REVIEW

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Investigation of Effects of Preoperative Readiness on Symptom Management in Patients with Intestinal Stoma: A Systematic Review and Meta-Analysis Study

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Abstract

Objective: This study aims to examine the effect of preoperative readiness on postoperative symptom management in patients with intestinal stoma through systematic review and meta-analysis. **Methods:** "Intestinal stoma", "complications" and other related terms were searched regardless of the language of publication in the publications published in the databases until December 29, 2021. **Result:** As a result, 30 studies were found. Two independent reviewers reviewed the studies, and the methodological quality of the included studies was assessed using the Health Evidence™ Quality Assessment Tool. The Comprehensive Meta-Analysis 3 was used to analyze the data. Publication bias, funnel plot, and the effect size were calculated using Cohen's kappa. Preparation for intestinal stoma surgery consisted of two main themes, and postoperative complications/problems consisted of nine sub-themes. The meta-analysis results showed that preoperative readiness had a moderate effect size on postoperative complications (d=0.498, d=0.457). **Conclusion:** It was thus concluded that preoperative practices were significant and effective in postoperative symptom management.

Keywords: Intestinal stoma- preoperative preparation- symptom management- meta-analysis- systematic review

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Introduction

The gastrointestinal tract (GIT) starts from the mouth and ends at the anus (Kara and Eti Aslan, 2017). Any of the organs in this tract may need to be anastomosed temporarily or permanently outside the body due to reasons such as cancer, inflammatory disease and trauma (Aksoy and Çavdar, 2015). This process is typically called "intestinal stoma" (Berti-Hearn and Elliott, 2019). Considering the incidence of intestinal stoma, the 2017 report of the European Ostomy Association (EOA) showed that 70,000 people in Spain and 150,000 in Germany and 0.002% of the population in Norway and England suffer from stoma (EOA, 2017). The 2021 annual report of the United Ostomy Associations of America (UOAA) indicated that between 750,000 and 1,000,000 people live with stoma in the USA (UOAA, 2021). Yılmaz et al., 2021 reported that 8205 patients underwent ostomy, which was most commonly performed due to colorectal cancer, between 2017 and 2019 per year in Turkey.

Although stoma applied in the lower GIT diseases seems to be life-saving and aims to increase quality of life, it causes the individual to experience various physiological, social and psychological problems (Öztürk and Karadağ, 2019). These problems include odor (59%) (Richbourg, 2007), stoma infection (25%) (Özaydın, 2013), peristomal skin complications (7%-43%) (Steinhagen, 2017), stoma retraction (1%-30%) (Krishnamurty, 2017), prolapse (2%-26%) (Husain, 2008), mucocutaneous separation (3.7%-9.7%) (Tsujinaka, 2020), peristomal hernia (3%-50%) (Krishnamurty, 2017), stoma necrosis (1.6%-11%) (Tsujinaka, 2020), fluid-electrolyte imbalance (17%) (Steinhagen, 2017), lack of individual care and social isolation (16%-50%) (Ayaz-Alkaya, 2019), and sexual problems (70%) (Vonk-Klaassen, 2016). How and how severely these problems affect the patient depend on his/her individual characteristics, the medical diagnosis he/she received, and his/her or his/her relatives' experiences with the disease (Berti-Hearn and Elliott, 2019; Simon, 2016). Dabiryan et al., (2010) reported in their qualitative study that patients with stoma had to change their lifestyle and went through physical, social and psychological problems, and Anarki et al., (2012) found that the quality of life of patients with stoma and that of their relatives were affected. Application of stoma causes lifestyle changes, loss of workforce, financial losses and problems in adaptation to life with stoma (Andrade, 2016; Capilla-Diaz, 2019; Compos, 2017).

There are also many problems/complications that patients undergoing stoma experience (Öztürk and Karadağ, 2019; Akın and Taylan, 2020). However, it is predicted that the evidence-based protocols known

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as Enhanced Recovery After Surgery (ERAS) and implemented in recent years can reduce these problems (Forsmo, 2016).

This study aimed to examine the effect of preoperative readiness on symptom management in patients with intestinal stoma.

Materials and Methods

This study was designed methodologically. Being one of the systematic synthesis methods, the meta-analysis method was chosen as the study model in this regard. Study protocols should be registered to avoid duplication of systematic reviews and meta-analyses and to ensure access to available studies. Therefore, the study was registered in the "PROSPERO" database, which enables this registration (ID= 301244). Thus, whether there was a study on a similar subject in the international literature was investigated, and no study on the subject was found.

Data Collection

In this section of the study, regarding the data collection processes, literature review, inclusion criteria, selection of studies, data extraction, quality assessment, analysis procedures and reporting were explained.

Literature review process

A pilot study was carried out before starting the study and the review strategy was determined. The keywords of the articles accessed during the pilot study were also included in the scope of the study and the review was started. The literature review covered the studies published in the last 20 years, with the last date being December 29, 2021. Full-text articles published in scientific journals, and theses were reviewed. The references of the obtained articles were also included in the review. The databases of EBSCOhost, CINAHL, PubMed, ScienceDirect, MEDLINE, Web of Science, Thesis Center of YÖK (Council of Higher Education of Turkey) and ULAKBİM were used. Medical Subject Headings (MeSH) thesaurus was used while creating the keywords. The keywords "intestinal stoma", "management", "perioperative preparation" were formed, and they and their combinations were looked up. A PRISMA 2020 flow diagram is also provided, showing how the 30 studies included in the meta-analysis were obtained from a total of 10,783 studies.

Inclusion criteria

While selecting suitable studies for the present systematic review and meta-analysis, it was ensured that there was no language bias, and all quantitative cross-sectional, cohort, and randomized controlled studies that included interventions before stoma surgery, had experimental and control groups, had statistical data such as standard deviations, F, t, r values, and were published in the last 20 years were included. The studies and theses that were designed as reviews or case studies were excluded. The studies whose participants were 18 years of age or older were included in the present study. The reason for this was that patients under 18 would be more likely to be dependent in the management of intestinal stoma, and this would cause inconsistency among the sample groups in the studies.

Selection of studies

The two researchers (E.K/H.A) reviewed the titles and abstracts, and selected the full-text articles independently based on the inclusion criteria. Any inconsistency in the inclusion of articles was resolved through discussion. The reference lists of eligible articles were reviewed.

Data collection process

In this systematic review and meta-analysis, "Data collection form for intervention reviews for RCTs and non-RCTs" (https://dplp.cochrane.org/data-extraction-forms), which was published by Cochrane Collaboration, was customized, re-developed in line with the scope of the study and used as a data extraction tool. Some sections were added to the original form, and some were removed. While creating the form, an expert in the field of statistics was consulted. After the data collection form was finalized, a preliminary test was made on an article and the data extraction process was started.

Data extraction

The researchers obtained the data using the data extraction tool they developed on the Microsoft Excel program. The two researchers performed this process independently, compared their results and converted them into a single text. In cases where there was a discrepancy between the data, the relevant article was reviewed again and correct data were obtained.

Quality assessment

Health Evidence™ Quality Assessment Tool – Review Articles, which consists of 10 key elements, was used to determine the quality of the studies (Dobbins et al., 2010). Those of "moderate" and "strong" quality according to the assessment were included in the meta-analysis. Before starting the analysis, the two researchers reviewed the studies, checked their eligibility and coded them according to this quality assessment tool. Consistency was then calculated for these codes (Cohen's kappa). The obtained consistency coefficients are presented in Table 1. The results were between 0.615 and 1, which indicates that all studies had sufficient consistency.

Results

Published between 2002 and 2021 and having a sample size between 30 and 1076, 30 studies were included in the study. The studies were grouped as main themes and sub-themes. The studies in which preoperative stoma counseling and education were provided and those on preoperative stoma site marking constituted the main themes. There are three studies that include both main themes. The subthemes, on the other hand, were analyzed by categorizing the postoperative symptoms arising from the main themes. The algorithmic representation of the themes is given in Figures 1 and 2.

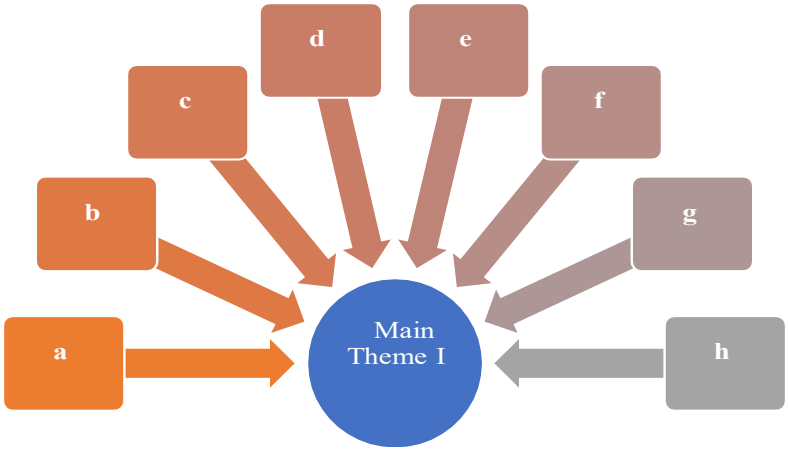

Figure 1. Main Theme I; Studies in which preoperative stoma counseling and education were provided (n:14) Subthemes; a: studies on peristomal skin complications observed after surgery (n: 2), b: studies on stoma-related problems observed after surgery (n: 4), c: studies on GIT problems observed after surgery (n: 2), d: studies showing effects on postoperative quality of life (n: 3), e: studies on the adaptation to stoma after surgery (n: 4), f: studies on effects on postoperative hospital stay (n: 9), g: studies on re-admission of patients to hospital after surgery (n: 5), h: studies on postoperative anxiety and depression (n: 3)

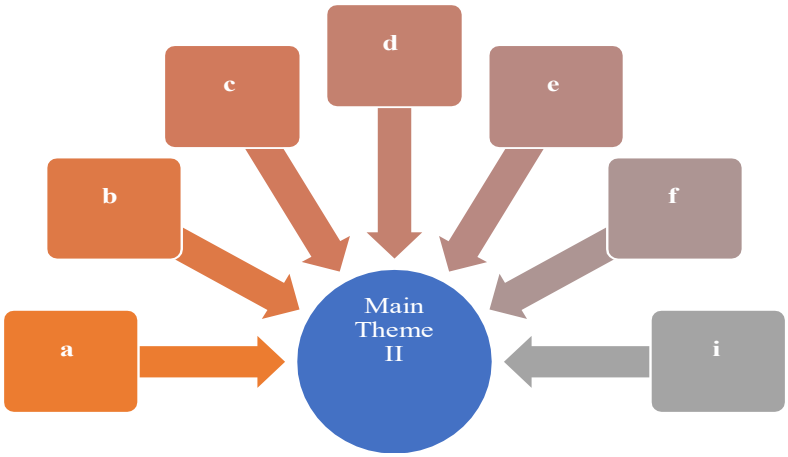

Figure 2. Main Theme II: Studies on preoperative stoma site marking (n: 19). Subthemes; a: studies on peristomal skin complications observed after surgery (n: 2), b: studies on stoma-related problems observed after surgery (n: 2), c: studies on GIT problems observed after surgery (n: 1), d: studies showing effects on postoperative quality of life (n: 8), e: studies on the adaptation to stoma after surgery (n: 5), f: studies on effects on postoperative hospital stay (n: 3), i: studies on multiple postoperative complications and problems (n: 2)

Meta-analysis results of the studies under Main Theme I

Observed in the studies showing the differences between the patients who received preoperative counseling and education and those who received no/inadequate counseling and education, the publication bias, effect

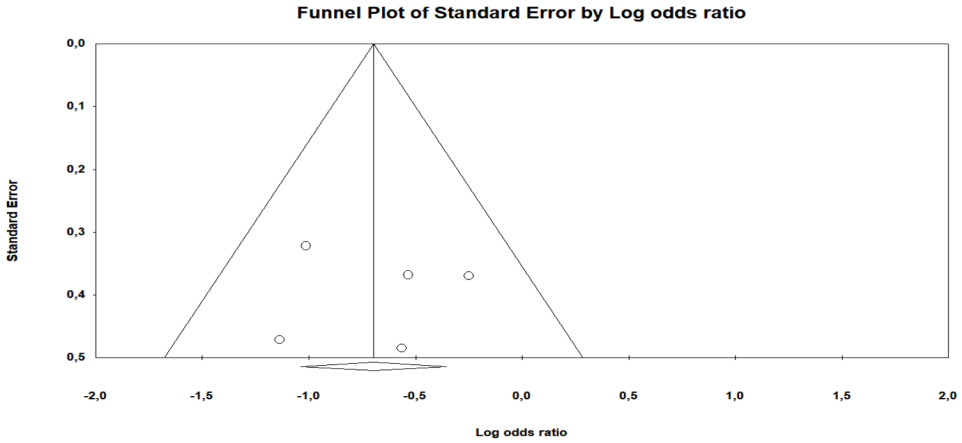

Figure 3. Results of Publication Bias Funnel Plot for Main Theme I

Table 1. Results of Quality Assessment (Cohen's Kappa) of the Studies

Study	Cohen's kappa	Study	Cohen's kappa
1	1	16	1
2	1	17	1
3	1	18	1
4	0.615	19	1
5	1	20	1
6	1	21	1
7	1	22	1
8	1	23	1
9	0.615	24	1
10	1	25	0.615
11	1	26	1
12	1	27	0.615
13	1	28	1
14	1	29	1
15	1	30	1

sizes, moderator findings, and a narrative description of the data obtained from the synthesis of the studies were included in this theme.

Publication bias of the studies included in the analysis. A funnel plot was performed to determine the homogeneity, heterogeneity and bias of the studies (Figure 3). According to the figure, all studies were included in the funnel plot. Within the scope of the study, the Tau value was calculated as 0.20 ($p>.05$). This shows that the studies were not biased.

Table 2. Effect Size of Studies under Main Theme II

Study	Effect Size	Probable Effect Size	Std dev
Milan, 2010	0.024	-3.741	1.442
Gök, 2019	0.114	-2.169	0.445
Parmar, 2011	0.199	-1.614	0.401
Arolfo, 2018	0.579	-0.546	0.138
Baykara, 2014	0.361	-1.019	0.176
Kozan, 2018	0.564	-0.572	0.654
Burke, 2017	0.637	-0.45	0.414
Mahjoubi, 2009	0.76	-0.275	0.235
Amugam, 2002	0.875	-0.134	0.563
Koç, 2017	1.067	0.065	0.302

Figure 4 shows some descriptive values and effect sizes of the studies in which preoperative stoma counseling and education were provided. The studies were found to have a positive effect and an effect size between 0.01 and

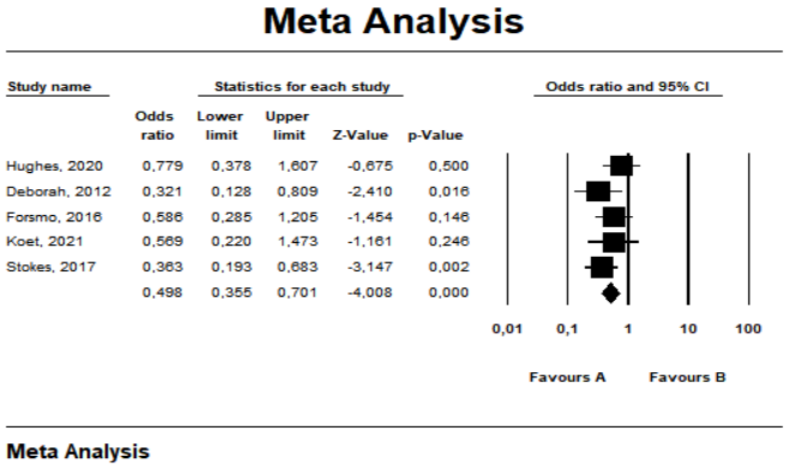

Figure 4. Meta-Analysis Graph for Main Theme I

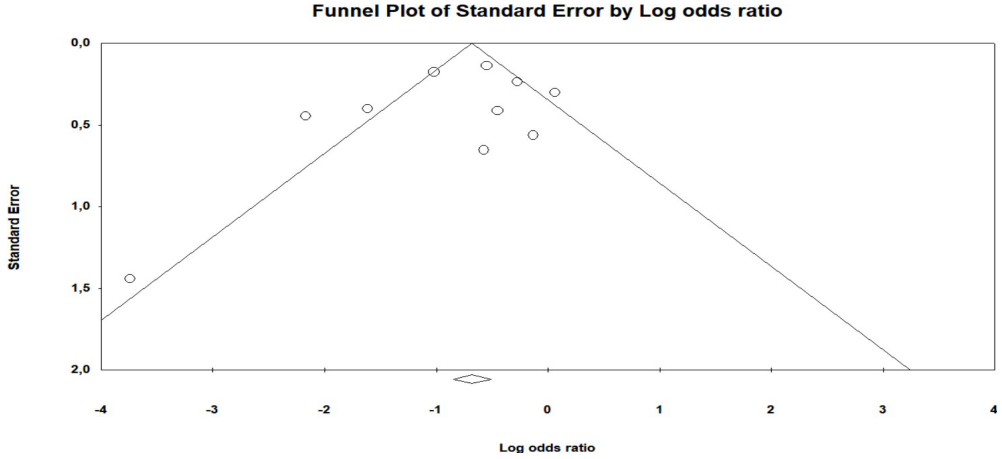

Figure 5. Results of Publication Bias Funnel Plot for Main Theme II

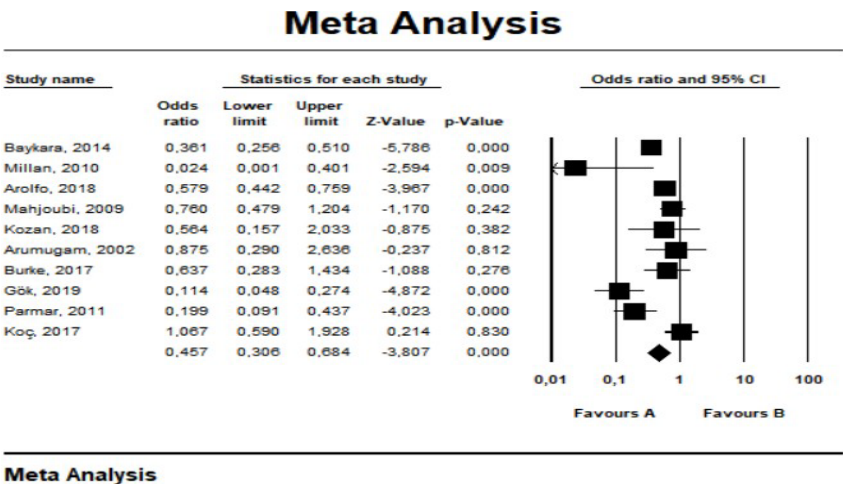

Figure 6. Total Effect Size of the Individual and Random Model of the Studies

1. The reason for this positive effect was that the patients received preoperative stoma counseling and education, and the number of complications/problems in this group was lower than that which did not receive counseling and education (n:8 / 171).

Meta-analysis results of the subthemes under main theme I

The effect sizes of the complications/problems that developed in the patients who were given/not given preoperative stoma counseling and education on the eight subthemes, and the comments of the moderators were included.

Subtheme a

Peristomal skin complications observed after surgery

This subtheme was analyzed through two studies. The results showed that the effect sizes of preoperative counseling and education on postoperative peristomal skin complications ranged from 0.739 (Forsmo, 2016) to 1.152 (Stokes, 2017). It was found that the studies had moderate and strong effect sizes, and that the overall effect on the prevention of peristomal skin complications is strong (d=0.936) in favor of providing preoperative counseling and education.

Subtheme b

Stoma-related problems observed after surgery

Four studies included in the study were analyzed within the scope of this subtheme. Accordingly, the effect sizes of preoperative stoma counseling and education on stoma-related problems ranged from 0.868 (Stokes, 2017) to 10,869 (Deborah, 2012). The combined results of the four studies revealed that the mean effect size (d=1.321) was strong, and this strong effect was related to providing counseling and education to patients before surgery in the prevention of stoma-related complications.

Subtheme c

GIT problems observed after surgery

Two studies were included in this subtheme. According to the results, the effect size of preoperative counseling and education on patients experiencing postoperative GIT problems was between 0.092 (Deborah, 2012) and 1.930 (Forsmo, 2016). The combined results of the studies indicated that the overall effect size (d=0.561) was moderate, and this effect was in favor of providing patients with counseling and education before surgery in the prevention of GIT complications.

Subtheme d

Changes in postoperative quality of life

Three studies included in the study were analyzed under this subtheme (Linda, 2016; Lim, 2018; Coca, 2015). The results of the studies examined within the scope of the study showed that the quality of life was higher in the stoma patients who received counseling and education about stoma before surgery compared to the group who did not.

Subtheme e

Adaptation to stoma after surgery

In four of the studies included in this study, the effects of counseling and educating patients about stoma before surgery on the process of adaptation to the stoma after surgery were given (Chaudhri, 2005; Brayn, 2010; Linda, 2016; Lim, 2018). In this regard, it was observed that the adaptation to the stoma after surgery included the patient's ability to independently change the bag, empty the bag, accept the presence of the stoma, and provide self-care. The results indicated that the patient group who received counseling and education about stoma before the surgery went through a more positive process of adaptation to stoma compared to the group that did not.

Subtheme f

Duration of postoperative hospital stay

The data on preoperative counseling and education about stoma and the duration of postoperative hospital stay were examined in nine of the studies included in this subtheme (Chaudhri, 2005; Brayn, 2010; Younis, 2012; Deborah, 2012; Zimnicki, 2013; Forsmo, 2016; Stokes, 2017; Hughes, 2020; Koet, 2021). Accordingly, the duration of hospital stay of the patients varied between 6 and 19 days, and it was shorter in the patient group who was provided counseling and education about stoma before surgery in eight studies (Chaudhri, 2005; Brayn,

2010; Younis, 2012; Deborah, 2012; Forsmo, 2016; Stokes, 2017; Hughes, 2020; Koet, 2021), and there was no difference compared to the group that was not in one study (Zimnicki, 2013).

Subtheme g
Re-admission to hospital after surgery

Five studies were included in this subtheme. According to the combined results of the studies, the effect size of preoperative counseling and education on patients' re-admission to hospital after surgery ranged from 0.139 (Younis, 2012) to 1.231 (Forsmo, 2016). The combined results also revealed that the overall effect size was moderate (d = 0.625), and this effect was in favor of providing preoperative counseling and education and on the decrease in the rate of re-admissions to hospital.

Subtheme h
Postoperative anxiety and depression

Three studies discussing this subtheme were included in the study (Chaudhri, 2005; Çakır, 2018; Lim, 2018). This section reports the changes in the level of postoperative anxiety and depression resulted from providing counseling and education about stoma to patients before surgery. Accordingly, compared to the preoperative period, the level of postoperative anxiety and depression was lower in the group in which preoperative counseling and education was given. In the group in which preoperative counseling and education was not provided, the level of postoperative anxiety was found to decrease in two studies (Chaudhri, 2005; Lim, 2018), and to increase in one study (Çakır, 2018). In a study on the levels of depression, a decrease was observed compared to the preoperative period (Chaudhri, 2005), while another study reported that there was no difference (Lim, 2018). The results of the studies showed that preoperative counseling and comprehensive education programs are effective on anxiety and depression in patients in the postoperative period.

Meta-analysis results of the studies under main theme II

Found in the studies indicating the effects between patients with preoperative stoma site marking and those without, the publication bias, effect sizes, moderator findings, and a narrative description of the data obtained from the synthesis of the studies were included in this theme.

Publication bias of the studies included in the analysis

A funnel plot was performed to determine the homogeneity, heterogeneity and bias of the studies (Figure 5). The Tau value was found to be -0.24 ($p>0.05$). This shows that the studies were not biased. Effect size of the studies included in the analysis. The effect sizes of the studies under Main Theme II are given in Table 2.

Figure 6 shows some descriptive values and effect sizes of the studies on preoperative stoma site selection and marking. The studies were found to have effect sizes between 0.01 and 1, and a positive effect. The reason for this positive effect was that preoperative stoma site selection and marking were performed on the patients, and the number of complications/problems in this group was lower than the group in which preoperative stoma site selection and marking were not performed (n:454 /810).

Main theme II, subthemes

The effect sizes of the complications/problems developing in the patients that were/were not performed site selection and marking on seven subthemes and comments of the moderators are given in this section.

Subtheme a
Peristomal skin complications observed after surgery

This sub-theme was discussed through two studies. Accordingly, the effect sizes of site selection and marking on postoperative peristomal skin complications ranged from 0.282 (Milan, 2010) to 0.951 (Baykara, 2014). The overall effect size of the studies was found to be moderate, in favor of site selection and marking, and this was associated with peristomal skin complications ($p=0.003$).

Subtheme b
Stoma-related problems observed after surgery

This subtheme was discussed through two studies. The effect sizes of preoperative site selection and marking on postoperative stoma-related problems were found to range from 0.564 (Kozan, 2018) to 1.089 (Baykara, 2014). It was observed that the preoperative site selection and marking had a strong effect on the postoperative stoma-related problems in the patients ($d=0.968$). That less problems were observed in the patients who were performed site selection and marking resulted in this strong effect.

Subtheme c
GIT problems observed after surgery

One study was discussed for this theme. According to this study, the effect size of preoperative site selection and marking on experiencing post-operative GIT problems is 0.760 (Mahjoubi, 2009). The overall effect on the prevention of GIT problems was moderate ($d=0.760$) in favor of preoperative site selection and marking.

Subtheme d
Changes in postoperative quality of life

The results of eight studies examining the effect of stoma site selection and marking on the quality of life of patients with stoma were reviewed in this subtheme (Çakır, 2018; Person, 2012; Abbas, 2019; Mahjoubi, 2009; Maydick, 2016; Gök, 2019; Linda, 2016; McKenna, 2016). The results obtained within the scope of this subtheme indicated that appropriate preoperative site selection and marking in patients with stoma had a positive effect on the postoperative quality of life.

Subtheme e
Adaptation to stoma after surgery

The effects of preoperative stoma site selection and marking on the adaptation process to stoma after surgery were analyzed in five of the studies included in this study (Carlsson, 2016; Linda, 2016; McKenna, 2016; Goldblantt, 2017; Arolfo, 2018). In this regard, it was observed that the adaptation to the stoma after surgery included the patient's ability to independently change the

bag, empty the bag, accept the presence of the stoma, and provide self-care. The results of the studies showed that the adaptation processes to the stoma after surgery were more effective in the patient group in which preoperative stoma site selection and marking were performed compared to the group in which those were not.

In this subtheme, the effects of preoperative stoma site selection and marking on outcomes related to postoperative hospital stay were discussed in three studies (Zimnicki, 2013; Burke, 2017; Goldblantt, 2017). It was found that the duration of hospital stay of the patients ranged from 6 to 19 days, and that the duration of hospital stay of patients in whom stoma site selection and marking were performed was shortened in two studies (Burke, 2017; Goldblantt, 2017), and no change was observed between the groups in one study (Zimnicki, 2013).

Subtheme i

Multiple postoperative complications and problems

Two studies were included in this theme in the study. According to the combined results of these studies, the effect sizes of preoperative site selection and marking in the studies reporting more than one postoperative complication or problem in the patients ranged from 0.013 (Milan, 2010) to 1.109 (Baykara, 2014). The overall effect on the postoperative stoma-related problems in the patients was weak (d=0.148) and this effect was in favor of site selection and marking. The patients in this group were found to have multiple postoperative problems at a lower rate.

Discussion

The results of this study, which examined the effect of preoperative readiness on postoperative symptom management in patients with intestinal stoma, are discussed below in light of the literature. Within the scope of ERAS protocols, which have gained more recognition and been widely used in recent years, patient counseling occupies an important place. This practice increases cooperation and participation in care in patients and prevents the emergence of possible symptoms (Eti Aslan, 2021). The results obtained from the seven studies Phatak et al., 2014 included in their systematic review indicated that preoperative counseling and education reduced postoperative complications. The present study, in which the effect of readiness on symptom management in patients with intestinal stoma was examined, found that preoperative patient counseling and education had a high effect size in preventing peristomal skin complications and stoma-related problems, and moderate effect size in preventing GIT-related complications. Although these results reveal the importance of patient education, it is thought that symptom control can be achieved to a large extent with counseling and education, which are among the basic nursing practices, and thus the recovery period will be shortened.

Postoperative symptoms in patients with intestinal stoma affect the recovery processes negatively, as well as increase the length of hospital stay and re-hospitalization rates (Fish, 2017). The results of nine studies that met the inclusion criteria of this study revealed that the duration of hospital stay was shortened in the groups that received preoperative counseling and education compared to the groups that did not in eight studies, and there was no difference in one study. Counseling and education were also found to be moderately effective on patients' re-admission to hospital. In the meta-analysis study Danielsen et al., (2013) conducted in 2013, two of the seven studies reported that the duration of hospital stay was shortened in the group that received preoperative counseling and education. According to this result of this study, which is in accordance with the literature, it is predicted that preoperative patient counseling and education will shorten the length of stay in the hospital, and accordingly, the loss of work force and the cost of care will decrease. Since there is no systematic review and meta-analysis about re-admission to the hospital in the literature, to the best of our knowledge, it is thought that the results of this study will contribute to the literature.

A systematic review including thirteen studies reported that preoperative counseling and education increased quality of life and adaptation to stoma (Faury, 2017). The meta-analysis study Danielsen et al., (2013) conducted in 2013 reported that there was an increase in the quality of life and the sufficiency of independent stoma care of patients, and this increase was due to preoperative counseling and education. In this study, which has similar results to the literature, three studies showed that preoperative counseling and education increased quality of life, while four studies showed that they improved adaptation to stoma. In addition, it is thought that the results of three studies, which found that there was a decrease in the rates of anxiety and depression in the patients compared to the preoperative period, will contribute to the literature since no similar studies have been found in the literature. It is believed that providing comprehensive preoperative patient-specific counseling and education to patients with intestinal stoma will contribute to symptom and stoma management, and thus increase quality of life, which will in turn affect them physiologically, socially and psychologically.

It is known that site selection and marking before intestinal stoma surgery leads to early postoperative discharge, shorter recovery time, and a decrease in postoperative complications/problems according to ERAS protocols (Forsmo, 2016). The systematic review and meta-analysis study Ambe et al., (2022) conducted in 2022 reported that postoperative peristomal skin complications and stoma-related problems decreased in the patients on whom appropriate preoperative site selection and marking were performed, and that the effect sizes of these results were moderate and weak. Another meta-analysis study with similar results found that the patients on whom preoperative site selection and marking were performed had less peristomal skin complications (Hsu, 2010). The meta-analysis study that Kim et al., (2021) conducted in 2021 and included 19 studies reported that peristomal skin complications, and general complications and problems decreased thanks to site selection and marking. The results of this study, which are in line with the literature, indicated that preoperative stoma site selection and marking reduce

postoperative peristomal skin complications at a moderate level according to two studies; reduce stoma-related problems at a high level according to two studies; and reduce GIT problems at a moderate level according to one study. Considering the results in light of the literature, site selection and marking, which are an important step in readiness before intestinal stoma surgery, reduce the rate of postoperative complications and accordingly shorten the recovery period of patients. Besides, further research is required to increase the current level of evidence.

Preoperative stoma site selection and marking and the outcomes of the complications experienced after surgery are thought to be effective in the process of adaptation to stoma, as well as the length of hospital stay and quality of life. Supporting this idea, the systematic review and meta-analysis Ambe et al., (2022) performed reported that there was an increase in the quality of life in the group that underwent site selection and marking compared to the group that did not. Another meta-analysis reported that site selection and marking had positive effects on the quality of life, as well as reducing the self-care deficiencies of the patients, and therefore, adaptation to the stoma was higher (Kim, 2021). Conducted by Konjevoda et al., 2020, the systematic review of 13 studies indicated that preoperative site marking significantly affects the self-esteem and quality of life of patients and their families. The systematic review by Velasco et al., (2014) concluded that the preoperative site marking the stoma nurse performed improved the patients' postoperative adaptation to the stoma and improved their quality of life. Including similar results to those in the literature, this study showed that there was an increase in quality of life in eight studies examining the quality of life of patients who underwent preoperative site selection and marking, and that there was an increase in the adaptation to the stoma based on the analysis of the results of five studies. Of the three studies included in the analysis, two indicated a reduction in length of hospital stay, while one found no difference. It is thought that this result will contribute to the literature, since, to the best of our knowledge, there are no systematic reviews and meta-analyses related to the length of hospital stay in the literature. In light of the literature and the results of this study, it should be emphasized that preoperative stoma site selection and marking must become a mandatory procedure in clinical settings and health institutions must support the implementation of this practice.

In conclusion, it is recommended that the stoma counseling and education incorporating the preoperative preparation stages of patients with intestinal stoma should be comprehensive and performed in accordance with the needs of each patient, patients and their companions should be included in every stage of the process, and the education content should be enriched with video and applied simulation training. Appropriate site selection and stoma marking, which constitutes another step, should be applied in collaboration with patients, taking into account their physical condition and daily living habits. It is thought that the implementation of this practice using the simulation method will increase patients' postoperative adaptation.

More randomized controlled studies examining the effect of preoperative readiness on postoperative symptom management in patients with intestinal stoma are needed. Thus, the level of evidence will increase and its use in practice will become widespread.

It is recommended that guidelines be used in the clinic to manage and maintain the preoperative preparation stages of patients with intestinal stoma and care should be provided accordingly.

Author Contribution Statement

E.K. research idea, literature review, statistics, article writing; F.E.A. literature review, consultant.

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This study was co-authored by E.K. It was created from his doctoral thesis.

Ethical permission was not obtained because the application was not performed on live subjects in the research. The studies included in the analysis were shown in the reference list with the symbol "*".

Availability of data

The data that support the findings of this study are available from the corresponding author, E.K., upon reasonable request.

Conflict of interest

The authors declare that they have no personal conflicts of interest that could potentially bias the outcomes or interpretation of the research presented in this article.

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