Original Article

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Assessment of Knowledge Levels of Nurses Working in Surgical Clinics About ERAS Protocol

Cerrahi Kliniklerde Çalışan Hemşirelerin ERAS Protokolüne Yönelik Bilgi Düzeylerinin İncelenmesi

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ABSTRACT

Objective: *The aim of the study was to assess the knowledge levels of nurses working in surgical clinics about ERAS protocol.*
Method: *The study was carried out as a descriptive study. The sample of the study consisted of 127 surgical unit nurses who were not on leave or sick leave during the study period and who were willing to participate. A data collection form consisting of two sections and 47 questions developed by the researchers was used to collect the data. The necessary ethical and institutional approvals were obtained before the study.*
Results: *In the study 84.25% of the nurses stated that they did not know about the ERAS protocol, 88.97% indicated that the institution where they were working did not implement ERAS practices, 99.21% said that they did not follow any publication on the ERAS protocol,and 99.21% expressed that they did not receive any training on the ERAS protocol.*
Conclusion: *It was determined that most of the surgical nurses in the study did not know about the ERAS protocol and that ERAS protocol were not implemented in the clinic where they were working. In line with these results, we can recommend that surgical nurses follow the current developments and evidence-based guidelines on the ERAS protocol. Organization of trainings for the implementation of ERAS practices and ensuring the participation of nurses can help increase their knowledge levels in this regard.*

Keywords: *ERAS, nursing, information, enhanced recovery after surgery protocol*

ÖZ

Amaç: *Çalışmanın amacı cerrahi kliniklerde çalışan hemşirelerin ERAS protokolüne ilişkin bilgi düzeylerinin incelemektir.*
Yöntem: *Çalışma tanımlayıcı olarak gerçekleştirildi. Araştırmanın örneklemini ise çalışmanın yapıldığı dönemde izinli/ raporlu olmayan ve araştırmaya katılma konusunda istekli olan 127 cerrahi birim hemşiresi oluşturdu. Verilerin toplanmasında araştırmacılar tarafından geliştirilen iki bölüm ve toplam 47 sorudan oluşan veri toplama formu kullanıldı. Çalışmaya başlamadan önce gerekli etik ve kurum izni alındı.*
Bulgular: *Çalışmada hemşirelerin %84.25'i "ERAS protokolünü bilmediklerini, %88,97'si çalıştıkları klinikte ERAS protokolü uygulamalarına yer verilmediğini, %99,21'i ise "ERAS protokolüne yönelik herhangi bir yayını takip etmediğini, %99,21'i ERAS protokolünü içeren herhangi bir eğitim almadığını belirtti.*
Sonuç: *Çalışmadaki cerrahi hemşirelerin çoğunluğunun ERAS protokolünü bilmedikleri ve çalıştıkları klinikte ERAS protokolü uygulamalarına yer verilmediği belirlendi Bu sonuçlar doğrultusunda cerrahi hemşirelerinin ERAS protokolüne yönelik güncel gelişmeleri ve kanıta dayalı rehberleri takip etmeleri, eras protokolü uygulamalarına yönelik eğitimlerin düzenlenmesi ve hemşirelerin katılımlarının sağlanması ile hemşirelerin bilgi düzeylerinin arttırılması önerilebilir.*

Anahtar kelimeler: *ERAS, hemşirelik, bilgi, cerrahi sonrası hızlandırılmış iyileşme protokolü*

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INTRODUCTION

With the recent developments in surgical practices and anesthesia methods, in particular, there has been a significant increase in the number of patients who are undergoing surgery [1]. Due to this serious increase in patient population, the treatment and care protocols of hospitals are inadequate, so progress should be made with evidence-based practices instead of traditional approaches [1,2]. It is known that recovery after surgery can be accelerated and mortality due to surgery can be reduced with an up-to-date approach on treatment and care in surgery and evidence-based practices. One of such evidence-based practices is the Enhanced Recovery After Surgery (ERAS) protocol, also known as the Fast Track Surgery (FTS) protocol, developed by the ERAS Society [3,4]. The ERAS protocol can be used for colorectal, gynecological and thoracic operations and other complex procedures [5]. The ERAS protocol requires a patient-centered, evidence-based and interdisciplinary approach to reduce patients' response to surgical stress, optimize their physiological functions and facilitate surgical recovery [6-11]. It is reported in the literature that ERAS has contributed to patient outcomes, reduced postoperative complications, accelerated recovery and supported early discharge [12-15]. Today, many evidence shows that the ERAS protocol reduces hospital stay by 2-3 days and morbidity and complication rates by 30-50%. Correspondingly, it leads to a decrease in the cost of health services for both the institution and the patient [16-20].

The components of the ERAS protocol include the preoperative, perioperative and postoperative periods. The preoperative period includes practices such as consultancy prior to admission, loading of liquid and carbohydrates, not prolonging fasting periods, not performing or selectively performing intestinal preparation, using antibiotic prophylaxis, thromboprophylaxis without premedication. The perioperative period includes practices such as using short-acting anesthetic agents, applying mid-thoracic epidural anesthesia/analgesia, avoiding drainage, salt and water loading and ensuring normothermia (heating the body, using heated intravenous fluids). The postoperative period includes practices such as applying mid-thoracic epidural anesthesia/analgesia, not using nasogastric tubes, preventing nausea and vomiting, avoiding salt and water loading, early removal of catheters, early initiation of oral feeding, using non-opioid oral analgesia, early mobilization, stimulating bowel movements and inspection of results and compliance with the protocol [5,10,21].

However, the literature shows low rates of postoperative care in accordance with the ERAS protocol. McLeod et al. [22] determined the obstacles for the implementation of ERAS to be the lack of workforce, hospital resources and participation and poor communication between team members. Successful implementation of ERAS depends on nurses to accept the use of this protocol and anesthesiologists and physicians to be in collaboration [6]. Considering the research on the implementation of ERAS, it is seen that most institutions focus on the perspective and effect of physicians' roles. However, taking into account that patient care is interdisciplinary in ERAS, nurses have a key role in overcoming ERAS implementation barriers and ensuring compliance with the protocol [11]. Understanding the role of nurses in the implementation of the ERAS protocol is important for future research. Although the global literature includes many studies on the ERAS protocol, there are only a limited number of studies on implementation involving the roles of nurses or its relationship with nursing [23]. There are also a limited number of reviews and researches by nurses on the ERAS protocol in Turkey [4,10,24-28]. In line with the information in the literature, the purpose of this study was to assess the knowledge levels of nurses working in surgical clinics about ERAS protocol and to contribute to the literature.

MATERIAL and METHOD

This study was carried out as a descriptive study between October 2018-March 2019 in the surgical units (orthopedics, plastic surgery, eye surgery, otolaryngology, urology, general surgery, neurosurgery and cardiovascular surgery) of one state, one city and one university hospital.

The target population of the study consisted of 360 nurses working in the surgical units (orthopedics, plastic surgery, eye surgery, otolaryngology, urology, general surgery, neurosurgery and cardiovascular

surgery) of a State Hospital, a City Hospital and a University Hospital in the same city in Turkey. The sample of the study consisted of 127 surgical unit nurses working in the surgical units of a State Hospital, a City Hospital and a University Hospital in the same city hospital between October 2018-March 2019, who were not on leave and were willing to participate. The data were collected by the researchers in 10-15 minutes by face-to-face interviews with the nurses on their working days and at certain hours not interfering with their work after obtaining written and verbal permission from the participants.

A data collection form developed by researchers and consisting of two sections was used to collect data. After the form was created, it was revised in line with the expert opinions of 5 people on the ERAS protocol. The first section included 13 questions for demographic characteristics (age, marital status, gender, educational status, etc.), occupational data (total work years, work hours) and individual questions regarding ERAS. The second section consisted of 34 questions regarding the information on ERAS protocol [29-31]. The Statistical Package for the Social Sciences 25 (IBM SPSS) software was used for the statistical analyses. In data evaluation, descriptive statistical methods (mean, standard deviation, frequency, etc.) were used.

Before the study, ethical approval was received from the Ethics Committee of Balıkesir University (No: 20188/188), and institutional approvals were obtained from the state hospital and city hospital where the study was conducted. The nurses were informed that all information written on the forms would be kept by the researchers, that their answers would remain confidential and would only be used for scientific purposes. The nurses gave verbal and written permission regarding their willingness to participate in the study.

RESULTS

It was determined that 26.7% of the nurses participating in the study were aged between 37-42 years, 59.05% had a bachelor's degree, 45.94% were in the profession for ≥16 years, and 72.44% worked for 40-49 hours weekly (Table 1).

The statistical evaluation of the knowledge levels of the nurses regarding ERAS is given in Table 2. In the study 84.25% of the nurses stated that they did not

Table 1. Demographic characteristics of nurses working in surgical clinics (n=127).

		n	%
Age	19-24 age	24	18.9
	25-30 age	25	19.7
	31-36 age	17	13.4
	37-42 age	34	26.7
	42 age and above	27	21.3
Marital status	Married	89	70.07
	Single	38	29.93
Graduate program	Vocational School of Health	25	19.68
	Associate Degree	20	15.74
	Bachelor's Degree	75	59.05
	Postgraduate	7	5.51
Total years in the profession	Less than 1 year	5	3.94
	1-5 years	27	21.26
	6-10 years	26	20.47
	11-15 years	14	11.02
	16 years and above	55	43.31
Weekly work hours	40-49	93	73.23
	50-59	23	18.11
	60 hours and above	11	8.66
Hospital where they worked	State hospital	28	22.05
	City hospital	60	47.24
	University hospital	39	30.1

Table 2. Knowledge on ERAS protocol (n=127).

		n	%
Could you write down what you know about the ERAS protocol?	I do not know	107	84.25
	Other	20	15.75
Are there any sources where you follow the latest developments in the field of surgery?	Yes	7	5.51
	No	120	94.49
Are ERAS protocol practices implemented in your clinic?	Yes	14	11.02
	No	113	88.98
Are there any publications you follow for the ERAS protocol?	Yes	126	99.21
	No	1	0.79
Have you attended any training that includes the ERAS protocol?	Yes	126	99.21
	No	1	0.79
Do you think ERAS protocol practices are useful?	Yes	27	21.26
	No	2	1.58
	I do not know	98	77.16

know about the ERAS protocol, 88.97% stated that the institution where they were working did not implement ERAS practices, 99.21% indicated that they did not follow any publication on the ERAS protocol, 99.21% reported that they did not receive any training on the ERAS protocol, and %77.16 expressed that they did not know whether ERAS practices were useful.

The numbers and percentages of the responses to the questions for the preoperative, perioperative and postoperative parts of the ERAS protocol are given in Table 3. For the preoperative part, 95.27% of the surgical nurses stated that the item "Patient counseling and education should begin at the first visit and should continue throughout the surgical procedure" was "correct", and 74.80% stated that the item "clear fluids can be taken up to 2 hours before surgery" was "incorrect".

For the perioperative part, the item "Risk factors should be evaluated for nausea and vomiting after surgery" was found to be the most correct answer by 90.55%, and the item "Short-acting anesthetics should be used" was the most incorrect answer by 19.68% of the participants. For the postoperative part, the item "Catheters should be removed as soon as possible" was found to be the most correct answer by 81.88%, and "Oral feeding should be provided in the early postoperative period" was the most incorrect answer by 27.55% of the participants.

DISCUSSION

For enhanced recovery after surgery and the successful implementation of the ERAS protocol, it is important for nurses to have high awareness and knowledge about ERAS, in addition to all other healthcare team members. It is reported in the literature that there are gaps in the training of healthcare professionals in terms of ERAS protocols and the implementation of these protocols [32]. Conn et al. [33] examined the experience of practitioners in successfully implementing postoperative recovery for elective colorectal surgery. In their qualitative study on 26 healthcare workers, they showed that most surgeons and anesthesiologists knew about the principles of ERAS, but most nurses did not know about the ERAS protocol. Similarly, Ince and Celebi [27] and Guzel and Yava [28], Kirik [34], Gustafsson et al. [35] found that most nurses did not have sufficient knowledge about ERAS in perioperative care. We also determined that most of the nurses did not have information about the ERAS protocol in this study. This finding is similar to the literature, and we think that it may be due to the continuation of traditional practices rather than evidence-based practices such as ERAS in Turkey and in some other countries, and because nurses do not receive any training on ERAS and follow publications in this regard.

Successful implementation of the ERAS protocol is possible only through the collaboration of a team of surgeons, anesthesiologists and nurses [36]. Herbert

Table 3. Knowledge levels regarding ERAS protocol.

Preoperative Period	Correct (%)	Incorrect (%)	Undecided (%)
1. Patient counseling and education should begin at the patient's first visit and should continue throughout the surgical procedure.	95.27	0	4.73
2. Patients should receive detailed education about the ERAS protocol with all team members.	71.65	3.15	25.20
3. Smoking, alcohol use and presence of anemia should be routinely investigated in the preoperative period	92.91	0	6.29
4. The patient should stop smoking at least 4 weeks before the intervention.	62.99	7.09	29.92
5. The patient should stop alcohol use at least 4 weeks before the intervention.	69.29	7.09	23.62
6. Blood glucose level should be kept at an optimum level.	87.40	2.36	10.24
7. Intestinal cleaning performed before surgery is effective in reducing infection rates.	73.23	8.66	18.11
8. Solid foods can be taken up to 6 hours before surgery.	24.41	65.35	10.24
9. Heterogeneous liquids (juice) can be taken up to 4 hours before surgery.	20.47	67.72	11.81
10. Clear fluids can be taken up to 2 hours before surgery.	12.60	74.80	12.60
11. Administration of carbohydrate fluids until the midnight before surgery accelerates recovery in the postoperative period.	11.81	34.65	53.54
12. The use of routinely applied long-acting sedatives should be avoided 12 hours before surgery.	48.04	7.87	44.09
13. Short-acting anxiolytics should be used before surgery.	30.71	18.11	51.18
14. Thromboembolism prophylaxis should be started the day before surgery.	39.37	23.62	37.01
15. Nutritional status should be evaluated, and nutritional support should be provided if NRS-2002/SGD-C score is above 3.	72.44	0	27.56
16. Short-acting anesthetics should be used.	41.73	19.69	38.58
17. Risk factors for nausea and vomiting after surgery should be evaluated.	90.55	1.58	7.87
18. Drainages, tubes and catheters should be used limitedly and only if necessary and should be removed as soon as possible.	81.89	2.36	15.75
19. Patients should be heated 10-20 minutes before surgery to ensure normothermia.	51.18	16.54	32.28
20. Antimicrobial prophylaxis should be done intravenously an hour before incision.	69.29	5.51	25.20
21. Patients should be given fluids (colloids and crystalloids) so that their cardiac functions remain optimal.	77.17	3.93	18.90
22. Advanced hemodynamic monitoring should be used for easy monitoring of fluid therapy and effective oxygen transport in the perioperative period.	62.21	8.66	29.13
23. Mid-thoracic epidural anesthesia/analgesia should be used.	35.43	14.96	49.61
24. Low-molecular-weight heparin should be used for postoperative thromboembolism prophylaxis.	56.69	7.09	36.22
25. Antiemetic prophylaxis should be performed to reduce nausea and vomiting after surgery.	74.80	3.94	21.26
26. Catheters should be removed as soon as possible.	81.89	0.79	17.32
27. High energy fluids after surgery should contain protein/carbohydrate.	59.06	10.24	30.71
28. Balanced crystalloid solutions should be used instead of 0.9% sodium chloride to prevent hyperchloremic acidosis.	38.58	8.66	52.76
29. Patients should be ensured to chew gums to prevent distension and constipation after surgery.	30.71	26.77	42.52
30. Controlled insulin therapy and regular blood glucose monitoring should be performed to prevent the development of hypoglycemia in patients with severe hyperglycemia.	74.02	4.72	21.26
31. Opioid use should be reduced after surgery.	57.48	4.72	37.80
32. A multimodal pain relief method should be used to control pain.	57.48	1.58	40.94
33. Oral feeding should be provided in the early postoperative period.	53.54	27.56	18.90
34. Patients should be kept out of bed for 2 hours on the day of surgery and 6 hours a day until discharge.	62.22	13.37	24.41

et al. [37] stated that ERAS is a strong evidence-based practice, but it has a slow transition to practice in clinics. Ament et al. [38] stated that the communication, institutional culture and structural features of clinics (circulation of employees) are common issues related to the applicability and sustainability of the ERAS protocol. Most of the nurses participating in this study stated that ERAS practices were not included in the clinic where they worked. This finding shows that the institutional culture and structural features of the clinics may have been effective in the lack of implementation of ERAS in the clinics where the nurses worked.

The ERAS protocol covers both preoperative, perioperative and postoperative periods. This protocol includes practices such as preoperative patient education and counseling, prevention of prolonged hunger due to surgery through nutrition, standardized analgesic and anesthetic regimens and early mobilization [23,39-41].

Educating patients before the surgery about issues such as the surgical team, possible complications and their management, pain management, etc. is the most important component of the ERAS protocol [23,42]. Inci and Celebi [27] found that the knowledge of nurses on preoperative training and counseling was compatible with ERAS. Similarly, in this study, the fact that the nurses knew that patients should be

educated in the preoperative period is compatible with the ERAS protocol.

The 2011-2017 guidelines of the American Society of Anesthesiologists (ASA) states that it is sufficient to stop the consumption of solid foods six hours before the operation and that of clear liquids two hours before the operation [43]. Patients undergoing surgery should be given 800 ml of liquid food rich in carbohydrates until the midnight before surgery and 400 ml 2–3 hours before surgery. This practice has been shown to improve postoperative well-being, reduce insulin resistance and significantly shorten hospital stay [44]. In the study of Inci and Celebi [27], the knowledge levels of nurses regarding fasting times were not found to be compatible with the ERAS protocol. In the study of Kankilic and Tuna [45], it was found that only 4.2% of healthcare professionals performed practices in line with the fasting recommendations of the ERAS protocol. Similarly, in this study, the knowledge levels of nurses regarding fasting times before surgery were not found to be compatible with the ERAS protocol. This result may be related to the continuation of the traditional attitudes of nurses working in surgical clinics regarding fasting times and their lack of sufficient knowledge in this regard.

Postoperative nausea-vomiting should be prevented, because it can restrict the oral feeding of patients in the early period. For this purpose, the use of agents that can induce vomiting should be avoided during the surgery, and combined antiemetic agents should be used (highly evidenced, strongly recommended) [35,44]. In this study, the knowledge levels and practices of nurses regarding nausea and vomiting were compatible with the ERAS protocols. This may suggest that nurses are conscious about risk factors in preventing nausea and vomiting after surgery and that antiemetic drugs are routinely applied during operations. A wide variety of agents are used to reduce preoperative anxiety. In practices similar with the ERAS protocol, long-acting premedication agents should be avoided [46]. In this study, it was seen that nurses had limited knowledge on the use of short-acting anesthetics.

It is recommended that urinary catheters should be removed in the early period due to their disadvantages such as urinary infection and restriction of mobilization [1,35]. In the current study, we observed that the practices of nurses regarding the removal of catheters were in accordance with the ERAS protocol. This may be due to the fact that the early removal of catheters is a routine practice performed in the clinics. The transition to oral feeding in the early postoperative period reduces both hospital stay and infection risk. However, early oral feeding may increase the risk of vomiting and may lead to problems such as delay in mobilization, pulmonary problems and bloating when a multimodal treatment is not applied [47]. In the study of Inci and Celebi [27], it was observed that nurses had low levels of knowledge regarding transition to oral feeding in the postoperative period. Similarly, in this study, we observed that the practices of nurses regarding transition to oral feeding in the postoperative period were in line with the ERAS protocols.

Limitations: The study was limited to State Hospital, City Hospital and University Hospital in the same city.

CONCLUSIONS

In conclusion, we determined that most of the surgical nurses in the study did not know about the ERAS protocol, that ERAS practices were not included in the clinics where they were working, that they did not follow any publications regarding the ERAS protocol, that they received no training including the ERAS protocol and that they did not know whether ERAS practices were useful. It was seen that the nurses had limited knowledge levels regarding the intake of clear fluids up to 2 hours before surgery, the preference of using short-acting anesthetics and the transition to oral feeding in the early postoperative period. In line with these results, we can recommend that surgical nurses follow the current developments and evidence-based guidelines on the ERAS protocol. Organization of trainings for the implementation of ERAS practices and ensuring the participation of nurses can help increase their knowledge levels in this regard. Considering the literature, it is seen that there are limited international and national publications on the topic. Thus, further studies with larger sample groups and different study types can be planned.

Ethics Committee Approval: Ethical approval was received from the Ethics Committee of Balıkesir

University (No: 20188/188), and institutional approvals were obtained from the state hospital and city hospital where the study was conducted.

Conflict of interests: Authors have no conflict of interest.

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