10.0	
Weight/kg (Mean±SD)	69.217±5.6519		66.963±6.3243		T-test 0.145
Height/cm (Mean±SD)	153.85±4.399		153.13±4.379		T-test 0.645
BMI					
Underweight	1	1.7	1	1.7	1.507 0.681
Normal	44	73.3	48	80.0	
Over weight	8	13.3	7	11.7	
Obese	7	11.7	4	6.7	

Chi square test

3.2 Obstetric history

Table (2) illustrates that 70.0% of study group and 56.7% in the control group were multigravida. Concerning Parity, 58.3% and 40.0% in the studied groups respectevely were multiparous respectively. Regarding history of abortion,16.7% and 13.3% the study and control groups had a history of abortion respectively. Regarding parity, 51.7% of participants in the study group and 38.3% in the control group reported having one to two living children. Overall, no statistically significant differences were observed between the two groups across any of these baseline characteristics.

Table 2. Obstetric history of the studied sample.

Obstetric history	**Study group**		**Control group**		**X^2 P-value**
	N	**%**	**N**	**%**	
Gravidity					
Pgda	18	30.0	26	43.3	2.297 (0.130)
Multigravida	42	70.0	34	56.7	
Parity					4.035 (0.133)
Non	18	30.0	26	43.3	
Prime	7	11.7	10	16.7	
Multi	35	58.3	24	40.0	
History of abortion					.261 (0.609)
Yes	10	16.7	8	13.3	
No	50	83.3	52	86.7	
Number of living children					2.969 (0.396)
Not present	19	31.7	27	45.0	
1-2	31	51.7	23	38.3	
3-4	8	13.3	9	15.0	
More than 4	2	3.3	1	1.7	

Chi square test

3.3 The last CS data for women

Table (3) represents that 63.3% in the study group and 65.0% of control group had less than 4 visit . Concerning weeks of gestation at CS, 65.0% and 80.0% in the study and control groups had from 37- 40 weeks r of gestation respectively. Regarding main indication of C.S, 46.7% and 30.0% in the study and control groups reported previous CS as a main indication for CS respectively. As regard Intraoperative complications of C.S, 85.0% and 90.0% in the studied groups respectively had no complications. with no statistical significant difference between both groups regarding all previous variables.

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Table 3. the last CS data for women of the studied sample

The last CS data	Study group		Control group		X^2 P-value
	N	%	N	%	
History of antenatal care					
No	3	5.0	1	1.7	1.039 (0.595)
Less than 4 visit	38	63.3	39	65.0	
4 or more than 4	19	31.7	20	33.3	
Weeks of gestation at CS					3.598 (0.165)
<37 weeks	7	11.7	5	8.3	
From 37- 40 weeks	39	65.0	48	80.0	
More than 40 weeks	14	23.3	7	11.7	
Main indication of C.S					
Cephalopelvic disproportion	11	18.3	17	28.3	4.070 (0.397)
Macrosomic baby	7	11.7	8	13.3	
Previous CS	28	46.7	18	30.0	
Drained amniotic fluid	3	5.0	5	8.3	
Fetal mal-presentation or position	11	18.3	12	20.0	
Duration of CS/ minute	48.35±12.553		48.99±12.058		T-test (0.507)
Intraoperative complications of C.S					
No	51	85.0	54	90.0	0.686 (0.710)
Anesthesia problems	6	10.0	4	6.7	
Intrapartum bleeding	3	5.0	2	3.3	

3.4 Mean and SD of the studied women's obstetric quality of recovery items

Table (4) represents highly statistically significant differences between the two groups across all evaluated outcomes—including pain, nausea, dizziness, shivering, comfort levels, independent mobilization, unassisted infant holding and nursing, personal hygiene and toilet use, and a sense of control ($p < 0.001$ for each).

Table 4. Compare between the study and control groups regarding mean and SD of the studied women's obstetric quality of recovery items

Items	Mean ±SD		T-test
	Study group	Control group	
Pain	7.82±1.610	3.73±2.342	**0.001****
Nausea	8.20±1.527	4.08±2.540	**0.001****
Dizziness	7.88±1.541	4.30±2.242	**0.001****
Shivering	7.85±1.582	3.70±2.520	**0.001****
I have been comfortable	7.80±1.582	4.00±2.762	**0.001****
I am able to mobilize independently	7.88±1.530	4.13±2.633	**0.001****
I can hold a baby without assistance	7.25±1.558	3.95±2.332	**0.001****
I can feed my baby Without assistance	7.78±1.606	3.62±2.358	**0.001****
I can look after my personal hygiene	7.40±1.464	4.10±2.406	**0.001****
I feel in control	7.72±1.574	3.43±2.758	**0.001****

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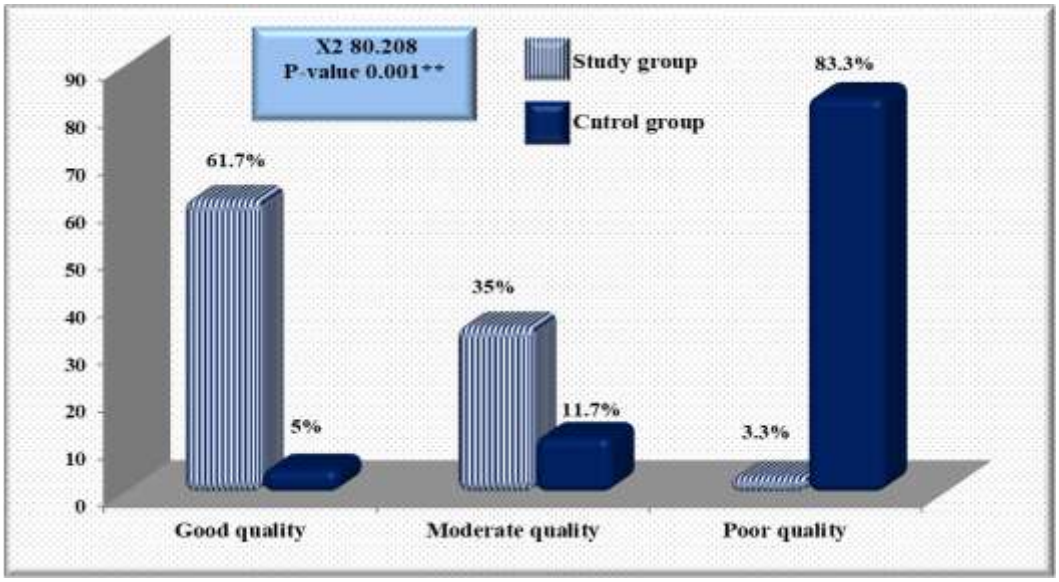
Figure (1) the studied women according to their obstetric quality of recovery level in the studied groups



Chi square test

(**) highly statistical significant difference

Figure (1) demonstrated that A significantly higher proportion of participants in the study group achieved a good level of quality compared to the control group (61.7% versus 5.0%, respectively; $p < 0.001$).

3.5 Women's obstetric quality of recovery items

Table (5) The findings revealed highly statistically significant improvements in the study group compared to the control group regarding several postoperative recovery milestones ($p < 0.001$), including time to first liquid and normal food intake, catheter removal, initial ambulation, passing of flatus, and readiness for discharge following cesarean section. Furthermore, postoperative complications were significantly lower in the study group (3.3%) than in the control group (13.3%, $p = 0.048$). Concerning Apgar scoring at CS, 95.0% and 93.3% in the study and control groups had normal Apgar score respectively. Regarding Baby weight, 91.7% and 93.3% in the study and control groups their baby weighted from 2500- 4000 gm respectively. with no statistical significant difference between both groups at p-value>0.05.

Table 5. Women maternal and neonatal outcomes in the in the studied groups

The last CS data	Study group		Control group		P-value
	N	%	N	%	
Fit for discharge after CS/ hours	7.415±3.781		32.615±8.071		0.001**
Time of first liquid	2.875±1.674		8.321±5.632		0.001**
Time of first normal food	8.432±3.531		29.784±8.436		0.001**
Time of catheter removal	6.329±1.654		25.786±6.932		0.001**
Time of first ambulation	5.577±2.469		28.544±5.998		0.001**
Time of first flatus	10.35±4.321		23.65±7.780		0.001**
Occurrence of any post-operative complications					
Yes	2	3.3	8	13.3	5.927
No	58	96.7	52	86.7	**(0.048*)**
if yes, type of complications (n=10)					
Delays initiation of breastfeeding	2	100.0	3	37.5	2.500
Infected wound	0	0.0	2	25.0	(0.287)

Postpartum bleeding	0	0.0	3	37.5	
Apgar scoring					
Normal	**57**	**95.0**	**56**	**93.3**	0.152 (0.697)
Abnormal	3	5.0	4	6.7	
Baby weight					
<2500gm	2	3.3	3	5.0	1.209 (0.546)
From 2500- 4000 gm	55	91.7	56	93.3	
> 4000 gm	3	5.0	1	1.7	

Chi square test

4. DISCUSSION

A multidisciplinary patient care strategy based on evidence-based guidelines, Enhanced Recovery after Surgery (ERAS) aims to improve post-operative outcomes and lessen surgical stress reaction. Incorporating the ERAS protocol may offer an ideal window of opportunity to enhance outcomes and promote the best possible recovery of physiological function, while also boosting maternal comfort during the postoperative phase, given the rising numbers of cesarean deliveries (Mundhra et al., 2024a). So the researcher interested to evaluate the effect of enhanced recovery program for elective caesarean section through using obstetric quality-of-recovery score (ObsQoR-10).

More than three-fifths of the women in the study group and only 5% of the women in the control group had good obstetric quality of recovery, according to the current study. There was a highly statistically significant difference between the two groups at p-value 0.001. Similar findings were conducted by (Niekerk et al., 2024), who applied their research in Johannesburg to assess the effect of a customized enhanced recovery program on the quality of recovery following an elective Caesarean section. They discovered that the Obstetric Quality of Recovery-10 scores significantly improved after ERAC, with a difference in medians of 9 between cohorts P<0.001. Also (Ciechanowicz et al., 2019), who implemented their research to create and assess a modified quality-of-recovery (QOR) tools score following an elective Caesarean delivery in London. They came to the conclusion that the ObsQoR-11 offers a valid, dependable, and responsive global assessment of recovery following an elective Caesarean delivery. From the researcher point of view, similarity here back to applying the study on the same sample with similar criteria, and explained the vital role of Obstetric Quality of Recovery-10 on improving post CS outcomes for women.

When comparing the mean and SD of the women's obstetric quality of recovery items between the study and control groups, the actual study shows that there were highly statistically significant differences between the two groups in terms of pain, nausea, dizziness, shivering, being comfortable, being able to move independently, holding a baby without assistance, nursing a baby without assistance, taking care of personal hygiene toilet, and feeling in control (p-value 0.001 for all).

Similarly, (Ali et al., 2019) found that there was a highly statistically significant difference between the active and control groups in terms of pain, nausea and vomiting, and early to ambulation at p-value 0.001 for all. The study was conducted in Egypt to examine the impact of improved recovery after elective CS on the length of hospital stay, pain management, patient satisfaction, complication rate, and return to hospital rate. Additionally, Mansour et al. (2025) conducted a study in Egypt to determine whether the ERACS protocol, which speeds up recovery after elective cesarean sections, improves final patient outcomes. They found that there were highly statistically significant differences between the two groups in terms of pain, nausea, dizziness, shivering, being comfortable, being able to move independently, holding a baby without assistance, nursing a baby without assistance, taking care of personal hygiene toilet, and feeling in control (p-value 0.001 for all). From the perspective of the researcher, this resemblance might be supported by applying all earlier research in the same context with exposure to comparable situations. and shown how using increased recovery following elective CS led to improvement.

Conversely, Niekerk et al. (2024) demonstrated that there was no statistically significant difference between the two groups in terms of nausea, dizziness, shivering, comfort, independent mobility, holding a baby without help, nursing a baby without hel p, and feeling in control at p-value >0.05 for all.

From the perspective of the researcher, this discrepancy could be explained by using Niekerk et al.'s study on a tiny sample si ze that is ineffective in demonstrating the differences between the two groups. Concerning maternal outcomes of the studied

women in the study and control groups, present study showed that there were highly statistical significant difference between study and control group regarding fit for discharge after CS/ hours, time of first liquid, first normal food, catheter removal, first ambulation, and first flatus. In line with earlier research (Mundhra et al., 2024b), who conducted their study in India to ascertain whether an ERAS pathway at emergency cesarean birth would permit a reduction in postoperative length of stay and improve postoperative patient satisfaction, they discovered that there were highly statistically significant differences between ERAS and conventional groups regarding fit for discharge after CS/hours, time of first liquid, first normal food, catheter removal, first ambulation, and first flatus.

From the researcher point of view similarity here explored the vital effect of ERAS protocol in improving the post CS' women recovery that should be encouraged to be a routine care for all post CS women. Present study showed that three percent in the study group and more than one tenth in the control group had post-operative complications, with statistical significant difference between both groups at p-value 0.048. On the other hand, (Borkowska et al., 2024), who performed their study to measure the ObsQoR-11 score as our main outcome before and after applying an ERAC pathway, and reported that there was no statistical significant difference between before and after implementing an ERAC pathway regarding post-operative complications at p-value 0.230. From the investigator opinion dissimilarity here may be backed to applying Borkowska et al's had a different sample number before after implementing an ERAC pathway.

Concerning personal and obstetric characteristics of the studied women, present study reported that there were no statistical significant difference between the study group and control group as personal data, gravidity, parity, weeks of gestation, and duration of CS at p-value >0.05. similar findings were reported by Mundhra et al., 2024b, and Mansour et al., 2025.

5. CONCLUSION

Based on the empirical findings of the present study, it can be concluded that:

The implementation of the Enhanced Recovery After Surgery (ERAS/ERAC) protocol yields a profoundly positive impact on the obstetric quality of recovery and clinical outcomes for women undergoing elective Caesarean sections compared to the conventional routine care.

The statistical evidence clearly demonstrates that the ERAS group achieved a significantly higher quality of recovery (61.7% good recovery level vs. only 5% in the control group; $p = 0.001$). Furthermore, implementing the program resulted in:

- A dramatic reduction in the time required to resume oral intake (first liquids/normal food), early ambulation, faster catheter removal, and earlier return of bowel function (first flatus) ($p = 0.001$).
- Significantly superior mean scores regarding post-operative pain management, reduction of nausea, dizziness, and shivering, allowing mothers to independently look after their personal hygiene, mobilize, and safely nurse/hold their newborns ($p = 0.001$).
- A remarkable decrease in post-operative length of hospital stay (7.41 ± 3.78 hours until discharge fitness in the study group compared to 32.61 ± 8.07 hours in the control group), accompanied by a significant reduction in post-operative complications from 13.3% down to 3.3% ($p = 0.048$).

6. RECOMMENDATIONS:

In light of the ongoing global and regional increase in Caesarean section rates, which exerts a substantial strain on hospital resource allocation and financial capacity, the following recommendations are proposed:

1. It is imperative to officially adopt and standardize the Enhanced Recovery After Surgery (ERAS) protocol as a routine clinical pathway for all elective Caesarean sections across tertiary and university hospitals to optimize maternal safety and decrease cost.

2. Designing structured educational programs and clinical workshops for obstetric and postpartum nursing staff to equip them with the standardized guidelines of the ERAS pathway (such as multi-modal pain management and early ambulation protocols).
3. Integrating ERAS milestones into routine antenatal counseling, ensuring that expectant mothers and their families are well-informed pre-operatively to enhance their active partnership and compliance bedside.
4. Conducting further large-scale, multicenter longitudinal studies to evaluate the long-term impact of ERAS implementation on maternal psychological well-being and neonatal breastfeeding attachment patterns over extended postpartum periods.

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AUTHOR CONTRIBUTIONS

- O.A.A.A.: Conceptualization, Methodology, Formal Analysis, Investigation, Writing—Original Draft Preparation, Writing—Review & Editing, Project Administration.
- R.M.A.E.: Conceptualization, Validation, Investigation, Writing—Review & Editing, Supervision.
- Randa M Abobaker: Conceptualization, Investigation, Resources, Writing—Original Draft Preparation, Writing—Review & Editing, Supervision.
- H.R.M.R.: Methodology, Investigation, Resources, Writing—Review & Editing.
- M.O.A.: Methodology, Investigation, Writing—Original Draft Preparation, Writing—Review & Editing.
- M.M.A.: Software, Formal Analysis, Investigation, Data Curation, Writing—Review & Editing.
- A.A.A.: Software, Investigation, Data Curation, Writing—Review & Editing.
- Naglaa Fathy Ahmed: Validation, Investigation, Writing—Review & Editing, Visualization.
- N.A.I.E.D.: Validation, Investigation, Writing—Review & Editing, Visualization.
- Rasha Abdelazim Abdallah: Investigation, Writing—Review & Editing.
- Amal hashem Mohamed: Investigation, Writing—Review & Editing.
- Rania Abd-Elnaby Mohammed Allam: Investigation, Writing—Review & Editing.
- Alhassan Mahmoud Shokry: Investigation, Writing—Review & Editing.
- Hanan Abdelmonem Mohamed: Investigation, Writing—Review & Editing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The datasets generated and analyzed during the current study are not publicly available due to institutional policies protecting patient privacy and clinical confidentiality. However, the data are available from the corresponding author upon reasonable academic request and subject to approval from the institutional review board.

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