

The Impact of Clinical Practice on Nursing Students Approaches to Enhanced Recovery After Surgery _____

_____ **Jasmina HOXHA MSc. RN.** _____

CORRESPONDING AUTHOR

DEPARTMENT OF NURSING, FACULTY OF HEALTH SCIENCES. BURSA
ULUDAĞ UNIVERSITY, BURSA, TÜRKİYE.

PHONE NO: +355675198779

e-mail: jasmina.hoxha@hotmail.com

ORCID: [HTTPS://ORCID.ORG/0000-0001-9278-8699](https://orcid.org/0000-0001-9278-8699)

_____ **Nursel VATANSEVER PhD, RN.** _____

e-mail: nurselaydin@uludag.edu.tr

ORCID: [HTTPS://ORCID.ORG/0000-0002-5858-573X](https://orcid.org/0000-0002-5858-573X)

Abstract

Background: *The concept of ERAS was introduced by Professor Henrik Kehlet in the late 1990s. ERAS protocols are defined as a perioperative care model designed to reduce a patient's stress response, prevent organ complications, provide early rehabilitation, and thus minimize the patient's hospital stay.*

Objective: *This study aimed to explore nursing students' attitudes towards Enhanced Recovery After Surgery (ERAS) and how clinical experiences influence these attitudes. It sought to identify less-known ERAS areas for students and factors impacting their compatibility with ERAS.*

Materials and Methods: *Conducted between November 2021 to March 2022, this descriptive and cross-sectional research included 199 nursing students from*

the second to fourth years of study at Bursa Uludağ University. The Approaches to Enhanced Recovery Practices After Surgery Survey was utilized for the data collection.

Results: 76.9% of participants were female, 62.3% had GPAs between 3.00 and 4.00, and 78.4% had graduated from qualified high schools. Overall, the correct answer level to survey questions was 62.17%, with a higher average among those with a higher GPA and qualified high-school graduates. “Early Mobilization” and “Pain Management” had the highest awareness, while “Catheter and Drain Use” and “Hypothermia” had the lowest. Gender, GPA, and high-school group correlated significantly with ERAS compliance.

Conclusions: Our research is similar to other studies conducted with nurses in terms of the ERAS components that were not well known by the participants. These findings will aid healthcare educators in enhancing ERAS compliance and education among nursing students.

Keywords: ERAS, Nurse, Nursing Students, Surgery

Introduction

Traditional perioperative care is heterogeneous and often based on local traditions and the personal preferences of the surgical team¹. Scientific studies reveal that many of these practices are unnecessary and harmful². Examples include prolonged fasting, preoperative bowel preparation, and delayed oral feeding^{3,4}. Implementing the Enhanced Recovery After Surgery (ERAS) protocol in clinics can be challenging due to long-standing traditional practices³. Addressing these issues is essential in terms of improving perioperative care, but rapid change may not be realistic⁴.

To this end, it is recommended that nurses conduct more research on the subject, provide ERAS training to healthcare professionals, and encourage healthcare professionals to implement these protocols. Providing such training to nursing students is also among these recommendations^{5,6}.

Nursing students often encounter practices in clinical settings that are different than what they have learned at university. This disconnection between theory and practice can lead to confusion. Students tend to question the evidence-based practices they have learned and come to rely on traditional methods, which seem easier to apply⁷. Such attitudes may also affect their approach to traditional practices in surgery. Students who understand the impact of traditional methods on perioperative care and can challenge these practices are more likely to embrace evidence-based approaches when they start working in clinics. A shift towards these kinds of practices is crucial for ensuring quality perioperative care and better

patient outcomes⁸. Therefore, the aim of this study was to determine nursing students' approaches to ERAS practices, and whether these approaches had an impact on their clinical practice.

ERAS Timeline

The concept of ERAS was first introduced by Professor Henrik Kehlet in the late 1990s. Despite advancements in surgery, anesthesia, and perioperative care, patients still experience postoperative complications such as pain, cardiopulmonary, infections, thromboembolic complications, nausea, and gastrointestinal paralysis⁹. Kehlet researched the care pathway that needed to be followed to prevent these complications¹⁰. Following his lead, other researchers conducted studies to obtain evidence-based results that would later be components of ERAS protocols³. ERAS protocols are defined as a perioperative care model designed to reduce a patient's stress response, prevent organ complications, provide early rehabilitation, and thus minimize the patient's hospital stay¹¹. ERAS guidelines have been prepared for 23 different specialties to date, including pancreaticoduodenectomy, colon, rectal/pelvic, thoracic, vascular, pediatric, urological, bariatric, and orthopedic surgery¹². Other surgical specialties have also achieved positive outcomes in applying ERAS, although care guidelines have not yet been prepared for them^{13,14}.

Methodology

Ethical Considerations: The study was conducted according to ethical standards, including obtaining permission from the original author of the survey and the institution where the students were enrolled. Ethics committee approval, dated 02.06.2021 and numbered 2021-05 was obtained from the Health Sciences Research and Publication Ethics Committee of Bursa Uludağ University.

Setting and Sample: The study had a descriptive and cross-sectional research design, aimed at determining the approaches of nursing students towards accelerated recovery protocols. The research was conducted among the students of the Nursing Department at the Faculty of Health Sciences of Bursa Uludağ University between November 27, 2021, and March 26, 2022. The population of the study consisted of second-, third-, and fourth-year students who had taken or were taking the Surgical Diseases Nursing course in the Nursing Department during the 2021-2022 academic year (N = 500). The sample size was determined to be 199 based on the inclusion criteria and power analysis. There were two inclusion criteria for the study: the student had taken or was taking the Surgical Diseases Nursing course at the time of the study, and the student was willing to participate in the research.



Data Collection: The study used the Approaches to Enhanced Recovery Practices After Surgery Survey to collect data on the students' sociodemographic characteristics and their compliance with ERAS protocols. The data form consisted of 35 questions, divided into two sections: a Sociodemographic Data Form and the Approaches to Enhanced Recovery Practices After Surgery Survey. The latter covered the preoperative, intraoperative and postoperative periods, and included questions on the use of catheter and drainage, preoperative fasting, antimicrobial prophylaxis, preparation of the surgical site, early feeding, pain management, early mobilization, preoperative bowel cleaning, hypothermia, discharge, and follow-up and control of the results. The sociodemographic data collected included gender, academic GPA, the status of taking the Surgical Nursing course, attended high school, and employment status. The data were analyzed using descriptive statistics.

Data analysis: The questionnaire, that had previously been developed by Afşar for similar research with surgical clinic nurses, was adapted for use with students in the present study. The data was collected, in accordance with the restrictions on face-to-face contact imposed at the time due to the COVID-19 pandemic, was collected online through Google Forms and analyzed using the SPSS 24.0. Descriptive statistics, test statistics, and p-values were presented for each analysis, and non-parametric tests were used due to the non-normal distribution of the data. The survey questions were grouped according to the components of ERAS, and the relationships between the participants' characteristics and their responses were examined using cross-tabulation and chi-square tests.

Results

The study had 199 participants, of which 76.9% (n=153) were female. Nearly all participants (98.5%) had successfully completed the Surgical Nursing course at their first attempt. The majority of participants (62.3%, n=124) had a grade point average (GPA) of between 3.00 and 4.00 (out of 4). Most participants (78.4%, n=156) had graduated from qualified high schools, while only 7.5% (n=15) had graduated from health vocational high schools, and only two of them were employed as nurses.

The study found that the average rate of ERAS compliance rate in the participants' answers was 62.17% (Table 1). According to the data, questions 1, 14, and 2 were the questions that the participants most often answered correctly. Conversely, questions 29, 21, and 12 were the questions that the participants most often answered incorrectly (Figure 1).

There was no statistically significant difference between the average number of correct responses given by male and female participants. However, there was a significant difference between the average number of ERAS-compliant answers

given by participants with a GPA score of 1.00-2.99 and those with a GPA score of 3.00-4.00. Participants with higher GPA scores had a higher average number of ERAS-compliant answers. Similarly, there was a significant difference between the ERAS-compliant response scores of students who had graduated from health/general/different high schools and those from qualified high schools. Those in the latter group gave a higher average number of ERAS-compliant responses.

TABLE 1: The numbers and rate of ERAS-compliant answers

Question number	Number of participants who answered correctly (n = 199)	Correct answer rate (%)
1	188	94
2	176	88
3	120	60
4	105	52
5	173	86
6	169	84
7	149	74
8	59	29
9	74	37
10	166	83
11	129	64
12	35	17
13	165	82
14	186	93
15	170	85
16	112	56
17	167	83
18	137	68
19	147	73
20	58	29
21	26	13
22	141	70
23	97	48
24	112	56
25	134	67
26	97	48
27	172	86
28	135	67
29	22	11

FIGURE 1: Number of answers to the questions in accordance with ERAS



TABLE 2: Comparison of the correct response rates of the ERAS components according to the participants' GPA score

Component	GPA score 1.00-2.99 n(%)	GPA score 3.00-4.00 n(%)	Chi-square test statistics	p-value
Use of catheter and drain				
Question 23	30 (%40,00)	67 (%54,03)	3,683	0,055
Question 29	8 (%10,66)	14 (%11,29)	0,018	0,892
Pre-op fasting				
Question 9	17 (%22,66)	57 (%45,96)	10,863	0,001
Question 10	54 (%72,00)	112 (%90,32)	11,342	0,001
Question 11	44 (%58,66)	85 (%68,54)	2,001	0,157
Question 25	47 (%62,66)	87 (%70,16)	1,193	0,275
Antimicrobial prophylaxis				
Question 18	45 (%60,00)	92 (%74,19)	4,389	0,036
Surgical site preparation				
Question 16	32 (%42,66)	80 (%64,51)	9,067	0,003
Early nutrition				
Question 26	37 (%49,33)	60 (%48,38)	0,017	0,897
Pain management				
Question 14	66 (%88,00)	120 (%96,77)	5,892	0,015
Question 15	60 (%80,00)	110 (%88,70)	2,848	0,092
Question 17	55 (%73,33)	112 (%90,32)	9,996	0,002
Early mobilization				



Question 1	65 (%86,66)	123 (%99,19)	14,043	0,001
Question 2	59 (%78,66)	117 (%94,35)	11,252	0,001
Question 3	49 (%65,33)	71 (%57,25)	1,273	0,259
Question 4	39 (%52,00)	66 (%53,22)	0,028	0,867
Question 6	55 (%73,33)	114 (%91,93)	12,631	0,001
Question 7	54 (%72,00)	95 (%76,61)	0,529	0,467
Question 8	17 (%22,66)	42 (%33,87)	2,813	0,094
Question 19	52 (%69,33)	95 (%76,61)	1,283	0,257
Question 21	12 (%16,00)	14 (%11,29)	0,913	0,339
Question 22	52 (%69,33)	89 (%71,74)	0,135	0,713
Pre-op bowel preparation				
Question 24	31 (%41,33)	81 (%65,32)	10,930	0,001
Hypothermia				
Question 12	9 (%12,00)	26 (%20,96)	2,593	0,107
Question 20	18 (%24,00)	40 (%32,25)	1,543	0,214
Question 28	45 (%60,00)	90 (%72,58)	3,390	0,066
Discharge planning				
Question 5	64 (%85,33)	109 (%87,90)	0,272	0,602
Follow-up and ongoing support				
Question 13	59 (%78,66)	106 (%85,48)	1,533	0,216
Question 27	61 (%81,33)	111 (%89,51)	2,668	0,102

A similar examination of the relationship between correct/incorrect answers and the type of high school from which the students had graduated, showed that nine questions had a significant relationship, and the students who had graduated from qualified high schools had a higher correct response rate to these questions (Table 3).

TABLE 3: Comparison of the correct response rates of the ERAS components according to the high school attended by the participants

Component	Qualified High School n (%)	Health/General/Other High School n (%)	Chi-square test statistics	p-value
Use of catheter and drain				
Question 23	76 (%48,71)	21 (%48,83)	0,017	0,959
Question 29	16 (%10,25)	6 (%13,95)	0,469	0,497
Pre-op fasting				
Question 9	63 (%40,38)	11 (%25,58)	3,162	0,075
Question 10	136 (%87,17)	30 (%69,76)	7,388	0,007
Question 11	103 (%66,02)	26 (%60,46)	0,457	0,499

Question 25	109 (%69,87)	25 (%58,13)	2,110	0,146
Antimicrobial prophylaxis				
Question 18	110 (%70,51)	27 (%62,79)	0,937	0,333
Surgical site preparation				
Question 16	89 (%57,05)	23 (%53,48)	0,174	0,677
Early nutrition				
Question 26	80 (%51,26)	17 (%39,53)	1,862	0,172
Pain management				
Question 14	148 (%94,87)	38 (%88,37)	2,332	0,127
Question 15	135 (%86,53)	35 (%81,39)	0,716	0,397
Question 17	132 (%84,61)	35 (%81,39)	0,259	0,611
Early mobilization				
Question 1	149 (%95,51)	39 (%90,69)	1,497	0,221
Question 2	139 (%89,10)	37 (%89,04)	0,308	0,579
Question 3	98 (%62,82)	22 (%51,16)	1,914	0,167
Question 4	82 (%51,56)	23 (%52,48)	0,012	0,914
Question 6	139 (%89,10)	30 (%69,76)	9,843	0,002
Question 7	119 (%76,28)	30 (%69,76)	0,760	0,383
Question 8	56 (%35,89)	3 (%06,97)	13,517	0,001
Question 19	120 (%76,92)	27 (%62,79)	3,488	0,062
Question 21	21 (%13,46)	5 (%11,62)	0,100	0,752
Question 22	120 (%76,92)	21 (%48,83)	12,876	0,001
Pre-op bowel preparation				
Question 24	97 (%62,17)	15 (%34,88)	10,207	0,001
Hypothermia				
Question 12	32 (%20,51)	3 (%06,97)	4,261	0,039
Question 20	46 (%29,48)	12 (%27,90)	0,041	0,840
Question 28	102 (%65,38)	33 (%76,74)	1,994	0,158
Discharge planning				
Question 5	140 (%89,74)	33 (%76,74)	5,015	0,025
Follow-up and ongoing support				
Question 13	134 (%85,89)	31 (%72,09)	4,534	0,033
Question 27	141 (%90,83)	31 (%72,09)	9,617	0,002

Discussion

Adhering to an updated ERAS protocol has been shown to accelerate recovery, reduce short- and long-term morbidity, shorten hospital stays, and lower medical costs. Despite the proven positive effects of implementing ERAS protocols in



different specialties, the application of ERAS in surgical clinics in Türkiye and around the world is still at a low level^{3, 15, 16, 17}.

Studies conducted with surgical nurses in Türkiye have shown that their knowledge of ERAS protocols is very low^{18, 19, 20, 21}. This is a worrying finding because nurses play a crucial role in implementing ERAS protocols in hospitals. The lack of knowledge about ERAS among nurses can lead to suboptimal care and poorer patient outcomes. It is essential to provide education and training to nurses to encourage the implementation of this evidence-based practice in hospitals²². In addition, it is important to provide ERAS education at university and create and improve awareness among nursing students about the subject^{6, 23}. However, there are no studies that evaluate the knowledge level, attitudes, or approaches of nursing students regarding ERAS protocols. The findings of the present have been mainly compared to those of Afşar's (2020) study, since the survey used was the same, and the clinics included in the sample were the same clinics where the students participating in the present study undertook their clinical practice.

The present study found that the average percentage of ERAS-compliant responses was 62.74%. In similar studies conducted with nurses, the average percentage of ERAS-compliant responses was at the moderate level or above the average. However, this rate in nurses can be attributed to their low level of knowledge about ERAS, as demonstrated in the same studies, and the facts that they had not previously received ERAS training, that evidence-based practices were not being carried out in the clinics, and that traditional and routine practices were employed^{18, 20, 21}. In contrast, in the present study all the participants had theoretical knowledge about ERAS and they had all learned the practices included in the survey during the Surgical Diseases Nursing course. In this case, then, the similarity between the average percentages of ERAS-compliant answers of the nursing students in this study and those of the nurses in other studies may have been related to the traditional practices that students witnessed during their clinical practice. Regarding this point, some examples from our study can be given as follows:

The questions with the highest number of correct answers were found in the "Early Mobilization" and "Pain Management" components of the ERAS. In a similar way in Afşar's (2020) study, "Pain Management" was found to be the component of which the nurses had the greatest awareness, while "Early Mobilization" was the component with the third greatest awareness.

On the other hand, in the present study, the questions with the lowest number of correct answers fell within the "Catheter and Drains Use" and "Hypothermia" ERAS components. In Afşar's (2020) study, "Hypothermia" was the component of which the nurses had the second lowest level of awareness. With regard to the "Catheter and Drains Use" component, there are many studies that emphasize the need to abandon the routine use of prophylactic intraperitoneal drainage;

however, this practice is still routinely used in some surgical clinics^{26,27,28}. It is thus thought that the very low correct answer rate of the students in the present study regarding this practice might have been due to their exposure to the traditional use of this practice during their clinical practices.

It was also found that, the higher the GPA score, the higher the percentage of correct answers. Similar, students who had graduated from qualified high schools had a higher percentage of correct answers. The questions that showed a significant relationship for both GPA groups and the high school groups were found in the “Preoperative fasting”, “Early mobilization”, and “Preoperative bowel preparation” components. “Preoperative fasting” and “Preoperative bowel preparation” were among the components with the lowest rates of correct answers in Afşar’s (2020) study. The nurses’ approaches to these questions may also have been reflected in their clinical practices, and it is thought that this may have affected students’ approaches towards these practices during their experience in the clinical settings. There was therefore a particular low number of correct answers to these questions given by students with lower levels of academic achievement. The finding that the students with a higher GPA gave a higher number of correct answers can be associated with the fact that the theoretical knowledge acquired during the Surgical Nursing course had a greater effect in this student group.

The study highlights the importance of ERAS education among nursing students and the need to create awareness about ERAS protocols in hospitals. It is important to provide ERAS education and training to nurses and other healthcare personnel in order to improve patient outcomes and reduce medical costs. The study found that the proportion of general ERAS-compliant responses from participants was above average, but the difficulties of remote learning and pandemic-related challenges may have prevented the students from learning more about how to apply ERAS^{29,30}. The study also suggests that observing traditional practices observed in clinical settings may influence students’ approaches to ERAS protocols, since the findings are similar to those of studies conducted with nurses.

Conclusions

In conclusion, our findings are similar to those of studies conducted with nurses in terms of the ERAS components that are not well known by the participants. These results may help healthcare professionals and educators identify areas for improvement in ERAS compliance and education. To address this problem, we recommend the following actions:

- Motivate students to engage in research on ERAS protocols.
- Guide students to conduct their own research about the traditional practices



commonly used in clinics in order to understand why these practices should not be continued.

- Encourage students to observe and assess traditional practices through group discussions during clinical practice.
- Conduct more studies on ERAS with nursing students, since the present study is limited to only one university.

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