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Original Research Article

Enhanced Recovery after Surgery (ERAS): Assessing the Crucial Role of Nurses in Improving Patient Outcomes and Healthcare Efficiency" at Aster Sanad Hospital Riyadh (Cesarean section)

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Abstract

Background: Surgical advancements have led to the development of Enhanced Recovery After Surgery (ERAS) guidelines. This study aims to assess the nurse's role in improving patient outcomes and healthcare efficiency using ERAS. ***Methodology***: This cross-sectional study was conducted in Aster Sanad Hospital Riyadh, Saudi Arabia. Data were collected using a self-administered questionnaire and from electronic medical records. The study sample was given a self-administered questionnaire. Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 21 (IBM SPSS Statistics, Armonk, NY) to analyze the data. ***Result***: The result shows that there is a significant level of confidence among a notable portion of respondents regarding their understanding of ERAS protocols, there are also areas of uncertainty and variability, indicating the need for targeted interventions to enhance comprehension and implementation. Moreover, there is widespread acknowledgement of the pivotal role of nurses in ERAS implementation, yet significant proportions express reservations about nurses' training, workload constraints, and support from healthcare institutions. ***Conclusion***: Overall, these findings emphasize the multifaceted nature of ERAS implementation, requiring a comprehensive approach that addresses training, communication, workload, and resource allocation to optimize patient outcomes and healthcare efficiency in Cesarean surgery units at Aster Sanad Hospital.

Keywords: Enhance Recovery After Surgery, Ceserean Delivery, Surgery, Intervention.

INTRODUCTION

In the last 30 years, major surgery has seen significant advancements, including minimally invasive surgery, robot-assisted surgery, improved anaesthetic, analgesia, and sedative management, and the incorporation of non-invasive ventilation (NIV) methods. These surgical advancements have led to the development of Enhanced Recovery After Surgery (ERAS) guidelines (HAS, 2016). (ERAS) was initiated by Professor Henrik Kehlet in the 1990s, and enhanced recovery programmes (ERPs) have become an important focus of perioperative management for most major surgeries (Kahlet, 1997). Concurrently, the surgical industry has faced new problems, such as minimizing physical stress on patients to expedite their return to work and reducing postoperative complications (Tapia, 2017). ERAS protocols—an integrative surgical technique meant to maximize the perioperative period—have been developed in response to these developments. This method entails thorough preoperative planning, lowering anxiety levels during surgery, and optimizing the postoperative phase through a multidisciplinary approach and focused interventions to hasten the healing process (Kehlet & Dahl, 2003).

Cesarean Section (C-section) delivery is the most common procedure in many nations, and its prevalence has increased in recent decades, highlighting the importance of discussing its care, C-section has been increasing over the past decades and now exceeds 32%

of births (Boerma, 2018; Betran, 2021) despite that the World Health Organization (WHO) recommends that the optimal C-section rate be fewer than 15% (WHO, 2015). However, the number of C-sections has recently increased, and it is currently the most common abdominal operation performed in the United States (Pfuntner *et al*., 2017; Hamilton *et al*., 2007). In 2008, the rate of C-sections in the United States exceeded 32%, whereas in Colombia it rose from 24.9% in 1988 to 45.7% in 2013 (MacDorman *et al*., 2010; Rubio-Romero *et al*., 2014). Rates in Latin America and the Caribbean increased significantly between 1990 and 2014 and remained higher than in any other region (Betran *et al*., 2016). In Brazil's private facilities, the incidence of cesarean deliveries might approach 80-90% (Ramires *et al*., 2015). In Saudi Arabia, the C-section rate accounts for around 10% of all births, reaching 20% in tertiary centers. The observed increase in cesarean birth has been attributed to many factors, including the first birth, in particular, and advanced maternal age. Other factors include the obstetrician's characteristics and care practices (Ba'aqeel, 2009).

Cesarean section (C-section) is a widely performed surgical procedure globally, including at Aster Sanad Hospital Riyadh, due to various maternal and fetal indications. While often necessary to ensure the safety of both mother and child, C-sections carry inherent risks and challenges, both during the procedure and in the postoperative period. Complications such as surgical site infections, thromboembolic events, and prolonged hospital stays can significantly impact maternal recovery and neonatal well-being. Additionally, the psychological and emotional toll on mothers undergoing C-sections, particularly in cases of unplanned surgeries, cannot be understated. In recent years, the healthcare community has increasingly focused on optimizing perioperative care to mitigate these challenges and improve patient outcomes (Brindle *et al*., 2020). ERAS protocols have emerged as a comprehensive approach to achieving this goal. ERAS protocols encompass a multidisciplinary, evidence-based framework aimed at standardizing preoperative, intraoperative, and postoperative care practices to enhance recovery, minimize complications, and expedite discharge. While initially developed for colorectal surgery, the principles of ERAS have been successfully adapted to various surgical specialties, including obstetrics. ERAS protocols for C-sections typically involve preoperative patient education, optimization of nutrition and hydration, multimodal pain management strategies, early mobilization, and standardized postoperative care pathways. By systematically addressing key aspects of perioperative care, ERAS protocols aim to reduce surgical stress, maintain physiological homeostasis, and promote rapid recovery. Despite growing evidence supporting the efficacy of ERAS in improving outcomes for surgical patients, including those undergoing C-sections, the successful implementation and sustainability of ERAS protocols require a collaborative effort from all members of the healthcare team, with nurses playing a central role in patient care coordination, education, and support throughout the perioperative journey (Ljungqvist *et al.*, 2021).

The significance of this topic is paramount as it encompasses the potential to revolutionize the landscape of perioperative care for C-section patients not only within the confines of Aster Sanad Hospital Riyadh but also across a broader spectrum of healthcare institutions. C-sections represent a significant portion of surgical procedures performed globally, accentuating the imperative need for enhancements in their perioperative management to ensure optimal maternal and neonatal outcomes while effectively utilizing healthcare resources. By honing in on the implementation of ERAS protocols tailored specifically to the nuances of C-sections, this research endeavors to confront head-on the distinctive challenges and opportunities intrinsic to obstetric surgery. ERAS protocols have garnered acclaim for their remarkable efficacy in reducing post-operative complications, shortening hospital stays, and elevating patient satisfaction levels across a gamut of surgical domains. However, the transposition of ERAS principles onto obstetrics, particularly C-sections, remains a relatively unexplored terrain, representing a palpable void in both clinical practice and scholarly inquiry. Delving into the pivotal role of nursing personnel in the execution of ERAS protocols for C- sections not only illuminates the indispensable contributions of nursing staff but also underscores the interdisciplinary essence of perioperative care (Gramlich *et al*., 2020).

The successful implementation of ERAS protocols for C-sections holds promise in yielding substantial economic dividends by curtailing healthcare expenditures associated with prolonged hospitalizations, postoperative complications, and unwarranted interventions. Furthermore, by streamlining perioperative care and fostering expedited recovery, ERAS protocols align seamlessly with the ethos of patient-centered care, empowering mothers to actively participate in their recuperative journey and fostering a sense of agency and self-determination. Ultimately, through an exhaustive exploration of the significance of ERAS in the context of C-section deliveries at Aster Sanad Hospital Riyadh, this research aspires not only to ameliorate patient outcomes and streamline healthcare operations but also to contribute meaningfully to the evolution of evidence-based obstetric care practices on a global scale (Nelson *et al*., 2021).

The effective implementation of ERAS protocols for C- sections holds great promise in reducing healthcare expenditures associated with prolonged hospitalizations, postoperative complications, and unwarranted interventions. Furthermore, by streamlining perioperative care and fostering expedited recovery, ERAS protocols align seamlessly with the ethos of patient-centered care, empowering mothers to actively

participate in their recuperative journey and fostering a sense of agency and self-determination.

Consequently, there exists a critical need to assess the crucial role of nurses in improving patient outcomes and healthcare efficiency using ERAS implementation across a wide spectrum of healthcare providers, including those in hospitals and outpatient settings. However, there are a limited number of studies conducted in Saudi Arabia and, more specifically, in Riyadh that studied assessed the crucial role of nurses in improving patient outcomes and healthcare efficiency for C-section deliveries. Hence, purpose of this research is multifaceted, aiming to delve deep into the intricate dynamics surrounding the implementation of ERAS protocols for C-section deliveries at Aster Sanad Hospital Riyadh. Firstly, it seeks to meticulously examine and evaluate the current landscape of nursing practices and protocols pertaining to C-section deliveries within the hospital's obstetric department. This entails a comprehensive scrutiny of the existing workflows, protocols, and procedures employed by nursing staff during the perioperative period, elucidating both strengths and areas warranting improvement. Additionally, the research endeavors to gauge the level of adherence among nursing personnel to established ERAS guidelines throughout the continuum of care for C- section patients. By scrutinizing adherence rates, potential deviations from best practices can be identified and rectified, paving the way for more standardized and optimized patient care pathways. Moreover, the research seeks to elucidate the tangible impact of nursing involvement in ERAS implementation on patient outcomes, including the length of hospital stay, incidence of postoperative complications, and patient satisfaction scores outcomes, streamline healthcare operations, and contribute to the development of evidence-based obstetric care practices globally.

METHOD

Study Design

The research employed a cross-sectional design to investigate the effectiveness of nurse-led Enhanced Recovery After Surgery (ERAS) programs. The study was approved by the Institutional Review Board (IRB) at Aster Sanad Hospital Riyadh, Saudi Arabia (ARC-05.00.00). Oral or written consent was obtained from study subjects prior to administering a questionnaire. Names and other identifying information from the study subjects were not requested during data collection. Confidentiality of data was maintained, and the data was used only for this research study. This design facilitated the systematic collection and analysis of objective data related to patient outcomes, healthcare utilization, and adherence to ERAS protocols.

Study Participants

Participants included patients undergoing surgical procedures within the ERAS framework. The inclusion criteria typically encompassed individuals undergoing elective surgeries within specified surgical specialties, such as colorectal or orthopedic surgery. Additionally, demographic information, clinical characteristics, and relevant medical history were collected for analysis (n=90).

Sample Size Calculator:

Population size(for finite population correction factor or fpc)(*N*):			100
Hypothesized % frequency of outcome factor in the population (*p*):			50%+/-5
Confidence limits as % of 100(absolute +/- %)(*d*):			5%
Design effect (for cluster surveys-*DEFF*):			1
Sample Size(*n*) for Various Confidence Levels			
Confidence	**Level (%)**	**Sample Size**	
95%		50	
80%		40	
90%		43	
97%		60	
99%		77	
99.9%		82	
99.99%		95	
Equation Sample size n = **[DEFF*Np(1-p)]/ [(d^2/$Z^2$1-$\alpha/2$*(N-1)+p*(1-p)]**			

Sampling Technique

Convenient sampling based on different times from different female clinics was used as the sampling method. All Saudi women attending from the age of 16 years old and above Aster Sanad Hospital, who were previously or currently married were included.

Instruments

The questionnaire has 14 questions and was prepared in English and Arabic based on a literature search to answer our objectives by the mutual efforts of all authors. The questionnaire was standardized surveys, validated and adopted assessment from previous tools, and retrospective chart review forms. These instruments were designed to capture objective data on various

outcome measures, including length of stay, readmissions, complications, adherence to ERAS protocols, and healthcare utilization. Questions were closed-ended, and open-ended, and were on a 5-Likert-scale ranging from strongly agree, agree, neutral, disagree, strongly disagree). Data collectors were trained in the use of the questionnaire. Participants were given a self-administered questionnaire.

Data Collection

Data collection involved the administration of surveys to assess patient satisfaction, adherence to ERAS protocols, and clinical outcomes. Additionally, relevant data were extracted from electronic medical records, including demographic information, surgical details, perioperative care processes, and postoperative outcomes.

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 21 (IBM SPSS Statistics, Armonk, NY). Descriptive statistics that were used included the mean, standard deviation, frequencies, and percentages. A p-value of < 0.05 and 95% confidence intervals were used to report the statistical significance and precision of the results.

RESULT AND DISCUSSION

The results of the research on the understanding of Enhanced Recovery After Surgery (ERAS) protocols for Cesarean surgeries at Aster Sanad Hospital in Riyadh reveal a mixed perception among respondents. Of the 50 study participants, the ages varied widely, but the frequency was the highest in women aged > 40 (44%) and the lowest in the ones aged < 20 (6%). Civil service held the highest rate amongst other occupations (58%), business came in second place, and there was a variable degree in other occupations. In regard to marital status, (100%) of the women were married. Having an income status of (5000 - 10,000 Saudi Riyal (SR)) was represented approximately 58% of our sample size, was middle class. Many of the women in our study had a secondary school certificate, which represented as many as 36% of the total sample. Sociodemographic variables are shown in Table 1.

Table 1: Demographic Characteristics and Self-Reported Health Status of Participants (50)

Variable	**Frequency (n)**	**Percentage** (%)
Gender		
Female	50	100%
Age		
20-25years	3	6%
25-30 years	5	10%
30-35 years	8	16%
35-40 year	12	24%
40-45 years	22	44%
Education		
No education	6	12%
Primary	12	24%
Secondary	18	36%
Higher Secondary	10	20%
Higher	5	10%
Marital Status		
Married	50	100%
Un-married	0	0%
Widowed/ Divorced/ Separated	0	0%
Family Size		
< 4	12	24%
4-5	21	42%
>5	**17**	34%
Occupation		
Service	29	58%
Business	7	14%
Unemployed	14	28%
Socioeconomic class		
Poor	9	18%
Middle class	28	58%
Wealthy	13	26%

A significant portion, comprising 38%, strongly agreed that they are confident in their understanding of the principles and components of ERAS protocols. This indicates a high level of confidence among a notable

proportion of respondents, suggesting that they possess a robust comprehension of ERAS protocols and their application in Cesarean surgeries. On the other hand, 20% agreed, 10% were neutral, and 20% disagreed or strongly disagreed with their confidence in understanding ERAS protocols for Cesarean surgeries. This distribution reflects a degree of uncertainty and variability in the perception of ERAS protocols among respondents. While a considerable number of respondent's exhibit confidence, there is a notable minority that either lacks confidence or holds neutral views. These findings underscore the importance of targeted interventions to enhance understanding and implementation of ERAS protocols among nurses involved in Cesarean surgeries. Addressing areas of uncertainty or lack of confidence through training, education, and ongoing support can contribute to standardizing practices, improving patient outcomes, and optimizing healthcare efficiency. Nurses play a crucial role in the successful implementation of ERAS protocols, and efforts to bolster their understanding and confidence can have a profound impact on the quality of care provided to Cesarean surgery patients at Aster Sanad Hospital in Riyadh, Table 2.

Table 2: I am confident in my understanding of the principles and components of ERAS protocols for Cesarean surgeries

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	6	12.0	12.0	12.0
Disagree	10	20.0	20.0	32.0
Neutral	5	10.0	10.0	42.0
Valid				
Agree	10	20.0	20.0	62.0
Strongly Agreed	19	38.0	38.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the belief in Cesarean surgery patients' understanding of the importance of following Enhanced Recovery After Surgery (ERAS) protocols for their recovery reveal a spectrum of opinions among respondents. A significant portion, comprising 34% (16% strongly agree and 18% agree), expressed confidence in Cesarean surgery patients' understanding of the importance of following ERAS protocols. This indicates a level of trust in patients' awareness and commitment to adhering to recommended protocols for their recovery, which is crucial for optimizing outcomes. However, a considerable proportion of respondents, totaling 66% (20% strongly disagree, 22% disagree, and 24% neutral), expressed reservations or uncertainty regarding Cesarean surgery patients' understanding of ERAS protocols. This suggests a perception among some respondents that patients may not fully grasp the significance of adhering to ERAS protocols for their recovery, or that there may be a lack of clarity or communication regarding these protocols. These findings underscore the importance of patient education and engagement initiatives aimed at enhancing Cesarean surgery patients' understanding of ERAS protocols. Effective communication, patient counseling, and provision of educational materials can empower patients to actively participate in their recovery process and optimize the benefits of ERAS protocols. Collaborative efforts between healthcare providers and patients are essential for successful implementation and adherence to ERAS protocols, ultimately leading to improved patient outcomes and healthcare efficiency, Table 3.

Table 3: I believe that Cesarean surgery patients understand the importance of following ERAS protocols for their recovery

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	10	20.0	20.0	20.0
Disagree	11	22.0	22.0	42.0
Neutral	12	24.0	24.0	66.0
Valid				
Agree	9	18.0	18.0	84.0
Strongly Agreed	8	16.0	16.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the perception of nurses' role in effectively implementing Enhanced Recovery After Surgery (ERAS) protocols for Cesarean surgeries demonstrate a diverse range of opinions among respondents. A notable majority, comprising 52% (26% strongly agree and 26% agree), expressed strong support for the crucial role of nurses in implementing ERAS protocols. This indicates a widespread acknowledgment among respondents of the pivotal contribution that nurses make in ensuring the successful implementation and adherence to ERAS protocols, which are integral to optimizing patient outcomes and healthcare efficiency. However, a significant portion of respondents, totaling 38% (16% strongly disagree, 22% disagree), expressed

reservations or disagreement regarding the extent of nurses' role in effectively implementing ERAS protocols. This suggests a divergence in opinion among some respondents, possibly stemming from varying perceptions of nurses' responsibilities or challenges in implementing ERAS protocols within the clinical setting.

These findings underscore the importance of recognizing and addressing any perceived barriers or challenges to nurses' effective implementation of ERAS protocols. Providing adequate training, resources, and support to nurses, along with fostering a collaborative interdisciplinary approach, can help enhance nurses' confidence and competence in implementing ERAS protocols. Additionally, highlighting the significant impact of nurses' roles in facilitating optimal patient outcomes can further promote their engagement and commitment to ERAS implementation efforts. By leveraging the expertise and dedication of nurses, healthcare institutions can maximize the benefits of ERAS protocols in Cesarean surgeries, ultimately improving patient care and healthcare efficiency, Table 4.

Table 4: Nurses have a crucial role in effectively implementing ERAS protocols for Cesarean surgeries

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	8	16.0	16.0	16.0
Disagree	11	22.0	22.0	38.0
Neutral	13	26.0	26.0	64.0
Valid				
Agree	5	10.0	10.0	74.0
Strongly Agreed	13	26.0	26.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the adequacy of nurses' training and preparedness to fulfill their responsibilities in the implementation of Enhanced Recovery After Surgery (ERAS) protocols reveal a range of perspectives among respondents. A considerable portion, totaling 38% (18% strongly disagree and 20% disagree), expressed skepticism or disagreement regarding the adequacy of nurses' training and preparedness in implementing ERAS protocols. This suggests a perceived gap or deficiency in the training and preparation provided to nurses, potentially hindering their ability to effectively execute their responsibilities within the ERAS framework. On the other hand, 38% of respondents (22% agree and 16% strongly agree) expressed confidence in nurses' training and preparedness to fulfill their responsibilities in implementing ERAS protocols. This indicates a level of assurance among some respondents regarding the adequacy of nurses' training and readiness to adhere to ERAS protocols, reflecting positive perceptions of the existing training programs and support mechanisms in place. However, a notable proportion of respondents, totaling 26%, remained neutral on the issue, indicating a degree of uncertainty or ambivalence regarding the adequacy of nurses' training and preparedness in implementing ERAS protocols.

These findings highlight the importance of ongoing assessment and enhancement of nurses' training programs to ensure they are adequately equipped to fulfill their roles within the ERAS framework. Investing in continuous education, skill development, and support systems tailored to the unique requirements of ERAS implementation can help address any perceived deficiencies and empower nurses to deliver high-quality care within the ERAS model. By prioritizing nurses' training and preparedness, healthcare institutions can maximize the effectiveness of ERAS protocols and ultimately improve patient outcomes in Cesarean surgeries and other surgical procedures, Table 5.

Table 5: Nurses are adequately trained and prepared to fulfill their responsibilities in the implementation of ERAS protocols

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	18.0	18.0	18.0
Disagree	9	18.0	18.0	36.0
Neutral	13	26.0	26.0	62.0
Valid				
Agree	11	22.0	22.0	84.0
Strongly Agreed	8	16.0	16.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the challenges nurses face in adhering to Enhanced Recovery After Surgery (ERAS) protocols due to workload constraints demonstrate a spectrum of viewpoints among respondents. A combined total of 52% (26% agree and 26% strongly agree) expressed strong agreement regarding the significant challenges nurses encounter in adhering to ERAS protocols due to workload constraints.

This suggests a prevailing perception among a notable proportion of respondents that workload constraints pose a considerable barrier to nurses' ability to effectively implement and adhere to ERAS protocols. Additionally, 16% of respondents indicated neutrality on the issue, reflecting a degree of uncertainty or ambivalence regarding the impact of workload constraints on nurses' adherence to ERAS protocols.

Conversely, a minority of respondents, comprising 32% (20% strongly disagree and 12% disagree), expressed disagreement or strong disagreement with the notion that workload constraints significantly impede nurses' adherence to ERAS protocols. This perspective suggests that some respondents may perceive workload constraints as less influential or may believe that nurses are capable of managing their workload effectively despite the challenges posed by ERAS implementation. These findings underscore the importance of addressing workload constraints as a potential barrier to effective ERAS implementation within healthcare settings. Strategies such as workload optimization, staffing adjustments, and resource allocation can help alleviate the burden on nurses and enable them to dedicate sufficient time and attention to adhering to ERAS protocols. By proactively addressing workload challenges, healthcare institutions can support nurses in delivering optimal care within the ERAS framework, ultimately improving patient outcomes and enhancing healthcare efficiency, Table 6.

Table 6: Nurses face significant challenges in adhering to ERAS protocols due to workload constraints

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	10	20.0	20.0	20.0
Disagree	6	12.0	12.0	32.0
Neutral	8	16.0	16.0	48.0
Valid				
Agree	13	26.0	26.0	74.0
Strongly Agreed	13	26.0	26.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the potential impact of additional training and educational resources on enhancing nurses' proficiency in implementing Enhanced Recovery After Surgery (ERAS) protocols for Cesarean surgeries reveal a range of perspectives among respondents. A combined total of 38% (20% agree and 18% strongly agree) expressed strong agreement regarding the positive impact of additional training and educational resources in enhancing nurses' proficiency in implementing ERAS protocols. This indicates a prevalent belief among a notable proportion of respondents that investing in further training and educational resources can significantly contribute to improving nurses' competency in adhering to ERAS protocols, thereby enhancing patient care and outcomes. On the other hand, 50% of respondents (28% strongly disagree and 22% disagree) expressed disagreement or strong disagreement with the notion that additional training and educational resources would enhance nurses' proficiency in implementing ERAS protocols. This perspective suggests a degree of skepticism or uncertainty among some respondents regarding the efficacy or necessity of additional training and educational initiatives in this context. Furthermore, 12% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the potential impact of additional training and educational resources on nurses' proficiency in implementing ERAS protocols.

These findings underscore the importance of considering diverse perspectives and engaging stakeholders in discussions about strategies to enhance nurses' proficiency in implementing ERAS protocols. While some respondents may advocate for additional training and educational resources, others may prioritize alternative approaches or believe that existing resources are adequate. Collaborative efforts to identify and address gaps in nurses' training and support systems can help optimize the implementation of ERAS protocols and improve patient outcomes in Cesarean surgeries and other surgical procedures, Table 7.

Table 7: Additional training and educational resources would enhance nurses' proficiency in implementing ERAS protocols for Cesarean surgeries

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	14	28.0	28.0	28.0
Disagree	11	22.0	22.0	50.0
Neutral	6	12.0	12.0	62.0
Valid				
Agree	10	20.0	20.0	82.0
Strongly Agreed	9	18.0	18.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding nurses' communication and collaboration with other healthcare professionals, such as surgeons and anesthesiologists, in implementing Enhanced Recovery After Surgery

(ERAS) protocols demonstrate a range of viewpoints among respondents. A combined total of 34% (14% agree and 20% strongly agree) expressed strong agreement regarding nurses' effectiveness in communicating and collaborating with other healthcare professionals in implementing ERAS protocols. This suggests a prevailing belief among a notable proportion of respondents that nurses play an active and collaborative role in interdisciplinary teamwork, which is essential for successful ERAS implementation and optimal patient care. Conversely, a significant portion of respondents, totaling 48% (22% strongly disagree and 26% disagree), expressed disagreement or strong disagreement with the notion that nurses effectively communicate and collaborate with other healthcare professionals in implementing ERAS protocols. This perspective suggests a perceived gap or deficiency in interdisciplinary communication and collaboration within the context of ERAS implementation, potentially hindering the seamless coordination of care and adherence to ERAS protocols. Furthermore, 18% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding nurses' communication and collaboration with other healthcare professionals in implementing ERAS protocols.

These findings highlight the importance of fostering a culture of effective communication and collaboration among healthcare professionals involved in ERAS implementation. Strategies such as interdisciplinary training, regular team meetings, and clear communication protocols can help facilitate seamless collaboration and optimize the implementation of ERAS protocols, ultimately enhancing patient outcomes and healthcare efficiency in Cesarean surgeries and other surgical procedures, Table 8.

Table 8: Nurses effectively communicate and collaborate with other healthcare professionals (e.g., surgeons, anesthesiologists) in implementing ERAS protocols

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	11	22.0	22.0	22.0
Disagree	13	26.0	26.0	48.0
Neutral	9	18.0	18.0	66.0
Valid				
Agree	7	14.0	14.0	80.0
Strongly Agreed	10	20.0	20.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding communication among healthcare professionals regarding Enhanced Recovery After Surgery (ERAS) protocols indicate varying perceptions among respondents. A combined total of 36% (16% agree and 20% strongly agree) expressed strong agreement regarding the clarity and efficiency of communication among healthcare professionals regarding ERAS protocols. This suggests that a notable proportion of respondents believe that communication processes related to ERAS protocols are effective, transparent, and facilitate seamless coordination among healthcare team members, which is essential for successful ERAS implementation. Conversely, a significant portion of respondents, totaling 46% (14% strongly disagree and 32% disagree), expressed disagreement or strong disagreement with the notion that communication among healthcare professionals regarding ERAS protocols is clear and efficient. This perspective indicates a perceived deficiency or inadequacy in communication processes related to ERAS protocols, potentially leading to challenges in coordination, information sharing, and adherence to ERAS guidelines. Furthermore, 18% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the clarity and efficiency of communication among healthcare professionals regarding ERAS protocols. These findings underscore the importance of evaluating and enhancing communication processes within healthcare teams involved in ERAS implementation. Strategies such as standardized communication protocols, interdisciplinary training, and regular feedback mechanisms can help improve the clarity, efficiency, and effectiveness of communication among healthcare professionals, ultimately facilitating the successful implementation of ERAS protocols and optimizing patient outcomes in Cesarean surgeries and other surgical procedures, Table 9.

Table 9: The communication among healthcare professionals regarding ERAS protocols is clear and efficient

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	7	14.0	14.0	14.0
Disagree	16	32.0	32.0	46.0
Neutral	9	18.0	18.0	64.0
Valid				
Agree	8	16.0	16.0	80.0
Strongly Agreed	10	20.0	20.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the impact of nursing interventions within the Enhanced Recovery After Surgery (ERAS) framework on patient outcomes following Cesarean surgery demonstrate a range of perspectives among respondents. A notable majority, comprising 38% (12% agree and 26% strongly agree), expressed strong agreement regarding the positive impact of nursing interventions within the ERAS framework on patient outcomes following Cesarean surgery. This indicates a prevailing belief among a significant proportion of respondents that nursing interventions play a crucial role in improving patient outcomes within the context of ERAS implementation, potentially contributing to enhanced recovery, reduced complications, and overall improved satisfaction among patients. However, a substantial portion of respondents, totaling 46% (18% strongly disagree and 28% disagree), expressed disagreement or strong disagreement with the notion that nursing interventions within the ERAS framework positively impact patient outcomes following Cesarean surgery. This perspective suggests a perceived skepticism or uncertainty among some respondents regarding the effectiveness or significance of nursing interventions in the ERAS model, potentially reflecting varying interpretations of the evidence or experiences within their clinical practice. Furthermore, 16% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the impact of nursing interventions within the ERAS framework on patient outcomes following Cesarean surgery.

These findings underscore the importance of further research, education, and collaboration to elucidate the role of nursing interventions in the ERAS model and their impact on patient outcomes. By enhancing understanding, promoting evidence-based practice, and fostering interdisciplinary teamwork, healthcare institutions can optimize the contribution of nursing interventions to the success of ERAS protocols and ultimately improve patient care and outcomes in Cesarean surgeries and other surgical procedures, Table 10.

Table 10: Nursing interventions within the ERAS framework positively impact patient outcomes following Cesarean surgery

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	18.0	18.0	18.0
Disagree	14	28.0	28.0	46.0
Neutral	8	16.0	16.0	62.0
Valid				
Agree	6	12.0	12.0	74.0
Strongly Agreed	13	26.0	26.0	100.0
Total	50	100.0	100.0	

The research results regarding the impact of implementing Enhanced Recovery After Surgery (ERAS) protocols on patient recovery times demonstrate diverse perspectives among respondents. A substantial proportion of respondents, totaling 40% (14% agree and 26% strongly agree), expressed strong agreement regarding the noticeable improvement in patient recovery times following the implementation of ERAS protocols. This suggests a prevailing belief among a significant portion of respondents that ERAS protocols have contributed to shorter recovery times among patients undergoing surgical procedures, including Cesarean surgeries. This perception likely reflects observations of reduced hospital stays, faster return to normal activities, and overall improved recovery experiences for patients. However, a notable portion of respondents, comprising 30% (16% strongly disagree and 14% disagree), expressed disagreement or strong disagreement with the notion that the implementation of ERAS protocols has led to a noticeable improvement in patient recovery times. This perspective suggests a perceived lack of tangible impact or skepticism regarding the effectiveness of ERAS protocols in expediting patient recovery times among some respondents. Furthermore, 30% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the impact of ERAS protocols on patient recovery times. These findings highlight the need for continued evaluation and assessment of the impact of ERAS protocols on patient outcomes, including recovery times. By gathering additional data, monitoring outcomes, and incorporating feedback from healthcare professionals and patients, healthcare institutions can further optimize the implementation of ERAS protocols to maximize benefits and improve patient care in Cesarean surgeries and other surgical procedures, Table 11.

Table 11: The implementation of ERAS protocols has led to a noticeable improvement in patient recovery times

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	8	16.0	16.0	16.0
Disagree	7	14.0	14.0	30.0
Neutral	15	30.0	30.0	60.0

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Agree	7	14.0	14.0	74.0
Strongly Agreed	13	26.0	26.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the adequacy of support provided by healthcare institutions to nurses for the effective implementation of Enhanced Recovery After Surgery (ERAS) protocols demonstrate a range of perspectives among respondents. A notable portion of respondents, totaling 36% (14% agree and 22% strongly agree), expressed strong agreement regarding the adequacy of support nurses receive from their healthcare institution to implement ERAS protocols effectively. This suggests a prevailing belief among a significant proportion of respondents that healthcare institutions provide sufficient resources, training, and support mechanisms to empower nurses in effectively implementing ERAS protocols. Such support is crucial for ensuring nurses feel equipped and empowered to adhere to ERAS guidelines and optimize patient care. However, a substantial portion of respondents, comprising 44% (22% strongly disagree and 22% disagree), expressed disagreement or strong disagreement with the notion that nurses receive adequate support from their healthcare institution to implement ERAS protocols effectively. This perspective suggests a perceived deficiency or inadequacy in the support systems provided by healthcare institutions, potentially hindering nurses' ability to effectively implement ERAS protocols and optimize patient outcomes. Furthermore, 20% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the adequacy of support provided by healthcare institutions to nurses for ERAS protocol implementation.

These findings underscore the importance of healthcare institutions prioritizing support for nurses involved in ERAS implementation through robust training programs, adequate staffing levels, access to resources, and ongoing support mechanisms. By addressing any perceived gaps in support, healthcare institutions can empower nurses to effectively implement ERAS protocols and ultimately enhance patient care and outcomes in Cesarean surgeries and other surgical procedures, Table 12.

Table 12: Nurses receive adequate support from their healthcare institution to implement ERAS protocols effectively

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	11	22.0	22.0	22.0
Disagree	11	22.0	22.0	44.0
Neutral	10	20.0	20.0	64.0
Valid				
Agree	7	14.0	14.0	78.0
Strongly Agreed	11	22.0	22.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the availability of sufficient resources to support the implementation of Enhanced Recovery After Surgery (ERAS) protocols in Cesarean surgery units demonstrate varying perspectives among respondents. A significant majority, totaling 54% (34% agree and 20% strongly agree), expressed agreement or strong agreement regarding the availability of sufficient resources (e.g., staffing, equipment) to support the implementation of ERAS protocols in Cesarean surgery units. This suggests a prevailing belief among a notable proportion of respondents that healthcare institutions have allocated adequate resources to support the successful implementation of ERAS protocols in Cesarean surgery units. These resources are crucial for ensuring optimal patient care, adherence to ERAS guidelines, and overall efficiency in Cesarean surgery units. Conversely, a minority of respondents, comprising 30% (18% strongly disagree and 12% disagree), expressed disagreement or strong disagreement with the notion that there are sufficient resources available to support the implementation of ERAS protocols in Cesarean surgery units. This perspective suggests a perceived deficiency or inadequacy in resource allocation, potentially hindering the effective implementation of ERAS protocols and optimal patient care in Cesarean surgery units. Furthermore, 16% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the availability of sufficient resources to support the implementation of ERAS protocols in Cesarean surgery units. These findings highlight the importance of healthcare institutions ensuring adequate resource allocation to support the successful implementation of ERAS protocols in Cesarean surgery units. By addressing any perceived gaps in resources, healthcare institutions can enhance their capacity to deliver high-quality care, optimize patient outcomes, and improve efficiency in Cesarean surgery units, Table 13.

Table 13: There are sufficient resources (e.g., staffing, equipment) available to support the implementation of ERAS protocols in Cesarean surgery units

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	18.0	18.0	18.0
Disagree	6	12.0	12.0	30.0
Neutral	8	16.0	16.0	46.0
Valid				
Agree	17	34.0	34.0	80.0
Strongly Agreed	10	20.0	20.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the active engagement of patients undergoing Cesarean surgery in their recovery process following Enhanced Recovery After Surgery (ERAS) protocols depict a spectrum of opinions among respondents. A substantial portion of respondents, totaling 42% (26% agree and 16% strongly agree), expressed agreement or strong agreement regarding the active engagement of patients in their recovery process following ERAS protocols. This suggests a prevailing belief among a notable proportion of respondents that patients undergoing Cesarean surgery actively participate in their recovery process in line with ERAS protocols. Active patient engagement is crucial for optimizing the benefits of ERAS protocols, promoting adherence to postoperative guidelines, and ultimately enhancing patient outcomes and satisfaction. However, a significant minority of respondents, comprising 46% (26% strongly disagree and 20% disagree), expressed disagreement or strong disagreement with the notion that patients undergoing Cesarean surgery are actively engaged in their recovery process following ERAS protocols. This perspective suggests a perceived lack of active participation or engagement among patients, potentially indicating challenges in patient education, communication, or empowerment within the ERAS framework.

Furthermore, 12% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the extent of patient engagement in their recovery process following ERAS protocols. These findings underscore the importance of healthcare providers' efforts to promote and facilitate active patient engagement in their recovery process following Cesarean surgery within the ERAS framework. Strategies such as comprehensive patient education, clear communication of postoperative guidelines, and collaborative decision-making can empower patients to take an active role in their recovery, ultimately optimizing the benefits of ERAS protocols and improving patient outcomes, Table 14.

Table 14: Patients undergoing Cesarean surgery are actively engaged in their recovery process following ERAS protocols

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	13	26.0	26.0	26.0
Disagree	10	20.0	20.0	46.0
Neutral	6	12.0	12.0	58.0
Valid				
Agree	13	26.0	26.0	84.0
Strongly Agreed	8	16.0	16.0	100.0
Total	50	100.0	100.0	

The research results regarding the role of nurses in educating Cesarean surgery patients about the importance of following Enhanced Recovery After Surgery (ERAS) protocols illustrate diverse perspectives among respondents. A significant portion of respondents, comprising 32% (14% agree and 18% strongly agree), expressed agreement or strong agreement regarding the significant role of nurses in educating Cesarean surgery patients about the importance of following ERAS protocols. This indicates a prevailing belief among a notable proportion of respondents that nurses play a crucial role in patient education within the ERAS framework, empowering patients with the knowledge and understanding necessary to adhere to postoperative guidelines and optimize their recovery. Conversely, a substantial minority of respondents, totaling 52% (36% strongly disagree and 16% disagree), expressed disagreement or strong disagreement with the notion that nurses play a significant role in educating Cesarean surgery patients about the importance of following ERAS protocols. This perspective suggests a perceived limitation or inadequacy in nurses' involvement in patient education within the ERAS context, potentially indicating challenges in communication, resource allocation, or other factors impacting nurses' ability to fulfill this role effectively. Furthermore, 16% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the extent of nurses' role in educating Cesarean surgery patients about the importance of following ERAS

protocols. These findings underscore the importance of recognizing and supporting nurses' role in patient education within the ERAS framework. By providing nurses with adequate resources, training, and support, healthcare institutions can empower them to effectively engage in patient education, promote adherence to ERAS protocols, and ultimately enhance patient outcomes and satisfaction in Cesarean surgeries and other surgical procedures, Table 15.

Table 15: Nurses play a significant role in educating Cesarean surgery patients about the importance of following ERAS protocols

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	18	36.0	36.0	36.0
Disagree	8	16.0	16.0	52.0
Neutral	8	16.0	16.0	68.0
Valid				
Agree	7	14.0	14.0	82.0
Strongly Agreed	9	18.0	18.0	100.0
Total	**50**	**100.0**	**100.0**	

The research results regarding the perception of the impact of Enhanced Recovery After Surgery (ERAS) protocols, when implemented by nurses, on patient outcomes and healthcare efficiency in Cesarean surgery demonstrate a range of perspectives among respondents. A substantial portion of respondents, totaling 22% (12% agree and 10% strongly agree), expressed agreement or strong agreement regarding the significant improvement in patient outcomes and healthcare efficiency in Cesarean surgery when ERAS protocols are implemented by nurses. This suggests a prevailing belief among a notable proportion of respondents that the involvement of nurses in implementing ERAS protocols contributes to positive patient outcomes, including faster recovery times, reduced complications, and overall improved healthcare efficiency. Conversely, a significant minority of respondents, comprising 48% (30% strongly disagree and 18%disagree), expressed disagreement or strong disagreement with the notion that ERAS protocols, when implemented by nurses, significantly improve patient outcomes and healthcare efficiency in Cesarean surgery. This perspective suggests a perceived skepticism or uncertainty among some respondents regarding the effectiveness or impact of ERAS protocols when implemented by nurses, potentially indicating concerns about barriers or challenges in implementation. Furthermore, 30% of respondents indicated neutrality on the issue, reflecting a lack of strong opinion or ambivalence regarding the overall impact of ERAS protocols implemented by nurses on patient outcomes and healthcare efficiency in Cesarean surgery These findings highlight the importance of ongoing evaluation, education, and collaboration to optimize the implementation of ERAS protocols by nurses in Cesarean surgery units. By addressing any perceived barriers, enhancing education and training, and fostering interdisciplinary teamwork, healthcare institutions can maximize the benefits of ERAS protocols and improve patient outcomes and healthcare efficiency in Cesarean surgeries and other surgical procedures, Table 16.

Table 16: Overall, I believe that ERAS protocols, when implemented by nurses, significantly improve patient outcomes and healthcare efficiency in Cesarean surgery

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	18.0	18.0	18.0
Disagree	15	30.0	30.0	48.0
Neutral	15	30.0	30.0	78.0
Valid				
Agree	6	12.0	12.0	90.0
Strongly Agreed	5	10.0	10.0	100.0
Total	**50**	**100.0**	**100.0**	

CONCLUSION

The research findings on the understanding, perception, and challenges related to Enhanced Recovery After Surgery (ERAS) protocols for Cesarean surgeries at Aster Sanad Hospital in Riyadh present a nuanced picture of stakeholders' perspectives. While there is a significant level of confidence among a notable portion of respondents regarding their understanding of ERAS protocols, there are also areas of uncertainty and variability, indicating the need for targeted interventions to enhance comprehension and implementation. Patient education and engagement initiatives emerge as critical strategies to address perceptions of patients' understanding of ERAS protocols. Moreover, there is widespread acknowledgment of the pivotal role of nurses in ERAS implementation, yet significant proportions express reservations about nurses' training, workload constraints, and support from healthcare institutions. These findings underscore the importance of continuous assessment and enhancement of nurses' training

programs, addressing workload challenges, and ensuring adequate institutional support. Collaboration among healthcare professionals and effective communication are highlighted as essential elements for successful ERAS implementation. Furthermore, the availability of sufficient resources is deemed crucial, with a majority expressing confidence in their adequacy, albeit with some dissenting voices. Overall, these findings emphasize the multifaceted nature of ERAS implementation, requiring a comprehensive approach that addresses training, communication, workload, and resource allocation to optimize patient outcomes and healthcare efficiency in Cesarean surgery units at Aster Sanad Hospital.

RECOMMENDATIONS

Recommendations for the research on Enhanced Recovery After Surgery (ERAS) and the crucial role of nurses at Aster Sanad Hospital in Riyadh:

1. **Develop targeted educational programs:** Design educational initiatives specifically tailored to enhance both patient and healthcare provider understanding of ERAS protocols, addressing areas of uncertainty and variability identified in the research.
2. **Implement patient engagement strategies:** Establish mechanisms to actively involve patients in their care process, providing them with comprehensive information about ERAS protocols and involving them in decision-making to improve their compliance and outcomes.
3. **Enhance nurses' training programs:** Continuously assess and update nurses' training programs to ensure they are equipped with the necessary skills and knowledge to effectively implement ERAS protocols. Address any identified gaps in training to improve confidence and competence among nursing staff.
4. **Address workload constraints:** Explore strategies to alleviate nurses' workload burdens, such as optimizing staffing levels, implementing workflow efficiencies, and prioritizing tasks to support successful ERAS implementation without compromising patient care quality.
5. **Provide institutional support:** Ensure that Aster Sanad Hospital demonstrates strong organizational commitment to ERAS implementation by providing adequate resources, support systems, and infrastructure necessary for nurses and other healthcare professionals to carry out their roles effectively
6. **Foster interdisciplinary collaboration:** Encourage collaboration among healthcare professionals involved in Cesarean surgery units, including nurses, physicians, anesthesiologists, and allied health professionals, to foster a cohesive approach to ERAS implementation and optimize patient outcomes.
7. **Improve communication channels:** Establish clear communication pathways within the healthcare team and between healthcare providers and patients to facilitate seamless coordination of care, address concerns, and ensure all stakeholders are informed and engaged in the ERAS process.
8. **Conduct regular assessments:** Implement systems for ongoing monitoring and evaluation of ERAS implementation, including tracking adherence to protocols, assessing patient outcomes, and soliciting feedback from stakeholders to identify areas for improvement.
9. **Allocate resources effectively:** Continuously evaluate the adequacy and appropriateness of resources allocated to ERAS initiatives, ensuring that necessary equipment, facilities, and personnel are available to support the efficient delivery of care and optimize patient outcomes.
10. **Promote a culture of continuous improvement:** Foster a culture of learning and quality improvement within the organization, encouraging staff to actively engage in identifying barriers, generating innovative solutions, and implementing best practices to continually enhance ERAS implementation and patient care delivery.

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