RESEARCH ARTICLE OPEN ACCESS

Effects of Preoperative Mobilization Education Using the Teach-Back Method on Patient Outcomes After Gynecological Surgery: A Randomized–Controlled Study

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ABSTRACT

This study aimed to determine the effects of preoperative mobilization education enhanced with the Teach-Back method on postoperative mobilization, recovery, and satisfaction in patients undergoing gynecological oncology surgery. This was a two-arm parallel-grouprandomized-controlled trial registered at https://www.clinicaltrials.gov (NCT05845086) and reported according to the Consolidated Standards of Reporting Trials checklist. The study was conducted with 102 patients between September 2023 and March 2024. The Patient Mobility Scale, Observer Mobility Scale, Postoperative Recovery Index, and Newcastle Satisfaction with Nursing Care forms were used to collect data. The intervention group received preoperative mobilization education enhanced with the Teach-Back method, besides the usual care; however, the control group received only usual clinical care. The patients in the intervention group exhibited higher levels of mobilization, recovery status, and satisfaction with nursing care than those in the control group. Preoperative mobilization education using the Teach-Back method effectively improved the mobilization process, recovery, and satisfaction of patients undergoing gynecological oncology surgery. Nurses working in the clinic should empower patients with knowledge and use the Teach-Back method in skill-oriented patient education.

1 | Introduction

Postoperative mobilization refers to the patient's ability to stand, walk, move, and get around (Çilingir and Şahin 2020; Wijk 2022). It is a crucial component of Enhanced Recovery After Surgery (ERAS) protocols (Bilgiç et al. 2019; Kırtıl and Kanan 2023). ERAS recommends that patients stay out of bed for 2 h on the day of surgery and 6 h on the days following surgery in the postoperative period (Aktaş and Yılmaz 2023). Early postoperative mobilization is a basic nursing intervention and the responsibility of nurses. Early postoperative mobilization is an evidence-based practice included in the ERAS protocols, and

studies in the literature are known to have many benefits such as supporting healing, reducing pain/fatigue symptoms, accelerating the return of bowel movements, and psychological well-being (Bilgiç et al. 2019; Çilingir and Şahin 2020). Nurses should assess patients' physiological and psychological readiness for mobilization, ensure a safe environment before mobilization, evaluate their vital signs just before and after mobilization, and mobilize them gradually (first raising the head of the bed, then sitting on the edge of the bed, and then ambulating). In addition, they should monitor any adverse conditions (dizziness, darkening of the eyes, etc.) that may occur in the patient in each stage of mobilization, support the patient's mobilization in bed, evaluate,

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Key Points

- Early postoperative mobilization is an important evidence-based nursing intervention included in Enhanced Recovery After Surgery protocols. The level of evidence of interventions for postoperative mobilization in gynecology units is reported as "low," and early postoperative mobilization is still not performed at the desired level in these units.

- Mobilization education enhanced with the Teach-Back method provided by nurses increased patients' mobilization, postoperative recovery, and satisfaction with nursing care levels.

- This study provides a new perspective by stating that mobilization education enhanced with the Teach-Back method can facilitate the mobilization of patients, support their recovery processes, and increase their level of satisfaction with nursing care. It is recommended that nurses use the Teach-Back method in skill-oriented patient education in the preoperative period.

and record the mobilization process (Çilingir and Şahin 2020; Johnson et al. 2019).

Many interventions have been designed and tested to increase early mobilization after surgery, such as providing patient education, setting mobilization goals, teaching progressive muscle exercises, and implementing mobilization programs. A randomized controlled study conducted by Liebermann et al. (2013) reported that the intervention of setting a daily mobilization goal did not statistically significantly affect the number of steps patients took. Jadhav and Gosavi (2023) reported that gradual and early mobilization intervention positively affected postoperative recovery in women undergoing cesarean sections, with a significant difference compared with the control group. Yayla (2016) found that the application of early mobilization protocol in patients undergoing cardiovascular surgery did not statistically significantly affect postoperative mobilization, but it accelerated the first gas output of the patients, shortened hospital stays, and lowered complication rates.

Early postoperative mobilization is considered one of the important nursing interventions; however, it is a nursing care practice most frequently overlooked (Kırtıl and Kanan 2023). Studies have reported that postoperative mobilization in patients undergoing gynecological surgery is not at the desired level (Bilgiç et al. 2019; Chen et al. 2022; Cortes et al. 2019; Jakobsen et al. 2021). The Teach-Back method is an effective health literacy method recommended by the Agency for Healthcare Research and Quality (AHRQ) in the late 1990s and is based on the principle of having patients, their relatives, and their families fully and accurately express the information and skills they want to gain in accordance with the planned educational objectives or repeating them until they demonstrate the skills (Caplin and Saunders 2015). The Teach-Back method is mostly used in health education related to patients as part of a structured education plan-based education, and it is reported to have positive effects on the clinical outcomes of patients by remembering and retaining the information associated with learning (Talevski

et al. 2020). It is widely used in the literature, especially in obtaining informed consent (Kripalani et al. 2008), management of chronic diseases (Dinh et al. 2016), discharge education (Yen and Leasure 2019), and preoperative patient education (Kesänen et al. 2016). Therefore, this study aimed to determine the effects of preoperative mobilization education enhanced with the Teach-Back method on postoperative mobilization, recovery, and satisfaction with nursing care levels in patients undergoing gynecological oncology surgery. The hypothesis of this study was as follows: The intervention groups will show superior outcomes compared with the control group in terms of increased mobility level, improved postoperative recovery, and higher patient satisfaction.

2 | Materials and Methods

2.1 | Study Design

This study was a nonblinded randomized clinical trial with a 15-day follow-up design, including two arms (intervention and control) based on the Consolidated Standards of Reporting Trials (CONSORT) checklist (Figure 1), which was used as the reporting guideline (Appendix S1, CONSORT checklist). The study was registered at https://www.clinicaltrials.gov before the participant recruitment (ID: 05845086).

2.2 | Study Participants

The study participants were patients who underwent elective gynecological oncology surgery between September 2023 and March 2024. Patients were recruited from the gynecology unit at a University Hospital in Aydın, Turkey. Patients' nutritional status, muscle strength, and body mass index (BMI) were pre-evaluated because they might significantly affect the mobilization process. Patients with a nutrition risk score of ≥ 3, a muscle strength score on the Medical Research Council scale of ≥ 3, and a BMI between 18.5 and $29.9 \, \text{kg/m}^2$ were evaluated for inclusion criteria. The inclusion criteria of this study were as follows: (a) patients aged more than 18 years and undergoing elective surgery and (b) patients with a BMI lower than $30 \, \text{kg/m}^2$. The exclusion criteria of this study were as follows: (a) patients advised absolute rest by the physician, (b) patients with hearing or visual problems, (c) patients with a history of surgery in the last 4 weeks, (d) patients with a history of disease (chronic cardiovascular or pulmonary diseases) that might prevent postoperative mobilization, (e) patients admitted to the intensive care unit after surgery, and (f) having had minimally invasive surgery.

2.3 | Sample Size and Randomization

The sample size of the study was calculated using the G*Power 3.1.9.2 software program based on the Patient Mobility Scale (PMS) used in Kavlak's (2017) study. The effect size was found to be 0.56. Considering this reference study, the sample size for each group was calculated as 43, by taking into account the effect size ($d = 0.56$), 5% margin of error ($\alpha = 0.05$), and 80% power ($1 - \beta = 0.80$) in the analysis performed by selecting the nonparametric test group as the statistical test (Cohen 1988; Faul et al. 2007;
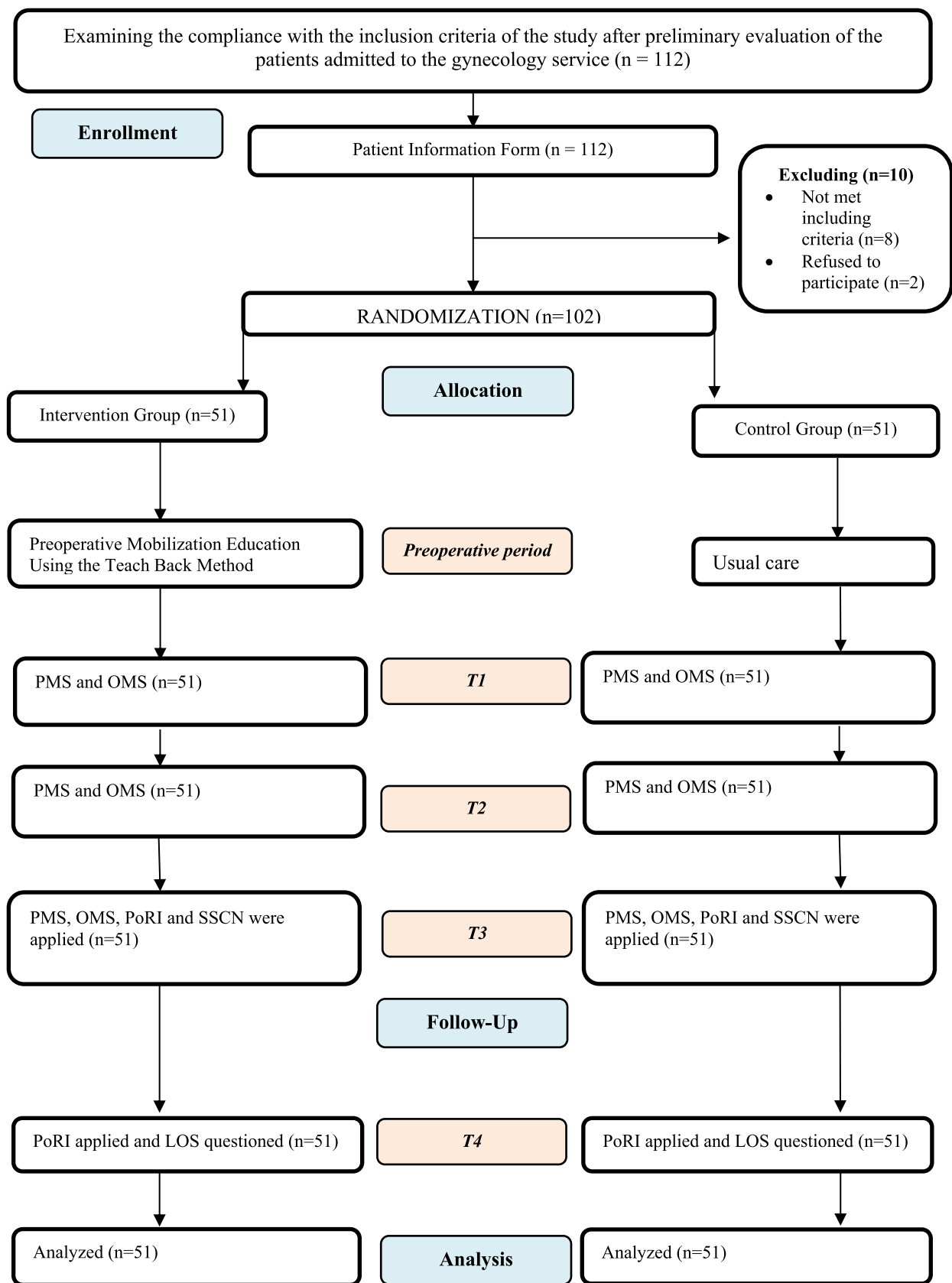
FIGURE 1 | CONSORT flow diagram.

Polit and Beck 2017). The sample was overestimated by 20% due to the possibility of losses during the follow-up period. The study was conducted with 102 (n = 51 per group) patients.

The randomization in the study was performed by the researcher using a computer program. The patients were numbered from 1 to 102 based on the order of surgery, and these numbers were assigned to the intervention and control groups using www.randomizer.org (Figure 1).

2.4 | Intervention

2.4.1 | Preoperative Mobilization Education Using the Teach-Back Method

The patients in the intervention group received mobilization education enhanced with the Teach-Back method besides the usual care in the preoperative period. The researcher prepared an education plan based on the published studies (Jones et al. 2019; Kavlak 2017; Wijk 2022). The topics included in this plan were as follows: (a) Definition and importance of early postoperative mobilization, (b) Exercises to be performed to facilitate early postoperative mobilization, including aims of the exercises/frequency and duration/process stages (deep breathing exercise, cough exercise, in-bed period exercise, use of TriFlo Inspiratory Exerciser, ankle and foot exercises), and (c) Safety precautions in postoperative mobilization. The education plan was finalized in consultation with two experts specialized in the field of Teaching in Nursing. The finalized educational content was prepared following the recommendations for preparing PowerPoint presentations (Naegle 2021; Nowak et al. 2014, 2016) and comprised 24 slides. This presentation included videos showing all the exercise stages from the education plan, filmed under the researcher's direction in a simulation laboratory environment that exactly imitated the patient room with the help of a volunteer nurse. The videos were integrated into the PowerPoint presentation following the flow of the education plan. The visuals in the presentation were sourced from istockphoto.com, shutterstock.com, and pexels.com sites that offered copyright-free images. The theoretical content of the presentation and all skill videos were evaluated by 10 experts using the Patient Education Materials Assessment Tool (PEMAT) developed by Orgun and Paylan Akkoç (2020). The first part of PEMAT is applied to printable materials and the second part to audio/visual materials. Based on PEMAT scoring, the mean score for comprehensibility and applicability of the presentation was found to be 97.4 and 93.7, respectively; for the skill videos, the mean score for comprehensibility and applicability was 93.4 and 93.05, respectively.

The researcher provided the education to the patients 1 day before surgery in their rooms, between 15:00 and 17:00, through a face-to-face interview method. The education was conducted as a single session, focused on skills, and lasted an average of 30 min. The Teach-Back method was used to increase the interaction between the patient and the nurse, ensure the permanence of the education, aid recall of the information conveyed to the patient, and confirm whether education objectives were achieved. The researcher used "framing expression" during the education process and asked the patient questions following the education objectives. The education was repeated until the patient answered the question correctly or demonstrated and performed the skill in question correctly (Arslan and Özkan 2023; Garrett 2016). All patients were given the opportunity to ask questions. After educating the patient, the PowerPoint presentation was printed, and the videos were delivered to the patient's phones via an application (e.g., WhatsApp) or e-mail based on their preference.

2.4.2 | Usual Care

The patients in the control group received usual care in the unit. The nurses working in the unit accept the patients, place them in their rooms, and provide preoperative patient education in the clinic the day before the surgery using the verbal explanation method. Patient education includes preoperative preparations (stopping oral intake, skin preparation, prophylaxis applications, etc.), basic information about the surgery, use of triflow, and the necessary items for the perioperative process. In the unit, the patients' oral intake is stopped after midnight (12:00), and cephalosporin group antibiotics are administered to all patients 60 min before the surgical incision. However, benzodiazepine group premedication and low–molecular–weight thromboembolism prophylaxis are applied if requested by the physician. The nursing care in the postoperative period includes ambulation first, followed by monitoring of vital signs, initiation of oral intake, pharmacological interventions, and verbal motivation for mobilization. Patients coming to the clinic from the operating room routinely have their first ambulation with the help of a nurse at approximately 5 h. The vital signs of patients are checked before mobilization. Mobilization was initiated if the patients' blood pressure values are between 90/60 and 140/90 mmHg; heart rate between 60 and 100 beats/min, and respiratory rate between 14 and 20 min, and oxygen saturation between 95% and 99% (Jadhav and Gosavi 2023; Stolbrink et al. 2014; Kavlak 2017). Vital signs are measured twice before mobilization, once in the semifowler position and 2 min after sitting on the edge of the bed; and twice after mobilization, once after sitting on the edge of the bed and once after taking the semi-fowler position. When vital signs are outside these ranges, mobilization is postponed and reviewed again at the next evaluation. These patients are not excluded from the study; mobilization is applied when vital signs are within the accepted limits. Mobilization is carried out using a structured and gradual protocol that includes sitting at the edge of the bed, standing with support, taking a few steps near the bedside, and walking short distances if tolerated. Progression through each stage depends on the absence of symptoms such as dizziness, nausea, and blurred vision. All mobilization procedures are conducted under the supervision of nurses. In the postoperative period, antibiotic prophylaxis is continued for all patients, deep vein thrombosis prophylaxis is applied according to the clinical condition of the patients, drains are placed according to the clinical condition of the patient, and urinary catheters are inserted for all patients in the operating room. The nurses working in the unit do not provide any structured, valid, and reliable training to patients with any education about the early mobilization process in the pre- and postoperative period.

2.5 | Data Collection and Outcomes

The results were measured on Postoperative Day 0 (T1), Postoperative Day 1 (T2), Postoperative Day 2 (T3), and Postoperative Day 15 (T4) after discharge. The data at Time Points T1, T2, and T3 were obtained through face-to-face interviews in the gynecology unit, and the data at Time Point T4 were obtained through interviews on the phone. The patient's mobility level was measured at T1, T2, and T3. The recovery after surgery level was measured at Time Points T3 and T4, and the satisfaction with nursing care was measured once at Time Point T3. The sociodemographic and clinical data of participants were retrieved from both the participants and their medical records.

2.5.1 | Primary Outcomes

2.5.1.1 | Patient Mobility Level. The patients' mobility levels were measured using the PMS and the Observer Mobility Scale (OMS), which were developed by Heye et al. (2002) and whose Turkish validity and reliability studies were conducted by Ayoğlu (2011). The PMS is used to assess the level of pain and difficulty experienced by the patient during four activities: rolling from side to side in bed, sitting on the edge of the bed, standing up on the edge of the bed, and ambulating in the patient's room. PMS consists of four subdimensions; each subdimension consists of two questions, and the entire scale consists of eight questions. The scale was constructed as a 15-cm visual analog, and the score is calculated by measuring the distance between the mark that the patient places on the scale and zero. The minimum score that can be obtained for each sub-dimension is 0; the maximum score is 30. The total score range of the scale is between 0 and 120. A high score on the scale indicates increased pain and difficulty associated with the activity. The Cronbach's alpha value of the scale was reported as 0.87. In this study, the reliability of PMS was 0.88.

The OMS is used to measure the extent to which the patient can independently perform the activities involved in PMS. The total score of the scale is obtained as a result of the evaluation of the four activities consisting of turning, sitting, standing, and walking in the postoperative period. It is a 5-point Likert-type scale. For each activity, a score of "1" indicates that the patient can perform the relevant activity independently, whereas a score of "5" indicates that the patient cannot perform the relevant activity despite physical assistance. The independence status of the patient during each activity is observed and marked by the observer. The minimum score that can be obtained from the scale is 4; the maximum score is 20. A high score indicates that the patients' movement skills are inadequate. The Cronbach's alpha value of the scale was reported as 0.61. In this study, the reliability of the OMS was 0.76.

2.5.1.2 | Recovery After Surgery. The Turkish adaptation study of the Postoperative Recovery Index (PoRI) was conducted by Cengiz and Aygin (2019). The PoRI consists of 25 questions and is a 5-point Likert-type scale. The items on the scale are scored between "1" (never) and "5" (always). For the PoRI total score, all 25 items are summed and the arithmetic mean is taken. The lower scores on the index indicate

easier postoperative recovery. In this study, the reliability of the PoRI was 0.84.

2.5.1.3 | Satisfaction With Nursing Care. Patients' satisfaction with nursing care was measured using the Newcastle Satisfaction Scale from Nursing Care (SSNC) whose developed by Thomas et al. (1996) was carried out by Akın and Erdoğan in (2007). The SSNC is a 5-point Likert-type scale composed of 19 items to determine how patients are satisfied with nursing care. The scoring answers used to determine the degree of satisfaction are 1 = *Not at all satisfied*, 2 = *Barely satisfied*, 3 = *Quite satisfied*, 4 = *Very satisfied*, and 5 = *Completely satisfied*. The SSNC assesses the patient's satisfaction with nursing care during their stay in the patient room. The scores are evaluated on a scale between 0 and 100 points by summing the scores of all items in the scale and converting them into 100. For example, to convert the score of a patient who received a raw score of 85 from their answers into 100, the SSNC score is calculated as follows: $100 \times 85/95 = 89.4$. An increase in the total score is interpreted as an increase in satisfaction with nursing care. In this study, the reliability of the SSNC was 0.96.

2.5.2 | Secondary Outcomes

2.5.2.1 | Sociodemographic and Clinical Data. The sociodemographic and clinical data were collected using a patient information form developed by researchers in line with the published studies (Jakobsen et al. 2021; Johnson et al. 2019; Kavlak 2017; Liebermann et al. 2013). The form included information about age, marital status, education level, income, and clinical data, presence of chronic disease, surgery/cancer history, diagnosis, stage of cancer, preoperative blood glucose level, hemoglobin level, and fasting time. The hemoglobin and blood glucose levels, which were thought to affect early postoperative mobilization, were obtained from patients' records. Fasting time was considered to be the time from midnight (12:00) until the patient entered the operating room.

2.5.2.2 | Postoperative Patient Outcomes. The postoperative patient outcomes included the total mobilization time of patients outside the bed (sitting on the edge of the bed, walking to the toilet, and walking in the corridor) and the hospital stay variables for 24 h at Time Points T1, T2, and T3. The patients were asked about the duration of performing these activities at T1, T2, and T3, and the responses were recorded on the data collection form. The duration of hospital stay was obtained at time point T4 by asking the patients.

2.6 | Blinding

This study was conducted unblinded. All parties involved in the study were aware of the treatment received by the participants.

2.7 | Statistical Analyses

The data obtained in the study were assessed using Statistical Package for the Social Sciences for the Windows 22

package program (IBM no: 10.255.255.30) at a 95% confidence interval and $p < 0.05$ significance level. The Shapiro–Wilks test result was $p < 0.05$ in the frequency distributions of the mean scale scores of the participants. Therefore, nonparametric tests were used in intergroup comparisons (Tabachnick and Fidell 2013). The frequency, percentage, mean, and standard deviation were used in the data analysis. The categorical data, numerical data, and repeated measurements were analyzed using the chi-square test and Mann–Whitney U test, respectively.

3 | Results

A total of 112 patients were screened for eligibility, of whom 102 were recruited. No data loss occurred during the follow-up period. The final data analysis was conducted on 102 patients whose data were collected at four time points (T1, T2, T3, and T4).

3.1 | Sociodemographic and Clinical Variables of Participants

The sociodemographic and clinical variables of the participants are shown in Table 1. The groups were similar in terms of the sociodemographic and clinical variables at baseline.

3.2 | Effect of the Preoperative Mobilization Education Using the Teach-Back Method on Primary Outcomes

The patients in the intervention group reported less strain/pain during mobilization and were less dependent than those in the control group at T1, T2, and T3 (Table 2).

The patients in the intervention group had postoperative improvement at T3 and T4 compared with those in the control group (Table 2).

The patients in the intervention group exhibited a higher level of satisfaction with nursing care at T3 compared with those in the control group (Table 2).

3.3 | Effect of the Preoperative Mobilization Education Using the Teach-Back Method on Secondary Outcomes

A statistically significant difference was found in the mean duration of mobilization at T1, T2, and T3 between the patients in the intervention and control groups. In addition, the patients in the intervention group were mobilized for a longer time out of bed than those in the control group (Table 3).

No statistically significant difference was found between the patients in the intervention and control groups in terms of the length of hospital stay (Table 3).

4 | Discussion

This study showed that patients in the intervention group had higher levels of mobility, recovery status, and satisfaction with nursing care than those in the control group.

4.1 | Effect of the Preoperative Mobilization Education Using the Teach-Back Method on Primary Outcomes

Patients in the intervention group have a better mobilization process than those in the control group at T1, T2, and T3. This might be because the mobilization education provided might have supported the mobilization process. Kavlak (2017) reported that the patients in the intervention group who were informed about mobilization on postoperative Day 0 reported less difficulty and pain during mobilization than those in the control group in a study on women undergoing hysterectomy. However, no statistically significant difference was found between the groups on postoperative Days 1 and 2. Liebermann et al. (2013) reported no significant difference between mobilized and nonmobilized patients in terms of the difficulty in walking before and after surgery. Yayla (2016) reported no effect of the application of the early mobilization protocol on the mobility levels of patients on postoperative Days 1 and 2. The results of this study differed from previous findings. This might be because the patients received surgical treatment for different reasons and methods, besides the differences in characteristics such as age, presence of comorbidities, postoperative pain severity, or recovery level. In addition, information such as exercise instruction, supporting the incision area, and safety precautions to be taken during mobilization, included in the mobilization training given to the intervention group patients, may have facilitated the mobilization process of the patients.

This study showed that the patients in the control group had lower levels of dependency during mobilization than those in the intervention group at Time Points T1, T2, and T3. In the study conducted by Kavlak (2017), the patients in the intervention group reported less dependency during mobilization compared with those in the control group on postoperative Days 0 and 1; however, no statistically significant difference was observed between the groups on Postoperative Day 2. Studies emphasized that patients needed information about the mobilization process (Liebermann et al. 2013; Santiago et al. 2022). Providing information and education on the mobilization process might enable patients to participate more in their own processes.

In addition, the patients in the intervention group had higher levels of recovery at T3 and T4 than those in the control group. Some studies in the literature report that mobilization-related training programs increase patients' functional capacities (Almeida et al. 2017) and gastrointestinal recovery (Willner et al. 2023), and accelerate return to daily living activities (Xavier et al. 2024). Postoperative recovery in patients undergoing abdominal surgery requires an average of 3–4 days

Variables	IG ($n = 51$)		CG ($n = 51$)		Test value ($\chi2$); p
	n	**%**	**n**	**%**	
Age (years)					
31–41	7	13.7	5	9.8	0.718[a]; 0.788
42–52	18	35.3	23	45.1	
53–63	10	19.6	8	15.7	
64–74	11	21.6	12	23.5	
75–85	5	9.8	3	5.9	
Marital status					
Single	4	7.8	5	9.8	0.122[a]; 0.727
Married	47	92.2	46	90.2	
Education level					
Literate	3	5.9	2	3.9	1.655[a]; 0.799
Primary school	29	56.9	29	56.9	
Secondary school	15	29.4	17	33.3	
University and above	4	7.8	3	5.9	
Income level					
Income less than expenses	6	11.8	2	3.9	3.540[a]; 0.170
Income equal to expenses	42	82.4	48	94.1	
Income more than expenses	33	5.9	1	2	
Smoking					
Yes	7	13.7	6	11.8	1.146[a]; 0.564
No	44	5.3	45	88.2	
Chronic disease					
Yes	23	45.1	25	49	0.353[a]; 0.552
No	28	54.9	26	51	
Having a surgery history					
Yes	27	52.9	16	31.4	4.865[a]; 0.027*
No	24	47.1	35	68.6	
Having a cancer history					
Yes	9	17.6	2	3.9	4.993[a]; 0.025*
No	42	82.4	49	96.1	
Diagnosis					
Endometrium ca	26	51	32	62.7	1.439[a]; 0.230
Over ca	25	49	19	37.3	
Stage of cancer					
Stage I	18	35.3	19	37.3	1.660[a]; 0.436
Stage II	28	54.9	23	45.1	
Stage III	5	9.8	9	17.6	

(Continues)

TABLE 1 | (Continued)

Variables	IG ($n = 51$)		CG ($n = 51$)		Test value ($\chi 2$); p
	n	%	n	%	
Score of ASA					
ASA 1	25	49	28	54.9	0.362[a]; 0.835
ASA 2	25	49	22	43.1	
ASA 3	1	2	1	2	
Geçirilen ameliyat					
TAH	3	5.9	6	11.8	2.989[a]; 0.393
TAH + Unilateral oophorectomy	7	13.7	9	17.6	
TAH + Bilateral oophorectomy	40	78.4	33	64.7	
Pelvic exantheration	1	2	3	5.9	
Presence of drain into surgical area					
Yes	12	23.5	8	15.7	0.995[a]; 0.318
No	39	76.5	43	84.3	
	Median (1th; 3th)		Median (1th; 3th)		
Blood glucose level at perioperative period (mg/dL)	116.00 (98.00; 138.00)		103.00 (92.00; 131.00)		1072.500[b]; 0.127
Hemoglobin level at perioperative period (g/dL)	11.500 (10.300; 12.500)		11.400 (10.300; 12.600)		1261.000[b]; 0.791
Fasting time until surgery (h)	10.00 (9.00; 11.00)		9.00 (8.00; 11.00)		1180.500[b]; 0.414

Abbreviations: 1th, first quartile; 3th, third quartile; Ca, cancer; CG, control group; IG, intervention group; M, mean; SD, standard deviation; TAH, total abdominal hysterectomy; $\chi 2$, chi-square test.
[a]Likelihood ratio.
[b]Mann–Whitney U test.
*$p < 0.05$.

(Arslan and Gezer 2023; Chen et al. 2022; Cortes et al. 2019). Early postoperative mobilization is a nursing intervention that increases not only physical but also emotional and social well-being (Akkaya and Karacabay 2022; Ibrahim et al. 2021; Jadhav and Gosavi 2023; Johnson et al. 2019; Jones et al. 2019; Kırtıl and Kanan 2023; Svensson-Raskh et al. 2021). It is thought that the mobilization training given in this study facilitated and increased the mobilization processes of the patients and thus had a positive impact on their well-being.

The patients in the intervention group exhibited higher satisfaction levels with nursing care than those in the control group in this study. The physiological and psychological burdens resulting from cancer negatively affected the quality of life of patients undergoing gynecologic oncology surgery (Almeida et al. 2017). Studies also reported that early mobilization increased patients' levels of satisfaction with nursing care by increasing comfort, sense of independence, and quality of life (Alsuwailem and Alessa 2023; Kırtıl and Kanan 2023; Xavier et al. 2024). Moreover, counseling, information, and education for patients provided by nurses in the preoperative period increased patient satisfaction (Gröndahl et al. 2019; Ibrahim et al. 2021). Especially, a study using the Teach-Back method in patient education reported that education positively influenced patient satisfaction (Johnson et al. 2019). According to the results of this study, early postoperative mobilization made the patient feel physically, mentally, and emotionally good. Also, mobilization education enhanced with the Teach-Back method increased the knowledge and skill levels of the patients and reflected on nursing care satisfaction positively. Considering the preoperative and postoperative processes as a whole, providing patients with the information they need during these processes is important and increases satisfaction with nursing care. Therefore, it is important to focus on patient education to improve the quality of nursing care patients perceive.

4.2 | Effect of the Preoperative Mobilization Education Using the Teach-Back Method on Secondary Outcomes

The total mobilization times were higher at Time Points T1, T2, and T3 for the patients in the intervention group than for those in the control group. Randomized controlled studies in the literature report that structured mobilization training, especially when applied before or immediately after surgery, increases the duration and frequency of postoperative mobilization in patients (Akkaya and Ayhan 2023; Kavlak 2017; No et al. 2021; Koyuncu and İyigün 2021). The exercises that facilitate the mobilization process included in the educational content and the topics demanding patients' attention before/during/after mobilization might have increased the patients' motivation for mobilization. In ERAS protocols, mobilization is recommended for 2 h on the day of surgery and 6 h on the days after gynecological surgery

TABLE 2 | Difference between the groups on patient mobility level, recovery after surgery, and satisfaction with nursing care at T1, T2, T3, and T4 ($n = 102$).

Outcomes and time points/groups	IG ($n = 51$) Median (1th; 3th)	CG ($n = 51$) Median (1th; 3th)	Test value; p
PMS			
T1	20.00 (18.00; 20.00)	23.00 (21 00; 27.00)	824 000[a]; 0,001*
T2	15.00 (12 00; 18.00)	18.00 (17 00; 19.00)	564 500[a]; < 0.001*
T3	12.00 (11 00; 15.00)	14.00 (12 00; 16.00)	827 500[a]; < 0.001*
OMS			
T1	10.00 (9 00; 12.00)	11.00 (10,00; 13.00)	748 000[a]; < 0.001*
T2	7.00 (6 00; 8.00)	8.00 (7,00; 10.00)	970 000[a]; 0.025*
T3	5.00 (4.00; 6.00)	7.00 (6,00; 10.00)	668 500[a]; < 0.001*
PoRI			
T3	46.00 (43.00; 49.00)	52.00 (48.00; 56.00)	715 000[b]; < 0.001*
T4	41.00 (38.00; 43.00)	45.00 (42.00; 50.00)	657 000[b]; < 0.001*
SSCN			
T3	91.57 (87.36; 94.73)	78.94 (67.36; 84,21)	382 500[b]; 0.001*

Abbreviations: 1th, first quartile; 3th, third quartile; CG, control group; IG, intervention group; OMS, Observer Mobility Scale; PMS, Patient Mobility Scale; PoRI, Postoperative of Recovery Index; SSCN, Satisfaction Scale from Nursing Care; T1, Postoperative Day 0; T2, Postoperative Day 1; T3, Postoperative Day 2; T4, Postoperative Day 15.
[a]Likelihood ratio.
[b]Mann–Whitney U test.
*$p < 0.05$.

TABLE 3 | Difference between the groups on secondary outcomes ($n = 102$).

Outcomes/groups	IG ($n = 51$) Median (1th; 3th)	CG ($n = 51$) Median (1th; 3th)	Test value[a]; p
Time of mobilization (minutes for 24 h)			
T1	37.00 (34.00; 46.00)	31.00 (23.00; 42.00)	885 500[a]; 0.005*
T2	281.00 (252.00; 319.00)	249.00 (201.00; 278.00)	795 000[a]; 0.001*
T3	360.00 (330.00; 388.00)	326.00 (293.00; 366.00)	874 000[a]; 0.004*
LOS	5.00 (5.00; 7.00)	6.00 (5.00; 7.00)	1 061 000[a]; 0.1

Abbreviations: 1th, first quartile; 3th, third quartile; CG, control group; IG, intervention group; LOS, length of hospital stay; T1, Postoperative Day 0; T2, Postoperative Day 1; T3, Postoperative Day 2.
[a]Mann–Whitney U test.
*$p < 0.05$.

(Ortiz et al. 2015). In this study, the patients in the intervention and control groups did not achieve this mobilization target during the follow-up period. However, they approached these targets although they could not meet the ERAS recommendations. In addition, the education provided might have contributed to the patients in the intervention group being mobilized for more time compared with those in the control group.

The length of hospital stay of the patients in groups was similar in this study. Studies conducted with different patient groups reported that postoperative mobilization shortened the length of hospital stay (Stolbrink et al. 2014; Turan et al. 2023; Wolk et al. 2019). The result of this study differed from previous findings. Gynecological oncology surgeries could be performed using open or minimally invasive methods. Patient stays in hospitals were shorter after minimally invasive surgeries (Santiago et al. 2022). The reason why the results of this study differed from previous findings could be attributed to the fact that all of the patients in this study underwent open surgery. Currently, postoperative mobilization is one of the discharge criteria for patients (Jakobsen et al. 2021). Performing basic nursing interventions, such as preparing patients for early mobilization starting from the preoperative period, motivating them, and providing patient education more effectively, is essential due to

the approaches to shorten the hospital stay of patients after gynecological surgery.

4.3 | Strengths and Limitations of the Study

This study had some strengths and limitations. The strengths of the study were that the patients were divided into groups using the randomization method, valid/reliable measurement tools were used in developing the content for mobilization education, and the sample calculation was based on a medium effect size. However, the limitations of the study included selecting the study sample from a single hospital, obtaining some of the data from patients' statements, and being unable to individualize the mobilization education. One of the limitations of this study is the lack of assessment of patients' postoperative pain levels immediately prior to mobilization. Pain is a critical factor that can significantly influence a patient's willingness and ability to mobilize after surgery. Although pain was not measured with a standardized pain scale for the purposes of this study, it is important to note that postoperative pain management was initiated as soon as the patient arrived on the ward, and pain assessments were routinely conducted every 4 h as part of clinical care. All patients received pain management according to a standard protocol applied uniformly across the unit. Pain control interventions were administered based on these regular assessments. However, since pain is a subjective experience that can vary significantly between individuals, such variations may still have influenced mobilization outcomes, and this should be taken into account when interpreting the results.

5 | Conclusions

This study showed that mobilization education provided using the Teach-Back method in the preoperative period was effective in improving the mobilization process, recovery status, and satisfaction of patients undergoing gynecological oncology surgery. It is expected that mobilization education led by nurses and using various teaching strategies in clinics can help increase patients' postoperative mobilization, recovery, and satisfaction with nursing care. Increasing the awareness of the nurses working in the clinic about the subject, besides increasing the interaction and permanence of the education using the Teach-Back method in patient education, can ensure that the mobilization processes of the patients during the perioperative period are planned, implemented, and evaluated under the guidance of evidence-based practices.

5.1 | Relevance for Clinical Practice

Patient education, one of the most effective and economical nursing interventions that can be applied by nurses in ensuring postoperative mobilization, is strengthened with the Teach-Back method, bringing a different perspective to patient education in the perioperative process. In this method, while mobilization skills are transferred to patients, it supports the active participation of the patient by ensuring that patients repeat what they have learned in their own words and demonstrate it in practice, and increases the effectiveness of the education by providing feedback to nurses about the patient's knowledge and behavior level. In addition, the education process can be individualized by completing deficiencies in line with the feedback received from the patient.

Ethics Statement

This study was approved by the Non-Invasive Ethical Committee (Date-Number: 29th August 2022-E-76261397-050.90-232845) of the Nursing Faculty of Aydın Adnan Menderes University (E-76261397-050.90-232845). The institutional permission (Date-Number: 5th September 2022-E-97594401-804.99-234297) was obtained from the hospital where the study was conducted. This study was registered at clinicaltrials.gov (ID: NCT05845086).

Consent

Written informed consent was obtained from a nurse who volunteered to shoot the skill videos to be used in the study. In addition, verbal and written informed consent was obtained from all participants.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.