

## Examination of Postgraduate Theses on ERAS Protocol Applications in the Field of Nursing in Türkiye\*

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### Abstract

**Aim:** This study is designed to examine postgraduate theses conducted in the field of nursing in Türkiye focusing on the Enhanced Recovery After Surgery (ERAS) protocols.

**Method:** In this retrospective literature review, theses conducted in the field of nursing between 2011-2023, focusing on the utilization of ERAS practices, were examined. The inclusion criteria for the theses retrieved from the National Thesis Center database of the Higher Education Council were as follows: having key terms such as "Postoperative enhanced recovery protocol," "Enhanced recovery," "Oral carbohydrate," or "ERAS" in their thesis titles, and being conducted by departments of Nursing and/or Nursing Science. After categorizing the theses into master's and doctoral theses, they were examined in chronological order.

**Results:** The screening process identified 21 theses conducted between 2011-2023, excluding one thesis that was inaccessible for full text. All theses were written within the last 12 years, with 3 theses at the doctoral level and 17 at the master's level. When examining the study designs, one these was a meta-analysis, 13 were descriptive, and 6 were conducted using experimental methods. Among the studies, 75% were conducted with patients, 10% with healthcare workers, and 10% with nursing students.

**Conclusion:** The nursing theses conducted on ERAS have concluded that ERAS practices are effective based on their intended purposes. Additionally, it has been determined that healthcare professionals have insufficient knowledge regarding ERAS practices. Therefore, it is recommended to increase the number of studies conducted in the field of nursing to promote the widespread implementation of ERAS practices and raise awareness.

**Keywords:** Surgery, ERAS, nursing, enhanced recovery, protocol.

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## Türkiye’de Hemşirelik Alanında ERAS Protokolü Uygulamaları ile Yapılan Lisansüstü Tezlerin İncelenmesi

### Öz

**Amaç:** Bu çalışma ülkemizde hemşirelik alanında Ameliyat Sonrası Hızlı İyileşme Protokolü” (Enhanced Recovery After Surgery-ERAS) uygulamaları ile yapılan lisansüstü tezlerin incelenmesi amacıyla planlanmıştır.

**Yöntem:** Bu retrospektif tipteki literatür araştırmasında 2011-2023 yılları arasında hemşirelik alanında ERAS uygulamalarının kullanıldığı tezler incelenmiştir. Yükseköğretim Kurulu Ulusal Tez Merkezi veri tabanında incelenen tezlerin araştırmaya alınma ölçütleri; tez başlıklarında "Cerrahi sonrası hızlandırılmış iyileşme protokolü ", "Hızlandırılmış iyileşme", "Oral karbonhidrat", "ERAS" anahtar kelimeleri yer alması, Hemşirelik ve/veya Hemşirelik anabilim dalları tarafından yapılmış olmasıdır. Tezler yüksek lisans ve doktora tezleri olarak ayrıldıktan sonra kronolojik sırayla incelenmiştir.

**Bulgular:** Tarama sonucunda 2011-2023 yılları arasında tam metnine ulaşılan 21 tez içerisinde 20 tez değerlendirmeye alınmıştır. Türkiye’de ERAS uygulamaları kullanılarak yapılan ilk hemşirelik tezinin 2011 yılında yapıldığı saptanmıştır. Tezlerin tamamının son 12 yılda yazıldığı ve 3 tezin doktora, 17 tezin yüksek lisans düzeyinde olduğu tespit edilmiştir. Çalışma desenleri incelendiğinde 1’i meta-analiz, 13’ü tanımlayıcı, 6’sı deneysel yöntem kullanılarak yürütülmüştür. Çalışmaların %75’i hastalarla, %10’u sağlık çalışanlarıyla, %10’u hemşirelik öğrencileri ile yürütülmüştür. Tezler kolorektal, kardiyak, bariyatrik, hepatobiliyer, tiroid, jinekolojik, ortopedik cerrahi ve sağlık çalışanlarının ERAS konusundaki bilgi düzeylerini içermektedir.

**Sonuç:** ERAS konusunda yapılan hemşirelik tezlerinde ERAS uygulamalarının kullanım amaçlarına göre etkili olduğu sonuca ulaşılmıştır. Aynı zamanda sağlık çalışanlarının ERAS uygulamaları konusunda bilgi düzeyinin yeterli olmadığı saptanmıştır. Bu kapsamda, ERAS uygulamalarının yaygınlaştırılması amacıyla hemşirelik alanında yapılan kanıt düzeyi yüksek deneysel çalışma sayılarının artırılması ve farkındalık yaratılması önerilmektedir.

**Anahtar Sözcükler:** Cerrahi, ERAS, hemşirelik, hızlandırılmış iyileşme, protokol.

### Introduction

Accelerated surgical care was initially designed by a group of surgeons in Northern Europe with the aim of optimizing postoperative stress and expediting postoperative recovery. This approach has demonstrated that early mobilization, early oral intake, and early discharge are suitable and beneficial for the postoperative patient<sup>1</sup>.

The Enhanced Recovery After Surgery (ERAS) project was initiated in the year 2000, and developments in this field have since shown a cumulative increase. Transforming into an international medical society based in Stockholm in 2010, it adopted the name ERAS Society (Enhanced Recovery After Surgery Society for Perioperative Care). The initial published guidelines included elective colon surgery, rectal surgery, and

pancreaticoduodenectomy. Subsequent guidelines have been developed over time in accordance with these initial recommendations<sup>2</sup>. ERAS encompasses the entire process that begins with the patient's preoperative clinic visit and concludes with their discharge to home. The fundamental goal is to reduce the metabolic response associated with surgical trauma, optimize functions in a short period, and facilitate the individual's return to activities as soon as possible<sup>3</sup>.

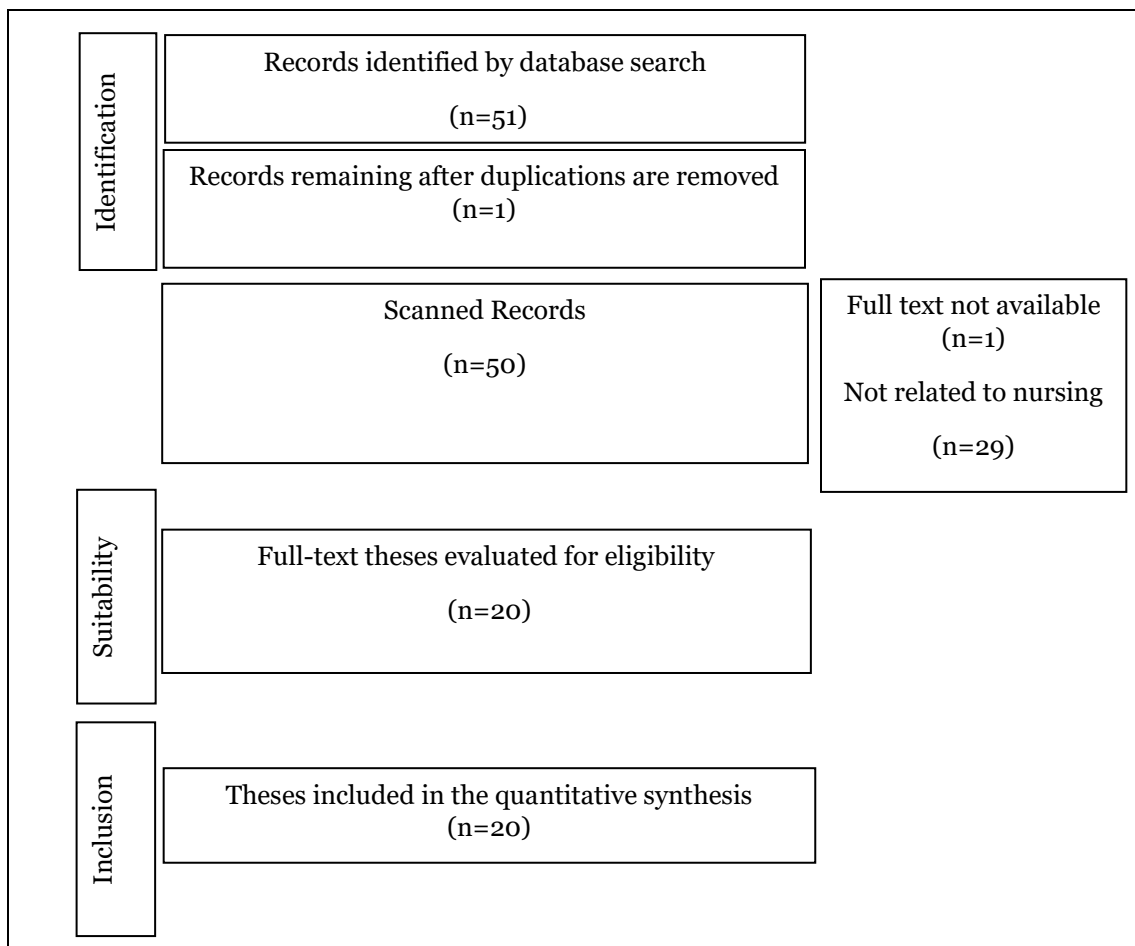
The elements of the ERAS protocol are categorized into preoperative, intraoperative, and postoperative phases. Among the preoperative elements are patient education, avoidance of routine mechanical bowel preparation, no fasting, oral carbohydrate loading, assessment and optimization of nutritional status, prehabilitation, avoiding premedication, thromboembolism prophylaxis, and antimicrobial prophylaxis. During surgery, elements of the ERAS protocol include the prevention of hypothermia, application of mid-thoracic epidural analgesia, a short-acting anesthesia protocol, multimodal management of nausea and vomiting, perioperative fluid management, drain-free surgery, avoidance of nasogastric tube, and the use of laparoscopic and robotic surgery. Postoperative elements consist of avoiding urinary catheters, use of non-narcotic analgesics postoperatively, blood sugar management, stimulation of gastrointestinal motility, early feeding, early mobilization, early discharge, and the monitoring and control of follow-up and outcomes<sup>3,4</sup>.

Surgical nurses play proactive roles in the clinical integration of ERAS protocols, as they actively engage in every stage of the perioperative process. Nurses play a key role in translating the preoperative, intraoperative, and postoperative phases of the ERAS protocol into patient care. In this context, it is important for nurses to apply the knowledge they acquire from current, evidence-based approaches to healthcare services during the perioperative process. There is a need to increase awareness among both nurses and nursing students regarding their duties, authorities, and responsibilities in accelerated recovery. In this context, it is important to enhance nursing studies related to the ERAS protocol in our country and contribute to the literature<sup>3,5</sup>. As a result, it is clear that the integration of ERAS programs and the involvement of nurses in studies on this subject will have a positive impact on the quality of perioperative care by increasing care performance. No study compiling nursing studies on ERAS protocols has been found in the literature. Therefore, this study was conducted to examine postgraduate theses in nursing in Turkey related to the implementation of the Enhanced Recovery After Surgery (ERAS) protocol.

## Material and Methods

In this retrospective literature review, the theses in the field of nursing that employed Enhanced Recovery After Surgery (ERAS) practices between the years 2011 and 2023 were examined. The inclusion criteria for the theses investigated in the Higher Education Council National Thesis Center database were as follows: the presence of key terms such as “Enhanced Recovery After Surgery protocol”, “Accelerated recovery”, “Oral carbohydrate”, and “ERAS” in the thesis titles, as well as being conducted by Nursing and/or Nursing Departments. Master's and doctoral theses that met the search criteria were selected. The study was organized methodologically according to the PRISMA reporting checklist (Figure 1).

**Figure 1.** PRISMA Flow Chart



## Ethical Consideration

In this study, since it was conducted by accessing publicly available master's and doctoral theses, ethical approval was not required.

## Data Collection

The theses were identified by the researchers, and a data collection form was prepared to determine their inclusion in the study. The data collection form consisted of 5 items, including the type of research, year, method, sample group, and accessibility to the full text. As a result of the database search, 51 theses were identified. Following the search, 1 thesis without access to the full text and 29 theses unrelated to nursing were excluded. Among the criteria for inclusion, 20 theses related to nursing were identified from the registered database. The examination revealed that 17 of the included theses were master's theses, and 3 were doctoral theses. The bibliographic information for the included 20 theses is provided in alphabetical order.

## Results

The study includes 20 theses that meet the inclusion criteria from the years 2017 to 2023. It was determined that 30% of these theses were conducted in 2022. Among the theses, 85% were master's theses, and 15% were doctoral theses. Patients constituted 75% of the sample groups in these theses. When the study designs were examined, it was seen most of them were made with a descriptive design, and 30% of them used experimental methods. It was determined 30% of theses were conducted in general surgery clinics (Table 1).

**Table 1.** Distribution of theses according to their characteristics

|              | Number of Theses | %    |
|--------------|------------------|------|
| <b>Years</b> |                  |      |
| 2017         | 3                | 15.0 |
| 2018         | 1                | 5.0  |
| 2019         | 2                | 10.0 |
| 2020         | 2                | 10.0 |
| 2021         | 3                | 15.0 |
| 2022         | 6                | 30.0 |
| 2023         | 3                | 15.0 |

|                              |    |      |
|------------------------------|----|------|
| <b>Postgraduate</b>          |    |      |
| Master                       | 17 | 85.0 |
| Doctorate                    | 3  | 15.0 |
| <b>Sample group</b>          |    |      |
| Patient                      | 15 | 75.0 |
| Nurse                        | 1  | 5.0  |
| Student                      | 2  | 10.0 |
| Healthcare workers           | 1  | 5.0  |
| Patient + Healthcare workers | 1  | 5.0  |
| <b>Study design</b>          |    |      |
| Experimental                 | 13 | 65.0 |
| Meta analysis                | 6  | 30.0 |
| Descriptive                  | 1  | 5.0  |
| <b>Study group</b>           |    |      |
| General Surgery              | 6  | 30.0 |
| Orthopedics                  | 3  | 15.0 |
| Cardiovascular Surgery       | 3  | 15.0 |
| Obstetrics and Gynecology    | 3  | 15.0 |
| Healthcare Worker            | 2  | 10.0 |
| Student                      | 2  | 10.0 |
| Adherence to ERAS Protocols  | 1  | 5.0  |

In three experimental studies, the effects of oral carbohydrate solution (OCS) administration were investigated in laparoscopic cholecystectomy (LC), arthroscopy, and hip arthroplasty surgeries. At the end of the studies, it was found that in the group receiving OCS, it reduced insulin resistance and improved patient comfort<sup>6</sup> had a positive effect on blood glucose levels and thirst<sup>7</sup>, and reduced preoperative anxiety and improved postoperative patient comfort<sup>8</sup>. In two theses conducted with patients undergoing colorectal and cardiac surgery, the implementation of an enhanced recovery protocol was found to increase overall and peri-anesthetic comfort levels<sup>9</sup>. It was determined that the protocol reduced anxiety levels, pain levels, and the use of opioid analgesics and non-opioid analgesics<sup>10</sup>. It has been found that obesity surgery gives earlier recovery results

compared to the traditional method<sup>11</sup>. A meta-analysis investigating the impact of recovery protocols on patient outcomes concluded that they are effective in general patient outcomes, pain, length of hospital stay, length of intensive care unit stay, development of delirium, extubation time, mobilization, opioid use, and the development of infections<sup>12</sup> (Table 2).

**Table 2.** Summary of randomized controlled nursing thesis on ERAS

| <b>Types of thesis author, publication year</b>                             | <b>Aim of the thesis</b>  | <b>Method</b>  | <b>Conclusion</b>   |
|---|---|--|---|
| <b>Önalın<sup>6</sup>, 2017</b><br><b>Randomized Controlled Study (RCS)</b> | A prospective randomized controlled trial was conducted to investigate the impact of preoperative oral carbohydrate solution (OCS) administration on postoperative insulin resistance and patient comfort in patients scheduled for elective laparoscopic cholecystectomy (LC). | The patients were divided into two groups: the OCS group with 25 patients and the control group with 25 patients. In the OCS group, 800 mL of OCS solution was administered the night before the surgical procedure, and 400 mL of OCS solution was given 2 hours before the surgery. The control group did not receive any food or drink after midnight.                          | The preoperative administration of OCS in patients undergoing elective LC has been determined to reduce postoperative insulin resistance and improve patient comfort  |
| <b>Akbuğın<sup>7</sup>, 2018</b><br><b>(RCS)</b>                            | A randomized controlled study was conducted to investigate the effect of preoperative oral liquid carbohydrate intake on blood glucose, hunger-thirst, and fatigue levels in patients undergoing arthroscopy surgery."  | A total of 31 individuals in the intervention group and 30 in the control group undergoing arthroscopy surgery were included in the study. The intervention group received 400 ml of oral liquid carbohydrate beverage two hours before the surgery, while no intervention was performed in the control group.   | In patients undergoing arthroscopy, preoperative oral liquid carbohydrate intake before spinal anesthesia was found to have a positive effect on postoperative blood glucose levels and thirst, while it was determined to have no effect on hunger levels and fatigue. |
| <b>Ertural<sup>8</sup>, 2022</b>  | The study was conducted to determine the impact of preoperative oral carbohydrate solution (OCS) administered before hip arthroplasty on preoperative anxiety and postoperative patient comfort.  | The research was completed with a total of 50 patients, consisting of 25 in the intervention group and 25 in the control group. Patients in the intervention group were administered OCS with 800 ml the night before the surgery and 400 ml two hours before being sent to the operating room. Patients in the control group underwent food and fluid restriction after midnight. | It has been found that oral carbohydrate solution reduces preoperative anxiety and enhances postoperative patient comfort in hip arthroplasty surgery.  |

|  |   |   |  |
|--|---|---|--|
| <b>Kavalcı<sup>9</sup>, 2021<br/>(RCS)</b>                       | A clinical experimental study was designed to determine the impact of implementing an enhanced recovery protocol on nursing care comfort in colorectal surgery patients.  | A sample of 60 patients was taken, with 30 in the experimental group and 30 in the control group, who underwent elective colorectal surgery and stayed in the ward for at least 72 hours.   | The implementation of an enhanced recovery protocol in colorectal surgery patients increases overall and peri-anesthetic comfort levels  |
| <b>Arpag<sup>10</sup>, 2021<br/>(RCS)</b>                        | The aim is to determine the effects of preoperative visits by the operating room nurse on postoperative anxiety levels, pain intensity and frequency, and the type, dose, and frequency of analgesic use in patients undergoing cardiac surgery with the cardiopulmonary bypass method. | A total of 64 patients, 32 in each experimental and control group, were included. Patients in the experimental group were visited by the operating room nurse before surgery, while no intervention was performed in the control group          | In the experimental group, the postoperative state anxiety level, pain level, and the use of opioid and non-opioid analgesics were lower compared to the control group.  |
| <b>Aykul<sup>11</sup>, 2022<br/>(RCS)</b>                        | The study was conducted to compare the impact of care based on the "Enhanced Recovery After Surgery (ERAS) Protocol" in obesity surgery with the traditional method on patient recovery outcomes.   | In the research, a total of 128 patients were included, with 64 in the control group and 64 in the experimental group.  | It has been observed that the ERAS Rapid Care Protocol yields significantly earlier recovery outcomes in the treatment of obesity surgery compared to the traditional treatment method applied to the control group.   |
| <b>Şanlıer<br/>Büyükcamsarı<sup>12</sup>,<br/>2023<br/>(RCS)</b> | The aim of this study is to conduct a systematic review and meta-analysis of studies investigating the impact of enhanced recovery protocols on patient outcomes in cardiovascular surgery.   | All studies published in Turkish and English languages were systematically reviewed. As a result of the review, 18 studies were included in the analysis. The study employed the meta-analysis method, one of the systematic synthesis methods. | The study concluded that ERAS protocols are effective in influencing general patient outcomes, pain, length of hospital stay, length of stay in the intensive care unit, development of delirium, extubation duration, mobilization, opioid usage, and infection development. However, it was determined that ERAS protocols do not have a significant impact on renal failure, arrhythmia development, stroke, or the need for reoperation. |

In four descriptive studies, the adherence of clinics to ERAS protocols was investigated. In the study by Özkeçeci and colleagues, the practices were in line with ERAS protocols<sup>13</sup>. In the study by Tunçel and colleagues, the adherence of practices to the ERAS protocol in patients undergoing cardiovascular surgery influenced postoperative recovery but did not affect self-efficacy, sleep quality, and pain<sup>14</sup>. In another study, the early mobilization time of patients was in accordance with the postoperative accelerated recovery protocol<sup>15</sup>. In a thesis conducted with women undergoing gynecological surgery, it was reported that



some clinical practices exhibited similarity to the ERAS protocol, while others did not align with the protocol<sup>16</sup>. In two other theses, it was concluded that clinical practices were not adequate in terms of adherence to the ERAS protocol<sup>17,18</sup>. Themes such as education, teamwork, communication, and resource shortage were indicated among the barriers to implementing the ERAS protocol<sup>18</sup>.

In one thesis examining the impact of ERAS protocol applications on patients, it was found that the risk of malnutrition, pain levels, and complication rates were lower, and the rates of gas passage and mobilization were earlier<sup>19</sup>. In one thesis aimed to determining the knowledge levels of surgical team members regarding enhanced recovery components, it was found that half of the team members had knowledge about ERAS, and the majority expressed a desire to be informed about the ERAS Protocol<sup>20</sup>. In the other two theses, it was determined that nurses' knowledge level regarding accelerated postoperative recovery practices was low.<sup>21,22</sup> In a thesis conducted to determine nursing students' approaches to postoperative accelerated recovery practices, one study found that their approaches to ERAS practices were positive<sup>23</sup>, while another study found that their knowledge and perception levels were low<sup>24</sup>. In a thesis evaluating the adherence of perioperative practices in patients undergoing hepatobiliary surgery to the ERAS protocol and nursing practices, it was found that the majority of nurses played an active role in maintaining the steps of ERAS practices<sup>25</sup> (Table 3).

**Table 3.** Summary of the descriptive nursing thesis on ERAS

| Types of thesis author publication year                             | Aim of the thesis   | Method  | Conclusion  |
|---|---|---|---|
| <b>Özkeçeci<sup>13</sup>, 2017</b><br><b>Descriptive Study (DS)</b> | The study was conducted to evaluate perioperative practices in elective cesarean section surgeries in comparison to the ERAS protocol.  | The research was conducted as a descriptive and prospective study involving 100 female patients.          | According to the findings obtained in the study, it was assessed that most of the practices were in accordance with the ERAS protocols.   |
| <b>Tunçel<sup>14</sup>, 2022</b><br><b>(DS)</b>                     | The study was conducted to determine the adherence of practices performed on patients undergoing cardiovascular surgery to the ERAS protocol and to assess the impact of these practices on patient outcomes, including postoperative recovery, pain, sleep quality, and self-efficacy. | An analytical cross-sectional research design was employed, involving 100 patients who underwent surgery. | The study found that the adherence of practices in the clinic to the ERAS protocol did impact postoperative recovery but did not affect self-efficacy, sleep quality, and pain. |
| <b>Bulut<sup>15</sup>, 2019</b><br><b>(DS)</b>                      | The study was conducted to determine the factors influencing early mobilization   | The research was carried out in a descriptive and   | It has been determined that the majority of patients undergoing knee and hip arthroplasty are in accordance   |

|  |  |   |   |
|--|--|---|---|
|  | after knee and hip arthroplasty in patients.   | cross-sectional design involving 60 patients.   | with the postoperative enhanced recovery protocol in terms of early mobilization time.  |
| <b>Yıldırım<sup>16</sup>,2017<br/>(DS)</b>         | The study was conducted to prospectively observe the practices in women undergoing major gynecological surgery and evaluate them according to the ERAS protocol.   | The research was prospectively and descriptively planned with 89 female patients.   | The study indicated that practices such as providing preoperative information, administering thromboembolism prophylaxis, utilizing minimal invasive surgery, avoiding nasogastric tube use, preventing intraoperative hypothermia, implementing preoperative antibiotic prophylaxis, determining the postoperative urinary catheter removal time, initiating oral fluids, and early mobilization were similar to the ERAS protocol compared to clinical routine. However, practices such as lack of preoperative optimization for smoking cessation, conducting preoperative bowel preparation, carbohydrate loading, managing postoperative nausea and vomiting, using peritoneal drainage, and determining the time to start solid food differed from the ERAS protocol. |
| <b>Çelebi<sup>17</sup>,2019<br/>(DS)</b>           | It was conducted to evaluate the compliance of perioperative practices of patients hospitalized in the surgery clinic with the ERAS protocol and their impact on patient outcomes.   | The descriptive study involved 405 patients.  | The research results revealed that routine clinical practices are not sufficient in terms of adherence to the ERAS protocol.  |
| <b>Gezer<sup>18</sup>,2020<br/>(DS)</b>            | The study was conducted with the aim of examining the compliance of healthcare personnel's current perioperative practices in colorectal surgery with the Surgery ERAS protocol, identifying barriers to implementing the ERAS protocol, and evaluating patient outcomes in cases where these perioperative practices are implemented. | This descriptive and cross-sectional study involved 110 healthcare professionals and 28 patients in surgical clinics and operating rooms. | The study determined that the compliance of healthcare personnel's current perioperative practices with the ERAS protocol is at a low level. Themes related to barriers in implementing the ERAS protocol were derived from their comments, including education, teamwork, communication, and resource deficiencies.  |
| <b>Karakuş<sup>19</sup>,2023<br/>(DS)</b>          | The study was planned to compare nutrition, quality of recovery, and complication development in patients undergoing colorectal surgery with and without the implementation of ERAS protocol.  | This descriptive and cross-sectional study involved 70 patients.  | It was determined that in the ERAS group, the risk of malnutrition, pain levels, and complication rates were lower, and the time to gas passage and mobilization were earlier.  |
| <b>Sezen Sayan<sup>20</sup>,<br/>2022<br/>(DS)</b> | The study was conducted to determine the knowledge levels of surgical team members regarding components of ERAS during and after surgery.  | A descriptive and cross-sectional study was carried out, involving 160  | It was found that half of the surgical team members had knowledge about ERAS, and the majority expressed a desire to acquire information about the ERAS Protocol.   |

|  |  |   |  |
|--|--|---|--|
|  |  | surgical team members.  |  |
| <b>Afşar<sup>21</sup>, 2020 (DS)</b>   | The study was conducted with the aim of determining nurses' approaches to postoperative enhanced recovery practices.   | The descriptive and cross-sectional research involved 160 nurses working in surgical clinics and surgical intensive care units. | It was determined that the knowledge level of nurses regarding ERAS protocols is low.  |
| <b>Çetin<sup>22</sup>, 2021 (DS)</b>   | The study was conducted with the aim of determining the implementation status and opinions of healthcare personnel regarding ERAS protocols in the preoperative and postoperative processes in the obstetrics and gynecology clinic. | This descriptive study was applied to 151 healthcare professionals working in the obstetrics and gynecology clinic.             | Awareness of ERAS protocols is low among healthcare professionals in obstetrics and gynecology clinics.  |
| <b>Hoxha<sup>23</sup>, 2022 (DS)</b>   | The study was conducted to determine the approaches of nursing students towards postoperative ERAS practices.  | This descriptive and cross-sectional study involved 199 students.   | It was found that nursing students' adherence to ERAS practices was above the moderate level.  |
| <b>Yemişçi<sup>24</sup>, 2023 (DS)</b> | The study was designed to examine the knowledge and perception levels of senior nursing students regarding the ERAS protocol.  | This descriptive and cross-sectional study involved 311 final-year nursing students.  | It was determined that nursing students' knowledge and perception levels were low regarding the ERAS protocol.   |
| <b>Tekin<sup>25</sup>, 2022 (DS)</b>   | The aim of the study was to evaluate the adherence of perioperative practices to the ERAS Protocol and to identify nursing practices in patients undergoing hepatobiliary surgery.   | This descriptive study involved 180 patients.   | Nurses were found to play an active role in preoperative education, teaching respiratory exercises, postoperative pain management, postoperative nausea and vomiting management, maintaining fluid-electrolyte balance, monitoring and caring for nasogastric, Foley catheter, and abdominal drains, facilitating early mobilization, and maintaining nutritional support therapy. |

## Discussion

Enhanced Recovery After Surgery (ERAS) protocols are evidence-based, multidisciplinary, and patient-centered approaches used to provide comprehensive and versatile care to surgical patients throughout the perioperative period. ERAS practices contribute to patient recovery in various aspects by minimizing complications, reducing the length of hospital stay, and increasing patient satisfaction<sup>26</sup>. ERAS protocols have become a preferred component of surgical processes through successful implementation strategies, and their foundation lies in the understanding and acceptance of the protocol's standard steps<sup>27,28</sup>. Given the active involvement of nurses in every stage of

perioperative surgical patient care, this study aims to examine postgraduate theses in nursing in Turkey related to ERAS practices.

In a systematic review and meta-analyses related to ERAS, length of hospital stay, occurrence of complications, readmission rates, mortality rates, and hospital costs were lower in the ERAS group<sup>29,30</sup>. Similarly, in a meta-analysis included in our study, it was concluded that ERAS is effective on general patient outcomes, length of hospital stay, length of stay in the intensive care unit, development of delirium, extubation duration, mobilization, opioid usage, and infection development<sup>12</sup>.

In another thesis examining the impact of ERAS protocol practices on patients, malnutrition risk, pain levels, and complication rates were lower, and gas passage and mobilization times were earlier<sup>19</sup>. A systematic review compared two groups applying traditional and ERAS elements, expressing that the compliance rate varied between 65% and 73.8% in the ERAS group<sup>30</sup>. It is reported that when compliance with integrating ERAS elements into clinical practices exceeds 70%, there is a 42% reduction in mortality rates<sup>31</sup>. However, in our study, it was concluded that the compliance of practices with the ERAS protocol in surgical patients, except for two theses, was sufficient.

In a study examining the effect of the ERAS implementation in patients undergoing knee arthroplasty, each patient was provided with 8 egg whites daily and clear oral fluids up to 2 hours before surgery. It was reported that in the ERAS group, the surgical incision length was shorter, the knee range of motion was better, length of hospital stay and postoperative complication rate were lower. It was emphasized that there was less blood loss, and postoperative hemoglobin and albumin levels were better<sup>32</sup>. In our study, as in the study by Akbuğa et al., the experimental group received 400 ml of oral carbohydrate solution two hours before surgery. At the end of the study, it was found that in patients undergoing arthroscopy, oral carbohydrate solution had a positive effect on blood glucose levels and thirst<sup>7</sup>. In our study, the effects of oral carbohydrate solution administration were examined in laparoscopic cholecystectomy, arthroscopy, and hip arthroplasty surgeries. The study concluded that the group receiving oral carbohydrate solution, reduced insulin resistance, increased patient comfort<sup>6</sup>, and reduced preoperative anxiety while enhancing postoperative patient comfort<sup>8</sup>.

In a study examining the knowledge and attitudes of surgical nurses about ERAS, it was reported that 38.8% of the nurses had no knowledge, 58.9% did not receive any training, and 36.4% stated that ERAS protocols were not implemented in the clinic where they

worked<sup>33</sup>. In a study by Xue et al., which assessed the knowledge level of 2230 nurses on ERAS, it was concluded that nurses working in surgical services had insufficient knowledge about ERAS protocols, and improvement was needed. To enhance nurses' knowledge about ERAS, standardized training within ERAS practices was recommended<sup>34</sup>. In our study, it was determined that the knowledge and application levels of healthcare professionals regarding ERAS protocols were low<sup>18,21,22,24</sup>. However, in two theses, it was reported that the knowledge levels were moderate and sufficient<sup>20,23</sup>.

ERAS protocols have been proven to have positive effects on patients and patient outcomes in various disciplines both in our country and worldwide. However, the implementation of these proven practices in surgical clinics is still at a low level both in our country and globally<sup>31</sup>. It is essential to provide education and information to healthcare professionals, including surgeons, anesthetists, nurses, dietitians, and physiotherapists to initiate the use of these proven practices by integrating them into clinics. Encouraging them to apply the acquired knowledge in practice is crucial<sup>35</sup>.

## **Conclusion**

As a result of our study, ERAS practices are effective in the theses conducted in the field of nursing in our country, depending on the purposes of use. However, it has been observed that the knowledge level of healthcare professionals regarding the implementation of these practices is not sufficient. The studies were found to be predominantly descriptive in design. The integration of Enhanced Recovery After Surgery (ERAS) protocols into clinical practice requires high-level evidence from randomized controlled trials conducted by nurses, who are an integral part of the perioperative care process. In this context, it is recommended to increase the number of studies conducted in the nursing field to promote the dissemination of ERAS practices. This can be achieved through the integration of ERAS into nursing education and creating awareness within the nursing community.

## **Limitations**

Among the limitations of the study are the small number of theses due to reasons such as not including theses whose full text has not been published and the screening being limited only to theses on nursing.

**Ethical Statement:** Since this research is a systematic review, an ethics committee decision is not required.

This work is not under active consideration for publication, has not been accepted for publication, nor has it been published, in full or in part.

### **Authors Contribution**

**Gülseren Maraş:** Conception, Design, Supervision, Materials, Data Collection and/or Processing, Analysis and/or Interpretation, Literature Review, Writing, Critical Review

**Yeliz Sürme:** Conception, Design, Supervision, Materials, Data Collection and/or Processing, Analysis and/or Interpretation, Literature Review, Writing, Critical Review

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