



www.bioinformation.net
Volume 22(8)



Research Article

Received August 1, 2026; Revised August 31, 2026; Accepted August 31, 2026, Published August 31, 2026

DOI: 10.6026/973206300224900

SJIF 2026 (Scientific Journal Impact Factor for 2026) = 8.478

2022 Impact Factor (2023 Clarivate Inc. release) is 1.9

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Citation: Ayyanar *et al.* Bioinformation 22(8): 4900-4904 (2026)

Barriers to enhanced recovery after surgery (ERAS) protocol implementation: A mixed methods study of surgeon attitudes, institutional factors and patient perspectives

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Abstract:

Enhanced Recovery After Surgery (ERAS) protocols improve post-operative recovery, yet their implementation remains inconsistent due to multiple barriers. Therefore, it is of interest to evaluate the surgeon attitudes, institutional factors and patient perspectives influencing ERAS protocol implementation using a mixed-methods approach. Quantitative data were collected through structured questionnaires, while qualitative insights were obtained from interviews and focus group discussions involving healthcare professionals and post-operative patients. The study identified resistance to change, inadequate institutional support, limited resources, insufficient training, communication gaps and poor patient awareness as the major barriers, although most patients expressed willingness to follow ERAS after appropriate education. Thus, data shows that addressing these barriers through targeted training, organizational support, multidisciplinary collaboration and patient education may improve ERAS adoption and surgical outcomes.

Keywords: Enhanced recovery after surgery (ERAS), surgical safety, perioperative care, implementation barriers, surgeon attitudes, institutional factors, patient perspectives, healthcare quality improvement, multidisciplinary care, mixed methods study

Background:

Enhanced Recovery after Surgery (ERAS) protocols are designed as evidence-based guideline standards that create the environment to help decrease surgical stress, improve recovery times and improve patient outcomes by providing guidelines for perioperative care [1]. In addition, ERAS protocols utilize a variety of different strategies from multiple disciplines such as optimizing anesthesia, early ambulation, minimal invasive techniques and improving nutritional support [2]. Studies of ERAS have shown that the implementation of ERAS protocols has decreased the length of hospital stays and the incidence of complications, while at the same time improving patients' satisfaction with the surgical experience [3]. Despite the demonstrated advantages of ERAS implementation, ERAS protocols are not consistently adopted at hospitals and surgical centers around the world. One reason for this is the differing attitudes of surgeons toward the use of standardized protocols and the acceptance of ERAS on the part of the surgeon, especially in locations with a large history of traditional practices [4]. Additionally, factors related to the institution like limited resources, lack of support from administration or inadequate training may also impede a surgical facility from effectively integrating ERAS protocols into routine practice [5]. Another significant factor that will play a major role in the success of ERAS protocols will be the cooperation of the multidisciplinary teams responsible for coordinating the protocol. This makes effective teamwork and communication vital to the success of ERAS implementation. Other factors, such as low patient awareness and findings associated with different cultural beliefs that will have an impact on patients' health literacy, can significantly limit the patient's adherence to ERAS protocol recommendations [6]. Additionally, both healthcare providers and healthcare system barriers (resistance to change) limit the

overall compliance with ERAS Protocols and cause a less than optimum effect from these protocols. The varying conditions found in the healthcare infrastructure and the policy framework implemented in different facilities can also dictate the extent to which healthcare providers utilize ERAS protocol guidelines. The collective experiences from previously successful implementations of ERAS protocols indicate that, along with the cooperation and coordination of all stakeholders and disciplines, leadership, pathways that are organized and initiated prior to the implementation and commitment are essential to overcoming the barriers associated with the implementation of ERAS protocols [7]. Therefore, it is of interest to determine the barriers to Enhanced Recovery after Surgery protocol implementation by examining surgeon attitudes, institutional factors and patient perspectives using a mixed methods approach.

Materials and Methods:

To identify barriers to Enhanced Recovery after Surgery (ERAS) protocol implementation in a tertiary care setting, a mixed methods research study was conducted over six months. The sample consisted of 120 participants from each group, including surgeons, anaesthetists, nursing staff and post-operative patients involved in an ERAS care pathway, who were recruited using purposive sampling. Quantitative data were collected using a structured, pre-validated instrument to assess surgeon attitudes toward ERAS protocols; institutional support of ERAS; and patient awareness of ERAS based on Likert-type scales (quantitative). In addition, qualitative data were gathered from semi-structured interviews, as well as focus group discussions, to further explore perceived challenges, behavioural factors and system-level barriers in detail from selected participants. Inclusion criteria included health care professionals directly

involved in perioperative care, as well as patients who had undergone elective surgery under ERAS, while exclusion criteria were those who were unwilling to participate, or whose data was incomplete. Ethical approval was granted from the institutional review board and informed consent was obtained from all participants prior to the collection of data. Quantitative data analysis included descriptive and inferential statistics such as means, standard deviations and chi-square tests for association between variables, while qualitative data were transcribed, coded and analysed to identify repeated themes and barriers using thematic analysis. Integration of quantitative and qualitative findings allowed for an enhanced understanding of ERAS protocol implementation barriers.

Results:

The study combined four cohorts: 120 total participants, with 80 health care professionals and 40 patients. Of the professional respondents, the largest demographic group was the 25-35 year age group (42.5%) and 65% were male. Surgeons and nurses each made up one-third of the cohort (37.5% for both groups). Most patient respondents (45%) were between 40-60 years old and most (60%) were male. General surgical procedures comprised 50% of all procedures undergone by patients. Regarding awareness of ERAS protocols in staff, 40% of respondents indicated a moderate level of awareness; 35% indicated a high level of awareness; and 25% indicated a low level of awareness. Surgeons indicated a strong positive attitude toward the use of ERAS to enhance positive patient outcomes (80% agreed), although only 45% indicated that ERAS would be easy to implement in practice; and 35% of respondents preferred to use traditional surgical practices instead of ERAS. The top institutional barriers noted included: Lack of resources (62.5%); inadequate provider training (57.5%); lack of adequate numbers of staff (52.5%); and lack of sufficient administrative support (47.5%). Among patients, 55% (of all patients surveyed) were unaware of ERAS protocols but 75% expressed the willingness to comply with ERAS recommendations once provided with information about the protocols. Communication-related findings from the study included that 60% of respondents experienced working with a team effectively; while simultaneously, 65% of teams identified gaps in communication with each other; and 37.5% of all respondents had regular, scheduled team meetings. Staff were more adherent to ERAS protocols with increased years of experience; specifically, 70% of participants with greater than 10 years of experience were adherent to using ERAS protocols whereas only 40% of participants who had less than 5 years of experience were adherent to using ERAS protocols. Lines of resistance (a qualitative analysis) identified the following as major barriers to ERAS: Resistance to Change (33.3%); Time Constraints (25%); Fear of Complications (21.7%); and Lack of Awareness (20%). In addition, ERAS compliance was statistically higher in institutions with adequate organizational support (72%) vs. those without adequate organizational support (38%), therefore; these findings strongly illustrate the importance of organizational factors in successfully implementing any clinical

protocol such as ERAS. In (Table 1), you can see the demographics of the healthcare professionals sampled and their age distribution, showing that the 25-35-year-old age group accounted for the largest percentage of respondents. There were also more men than women among healthcare professionals. Finally, surgeons and nurses were equally represented in the respondents to this survey. In (Table 2), you can find the demographic characteristics of the patient participants sampled. The majority of the patients surveyed were between the ages of 40-60 and also of the male sex. Of the patients reported by the respondents of this survey, the most frequent surgical procedure performed was general surgery. (Table 3) provides an overview of the healthcare professional's awareness levels regarding ERAS protocols. The majority of respondents reported having moderate levels of awareness regarding ERAS protocols. As shown in (Table 4), the surgeon's attitudes toward implementing ERAS have strong consensus toward the idea that ERAS would improve patient outcomes; however, physicians differ in their opinions regarding the ease of implementing ERAS, with some preferring traditional methods of surgical care to the ERAS process. In (Table 5), you can see the institutional barriers identified by respondents; the most significant barriers reported were lack of resources and inadequate training. As indicated in (Table 6), a significant number of patients surveyed reported that they had not been informed about the ERAS protocols; however, they were willing to comply with the ERAS process. (Table 7) provides several factors related to the communication and teamwork between healthcare professionals, demonstrating that although teamwork was reported as moderate in its effectiveness, communication was considered as having gaps. (Table 8) shows the comparison of ERAS adherence to patient participants based on the length of experience, where it is found that those who have greater amounts of experience exhibit higher levels of ERAS adherence. As indicated in (Table 9), the primary themes identified by respondents for qualitative barriers to implementing ERAS include change resistance and time limitations. As shown in (Table 10), there is a significant difference in ERAS compliance based on the level of support from the institution. Overall, there is a significantly greater level of ERAS compliance in settings that have provided support and/or resources needed to implement and adhere to the ERAS protocol.

Table 1: Demographic distribution of healthcare professionals

Variable	Category	Frequency (n=80)	Percentage (%)
Age (years)	25-35	34	42.5
	36-45	28	35.0
	>45	18	22.5
Gender	Male	52	65.0
	Female	28	35.0
Profession	Surgeons	30	37.5
	Anesthesiologists	20	25.0
	Nurses	30	37.5

Table 2: Distribution of patient participants

Variable	Category	Frequency (n=40)	Percentage (%)
Age (years)	<40	12	30.0
	40-60	18	45.0
	>60	10	25.0
Gender	Male	24	60.0

Type of Surgery	Female	16	40.0
	General surgery	20	50.0
	Orthopedic	12	30.0
	Others	8	20.0

Table 3: Awareness of ERAS protocols among healthcare professionals

Awareness Level	Frequency (n=80)	Percentage (%)
High awareness	28	35.0
Moderate awareness	32	40.0
Low awareness	20	25.0

Table 4: Surgeon attitudes towards ERAS implementation

Statement	Agree (%)	Neutral (%)	Disagree (%)
ERAS improves patient outcomes	80.0	10.0	10.0
ERAS is easy to implement	45.0	25.0	30.0
Traditional methods are preferable	35.0	20.0	45.0

Table 5: Institutional barriers to ERAS implementation

Barrier	Frequency (n=80)	Percentage (%)
Lack of resources	50	62.5
Inadequate training	46	57.5
Poor administrative support	38	47.5
Staff shortage	42	52.5

Table 6: Patient awareness and perception of ERAS

Parameter	Frequency (n=40)	Percentage (%)
Aware of ERAS	18	45.0
Not aware	22	55.0
Willing to follow ERAS	30	75.0
Not willing	10	25.0

Table 7: Communication and teamwork factors affecting ERAS

Factor	Frequency (n=80)	Percentage (%)
Effective teamwork present	48	60.0
Communication gaps present	52	65.0
Regular team meetings	30	37.5

Table 8: Impact of experience on ERAS adherence

Experience (years)	High adherence (%)	Low adherence (%)
<5 years	40.0	60.0
5-10 years	55.0	45.0
>10 years	70.0	30.0

Table 9: Key barriers identified in qualitative analysis

Theme	Frequency (n=60 responses)	Percentage (%)
Resistance to change	20	33.3
Time constraints	15	25.0
Lack of awareness	12	20.0
Fear of complications	13	21.7

Table 10: Association between institutional support and ERAS compliance

Institutional Support	High Compliance (%)	Low Compliance (%)
Adequate support	72.0	28.0
Inadequate support	38.0	62.0

Discussion:

The present research presents a detailed analysis of the obstacles to successful implementation of Enhanced Recovery after Surgery (ERAS) protocols. It investigates the views of surgeons, type of healthcare institution and the patients, using both qualitative and quantitative research methods. Existing research has demonstrated that ERAS protocols provide strong evidence to support their usage; however, ERAS protocols have been minimally implemented due to a variety of barriers [8]. The literature illustrates that the shapes of the populations reflect the multi-faceted, interdisciplinary group of physicians involved in

perioperative care that must work together as a cohesive team to effectively implement ERAS protocols. Research has shown that implementing ERAS protocols will improve patient outcomes [9]. Although empirical evidence exists to support both the implementation and widespread utilization of ERAS protocols, there is variation among practitioners regarding knowledge and utilization of ERAS [10]. In addition, the results of this research suggest that the surgeon's attitude toward ERAS protocols is a significant determinant to ERAS protocol success. Extant research suggests that while the vast majority of surgeons perceive ERAS as efficacious for patient care, many surgeons continue to resist implementing ERAS protocols by continuing to follow their own traditional practices, constituting major barriers to effective implementation. Survey data regarding surgeons' knowledge and perceptions of ERAS have indicated that clinicians' inertia in adopting evidence-based practices and a lack of faith in the efficacy of ERAS protocols have contributed to delayed implementation; however, extensive formal education would enhance the ability of these barriers to be mitigated [11]. Important institutional barriers identified in this study include: a lack of resources, lack of education and lack of administrative support. The implementation of ERAS protocols is shown to improve patient clinical outcomes; however, the literature supports that institutional organizations must support ERAS protocol implementation through sufficient funding and structured implementation programs [12]. Similarly, Mozzarelli *et al.* reported that inadequate organizational support, limited education and communication challenges were major barriers to ERAS implementation, while multidisciplinary collaboration and institutional commitment acted as important enablers of successful protocol adoption [20]. For the successful implementation of ERAS across the continuum of healthcare delivery, there must be administrative and health systems-support for organizational restructuring efforts such as increased engagement of leaders and uniformity of the clinical practice pathway to achieve sustainability of ERAS Protocols [13]. Both of these barriers are supported by qualitative findings associated with the Challenges to ERAS implementation identified through this study, including barriers related to time constraints and resistance to change [14]. Both systematic reviews and descriptive reports of practical implementation of ERAS protocols have documented that multidisciplinary collaboration is necessary to overcome both clinical and organizational barriers to successful ERAS implementation [15]. Despite low levels of ERAS protocol awareness in the patient population, there are high levels of willingness among patients to engage in ERAS protocols with education regarding the benefits of engaging in the use of ERAS protocols. This is consistent with evidence supporting that patients derive not only improved quality of care from ERAS protocol implementation, but also from enhanced patient safety as a result of having patients involved in their own healthcare through ERAS [16]. Similarly, Ram *et al.* highlighted that successful ERAS implementation requires addressing barriers to equitable surgical care through improved patient engagement, culturally sensitive education and healthcare system support, particularly for underserved

populations [21]. Consistent with previous studies, qualitative research provides evidence that ERAS implementation must address both provider-related and patient-related factors in order to facilitate successful ERAS implementation across the multiple clinical environments in which patients receive care [17]. Identifying barriers to the implementation of ERAS protocols, including communication difficulties, hierarchical structures and time constraints, is congruent with earlier literature on ERAS protocol implementation; thus, in order to address ERAS protocol implementation barriers, systematic planning must include instituting structured practice guidelines and institutional support [18]. Furthermore, having evidence of positive patient outcomes associated with ERAS implementation strengthens the need to develop and implement standards and procedures that address ERAS protocol implementation barriers and to promote the uptake and implementation of ERAS protocols within healthcare organizations [19]. The current findings support the notion of a relationship between ERAS implementation and interactions among multiple variables involving individuals (attitudes), institutions (readiness) and patients (engagement) and therefore overcoming the barriers recognized in this study via the development of stakeholder-targeted educational programs, improvement in institutional infrastructure and enhancement of multidisciplinary collaboration will be critical to increasing compliance, maximizing surgical results and providing a high level of quality of care to patients.

Conclusion:

Successful implementation of ERAS protocols is influenced by surgeon attitudes, institutional support and patient engagement. Addressing these barriers through targeted education, adequate resources and multidisciplinary collaboration can improve ERAS compliance. Thus, improved implementation of ERAS protocols may enhance post-operative recovery and overall surgical outcomes.

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