Effects of a Recovery Promotion Program with Family Support for Older Adults Undergoing Abdominal Operation: A Quasi-Experimental Study

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Abstract: Older adults undergoing abdominal surgery may experience delayed recovery due to changes in physical and psychological aspects. Additionally, the process for effectively involving family members in enhancing recovery for older adults undergoing abdominal surgery in Thailand remains unclear. A quasi-experimental, two-group post-test-only design was employed to investigate the effects of the Recovery Promotion Program with Family Support for older adults undergoing abdominal surgery. The sample consisted of 66 older individuals who underwent abdominal surgery in the surgical department of a supertertiary hospital in the lower North of Thailand. The participants in the control group (n = 33) were purposively selected and completed the study first. Then, the participants in the experimental group (n = 33) were recruited in pairs to ensure similarity in gender, age, and type of surgery with those in the control group. The instruments used to collect data were: a Demographic Data Form, the Convalescence and Recovery Evaluation Form, the Fall Risk Assessment Tool, and the Pressure Ulcer Risk Assessment Tool. Data were summarized with descriptive statistics and analyzed using the Chi-square and independent t-test.

The results showed that on day 5 post-surgery, older adults who received the Recovery Promotion Program with Family Support plus usual care had a significantly better overall recovery, with an extremely large effect size, and also experienced substantially better recovery in terms of pain, gastrointestinal function, emotional status, and activity compared to participants who received routine care alone. Regarding safety, post-intervention analysis revealed no difference between the groups. When comparing the incidence of falls and pressure ulcers, both the experimental and control groups demonstrated 100% safety, with no reported adverse events, such as severe pain, persistent nausea or vomiting, or difficulty breathing. The study findings indicate that the Recovery Promotion Program with Family Support can enhance postoperative recovery in older adults undergoing abdominal surgery. Nurses can apply this intervention in promoting recovery among this population. However, further testing with a multisite study and randomized controlled trial is needed before it can be widely used.

Keywords: Abdominal surgery, Family support, Older adults, Recovery, Recovery promotion, Thailand

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Introduction

More than 50% of older adults in the US undergo abdominal surgery, and it is likely to go up with the rise of the older population. In Thailand,

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from 2021–2023, 150,572 to 143,153 abdominal surgeries were performed annually.[1] Older adults having abdominal surgery are susceptible to postoperative complications and delayed recovery due to age-related cognitive and decision-making abilities, frailty, and comorbidity. About 20.2-24% older adults who have had abdominal surgery tend to report functional deterioration and delayed mobilization, leading to a high risk of 30-day readmission and death.2 Nurses play a key role in enhancing recovery among older adults by utilizing Enhanced Recovery After Surgery (ERAS) protocols, which can minimize postoperative complications and support a faster recovery.[3,4] However, the ERAS protocols have been implemented inconsistently across hospitals, depending on the surgical practices and the surgeons' familiarity with traditional methods.[3] Furthermore, sometimes collaboration between patients and families after surgery does not occur, resulting in ineffective recovery and an increased risk of complications.[4,5]

Family involvement in older adults undergoing surgery has been shown to reduce postoperative delirium, maintain physical and cognitive functions, and shorten the length of hospital stay.[6] Meanwhile, involving a family caregiver during hospitalization fostered stronger family relationships and promoted recovery after the operation.[7] This is congruent with Thai culture, in that during sickness, older adults should have their family members surround them, as a traditional aspect of filial obligations among adult children.[8] However, the integration of family participation in postoperative recovery remains limited.[9] In addition, theory-based interventions are needed to guide collaboration among nurses, patients, and families. Thus, this study seeks to answer whether integrated family support with ERAS protocol, and King's Theory of Goal Attainment[4,10] to facilitate teamwork among nurses, patients, and families, is effective in recovery from abdominal surgery in older adults.

Literature Review and Conceptual Framework

Recovery after surgery is the process by which the body resuming normalcy, both physically and psychologically.[11] It includes three phases: 1) the early phase, which starts from the completed surgical procedures until recovery from general anesthesia (2-6 hours); 2) the intermediate phase, which covers the first week after surgery. The body system should change to be normal, such as vital signs, mobilization, or ambulation; and 3) the late phase, which occurs after the first postoperative week to one month after surgery. The functioning of body systems returns to near-normal levels compared to the preoperative state.[11] Post-abdominal surgery recovery encompassed four domains: 1) alleviation of bothersome physical symptoms—most notably discomfort, nausea, and fatigue, 2) restoration of physical functions, particularly gastrointestinal function, 3) re-establishment of emotional well-being, and 4) progressive resumption of normal activities, such as ambulation or exercise.[12]

The ERAS protocol has been widely used to improve postoperative recovery in older adults who are undergoing abdominal surgery.[5,13,14] The ERAS pathway encompasses structured preoperative education, the use of minimally invasive techniques, multimodal analgesia, early mobilization, individualized fluid management, and early nutrition initiation, as clinically appropriate.[15-17] Additionally, all recovery phases will achieve their ultimate goal if family members are involved in patient care.[18] Older adults undergoing surgery identified that social support is vital to effective recovery from surgery.[18] During the intermediate phase, postoperative older adults need family caregivers for early ambulation to avoid complications and slow recovery.[19]

King's theory was used in this study to guide the mutual team in caring for older adults through four steps: identifying mutual disturbances, setting goals

together, determining and agreeing on the ways to reach these goals, and implementing the agreed-upon actions.[10] Previous studies reported that older adults undergoing abdominal surgery, receiving a structured preoperative preparation program and early ambulation, significantly increased early recovery within the first postoperative week.[13,20] Also, using simple "easy-walk" equipment with a protocolized early ambulation prevented postoperative complications in the adult population.[21] However, an early promoting mobility program improved postoperative recovery outcomes on only pulmonary function but not other outcomes such as recovery of bowel function, quality of recovery, and postoperative time out of bed among critically ill adults after major abdominal surgery.[14] The outcomes of previous studies remain inclusive across various types of outcomes and populations. Also, the families were not included to support the patients in postoperative care.

This study focused on enhancing recovery for older adults having abdominal surgery, covering perioperative phases, in accordance with the ERAS protocols.[15] In line with the family involvement concept, the program established a transparent collaboration process among three partners: patients, family members, and nurses. Family involvement is defined as the participation in routine care (e.g., comforting or hygiene), technical care (e.g., holding or positioning older adults during activities, information sharing (e.g., reporting symptoms or changes), and decision-making (e.g., weighing activity options).[22] In addition, all partners built a relationship and set a goal to enhance recovery for older adults together, based on King's Goal Attainment Theory, which involves four steps: identifying mutual disturbances, setting goals together, determining and agreeing on the ways to reach those goals, and implementing the agreed-upon actions.[10,15]

Study Aim and Hypotheses

This study aimed to compare recovery and safety outcomes between older adults who received the Recovery Promotion Program with Family Support, including usual care, and those who received only routine nursing care. Research hypotheses were that older adults who received the Program would have a higher recovery mean score and a lower incidence of falls and pressure sores than those who received only routine nursing care on day 5 post-surgery.

Methods

Design: This study utilized a quasi-experimental, two-group, and post-test-only design. The Transparent Reporting of Evaluations with Non-randomized Designs (TREND) statement was used to report this study.[23]

Sample and Setting: The participants comprised older adults aged 60 years and above admitted to the surgical department at a supertertiary hospital in the lower North of Thailand, and scheduled to undergo open abdominal surgery. Inclusion criteria for participants were: 1) admission for inpatient care at least one day before surgery, 2) undergoing open abdominal surgery for the first time, 3) required a cognitive status screening test using the Short Portable Mental Status Questionnaire – Thai version[24] (SPMSQ score ≥ 8 out of 10, 4) diagnosed with a gastrointestinal condition requiring open abdominal surgery (small or large intestines, spleen, stomach, liver, pancreas), 5) no uncontrolled comorbidities, 6) required functional independence in basic self-care and mobility screening test as evaluated by the Barthel Index of Activities of Daily Living – Thai version[25] (Barthel ADL Index ≥ 12 out of 20 points), 7) agreed to be involved in the study, and 8) had a designated family caregiver. Exclusion criteria included: 1) failure to participate in the program through to completion; 2) postoperative complications requiring intensive care unit transfer, 3) inability to extubate after surgery, and 4) postoperative mobility limitations. Inclusion criteria for family

caregiver were: 1) aged 18 years or older, 2) identified by the older adult as a close relative, 3) if aged 60 years or older, must have SPMSQ score ≥ 8 out of 10, 4) able to communicate in Thai, 5) Barthel ADL Index ≥ 12 out of 20 points, and 6) able to participate in all sessions.

G*Power 3.1 was used to determine the sample size, utilizing a 0.90 power, a 0.75 effect size, and a significance threshold of 0.05, based on a previous similar study.[13] This yielded 31 participants per group. To prevent attrition, an additional 5% was added, resulting in 33 participants per group, for a total of 66 participants. To avoid contamination of the intervention and prevent demoralization in the control group, participants in the control group (n = 33) were purposively selected, and data collection was completed first. Then, the participants in the experimental group (n = 33) were recruited in pairs to match the participants in the control group to ensure similarity in gender, with an age difference not exceeding 5 years, and the type of surgery.

Ethical Considerations: Ethical approval was granted by the Human Research Ethics Committee of the Boromarajonani College of Nursing, Bangkok (COA No.: IRB. BCNB-2568-04) and the Human Research Ethics Committee of the studied hospital (HREC 033/2568/68). Participants were informed of the study's aims, method, duration, anticipated benefits, and the right to opt out without any impact on their care and provided written consent. To maintain confidentiality, personal identifiers were replaced with codes; all study documents were kept in a secure, locked cabinet, with access restricted to authorized researchers. In addition, study findings were reported as aggregated data. All information was destroyed at study completion.

Instruments included in those for data collection to determine the primary outcomes and the intervention program. There were four instruments for data collection:

The Demographic Characteristics Form comprised items on: gender, age, marital status, education level, underlying diseases, diagnosis, type of surgery, duration of surgery, incision length, and drainage bottles used postoperatively.

The Convalescence and Recovery Evaluation (CARE) instrument was constructed by Hollenbeck et al.[26] and adapted into Thai by Krisanabud et al.[27] Authorization to utilize this tool was granted by the original Thai authors. This instrument was used to determine post-abdominal and pelvic surgery recovery. There are 20 items with four domains: pain recovery (9 items), gastrointestinal function recovery (5 items), emotional status recovery (2 items), and activity recovery(4 items). The first three domains use a 6-point scale (0-5) with anchors from 0 = no symptom/normal to 5 = very severe symptom/maximal impairment. Activity domain used a 5-point scale (1-5) from 1 = unable to 5 = as usual/independent. Therefore, the first three domains were reverse-scored and transformed to 0-100 so that higher values reflect better recovery. For example, an item score of 0 (no symptom) contributes 100 to recovery, whereas 5 (very severe) contributes 0. For the activity domain (1-5; higher = better), we rescaled without reversal. A prior study reported that a Cronbach's alpha for the Thai version was 0.86.[27] In this study, reliability testing of the CARE was conducted with 30 older adult participants post-abdominal surgery, and in the actual study, demonstrating Cronbach's alpha values of 0.83 and 0.87, respectively.

The Morse Fall Risk Assessment Tool was originally developed in English by Morse et al.,[28] and was composed of six components: history of falls in the preceding three months, comorbidity, utilization of walking aids, existence of IV or heparin lock, movement and reposition, and cognitive function. The rater selects one option per item that best describes the patient's current status. For example, on the ambulatory aid item, the rater chooses "none/bedrest/

wheelchair" (0), "cane/crutches/walker" (15), or "furniture" (30). The scores range from 0–125: 0–24: no fall risk, 25–50: fall risk, and ≥ 51: high fall risk. Zero incidents indicate effective prevention of avoidable complications.[28] The Cohen's kappa coefficient of the Thai version yielded a value of 0.95.[29] In this study, inter-rater reliability was tested between the primary investigator (PI) and a senior clinical nurse specialist in a surgical department, who served as the expert, among 30 older adult participants post-abdominal surgery, demonstrating a Cohen's kappa coefficient of 1.00.

The *Braden Scale for Predicting Pressure Sore Risk* was developed by Bergstrom et al.,[30] and includes six items: sensory acuity, skin dampness, activity, physical movement, dietary, and skin friction/shear, rated on ordinal scales (five items 1–4; friction/shear 1–3). An example is Mobility 1–4 from "completely immobile" to "no limitations." Scores range from 6–23: 19–23: no risk, 15–18: mild risk, 13–14: moderate risk, 10–12: high risk, 6–9: very high risk. The zero incidents of pressure sores indicate safety from preventable complications.[31] The Cohen's kappa coefficient of the Thai version yielded a value of 1.00.[32] In this study, its reliability was conducted with 30 older adult participants post-abdominal surgery, demonstrating a Cohen's kappa coefficient of 1.00.

The Recovery Promotion Program with Family Support (RPP-WFS)

The researchers developed this program drawing upon King's Goal Attainment Theory, Enhanced Recovery After Surgery (ERAS) principles, and the family involvement concept by Schepp.[15,16,22] The RPP-WFS plan and handbook were developed, comprising four phases: 1) Mutual perception – on the first day before surgery, nurses and families spent 30 minutes aligning understanding through rapport building, sharing information, and teaching pre- and postoperative self-care.; 2) Mutual goal setting – nurses, patients, and families set recovery goals, with families assisting in daily activities, safe mobilization, and preventing tube dislodgement; 3) Agreeing on methods – before surgery, patients and families practice breathing, coughing, and safe movement, with emotional support from the family; 4) Implementation after surgery – during days 1–5 post-surgery, families participated 40 minutes daily in pain relief, protecting tubes and drains, encouraging breathing exercises, and promoting early safe mobilization to support recovery (**Appendix, Table A1**).

To ensure content validity, five experts reviewed the program plan and patient handbook: a surgeon, two senior surgical nurses, and two nurse educators with expertise in surgical nursing. The content was revised according to expert feedback. The content validity index (CVI) for the Recovery Promotion Program with Family Support = 1.0, Pre- and Postoperative Recovery Plan = 1.0, and the Recovery Handbook = 1.0. Then, the developed program was pilot-tested with five older adults similar to the study sample to identify and correct any flaws.

Ambulation and Early Postoperative Performance Criteria were modified from those proposed by Chae and Stiegmann, translated into Thai via back translation by Penphumaphuang,[20,33,34] was used with permission from the Thai authors to evaluate any abnormality during mobilization. If any abnormality was detected, the issue must be addressed, and the patient re-evaluated before continuing with mobilization.[20] In addition, pain measure using the 0-10 Numerical Rating Scale (NRS) was also performed before each recovery session on postoperative days 1–5. If NRS > 4, the session was paused, analgesia or other issues were addressed, and the patient was re-evaluated before continuing.

Usual Care: This was applied in the preoperative and postoperative periods. During

the preoperative period, nurses educated patients about abdominal surgery and prepared them for the procedure. For postoperative care, nurses monitored consciousness and vital signs until stable, managed pain and drainage, fluid intake and output, and facilitated early mobilization according to patients' needs and abilities, without established recovery protocols.

Data Collection: Following the IRB approval, data were collected from March to June 2025. Posters invited participants, and willingness was established when they notified the ward nurse. Eligible participants, including older adults and their families, signed the consent form. Prior to standard care, the PI collected demographic data from the control group. They were then provided with standard postoperative nursing care in accordance with the hospital protocols. The PI evaluated recovery, falls, and pressure sores on day 5 post-surgery. After completing data collection in the control group, the study proceeded with the experimental group, following a similar approach to the control group. The PI collected the data and provided the intervention. All activities were documented using a structured activity log developed by researchers to ensure fidelity to the intervention, completed by one trained nurse. The final recovery, falls, and pressure sores were evaluated at the same period as the control group.

Data Analysis: The IBM SPSS version 23 was utilized. Demographic data were described with descriptive statistics. The Chi-square and Fisher's exact tests were applied to test the demographic differences between the two groups. Kolmogorov-Smirnov test was used to test the data normality, and the results confirmed a normal value ($p > 0.05$). Therefore, the assumption for applying the t-test was fulfilled. Group comparisons of recovery on the fifth postoperative day were conducted using an independent t-test, while fall and pressure ulcer incidences were described using frequency and percentage.

Results

This study involved 66 participants, divided into two groups of 33 each. The average ages of the experimental and control groups were 69.40 and 69.21 years, respectively. Most participants in both groups were married and had completed primary education. In the experimental group, 87.88% had comorbidities, mainly hypertension. Similarly, 90.91% in the control group had the most common comorbidities with hypertension. Demographic characteristics did not significantly differ between the two groups ($p > 0.05$) (**Table 1**).

Table 1. Comparison of the demographic characteristics according to groups (N = 66)

Demographic characteristics	Control group (n = 33)		Experimental group (n = 33)		Chi-square test	p-value
	n	%	n	%		
Gender					0.000[a]	1.00
Male	27	81.82	27	81.82		
Female	6	18.18	6	18.18		
Age (years)					0.000[b]	1.00
60-69	14	42.43	14	42.43		
70-79	16	48.48	16	48.48		
≥ 80	3	9.09	3	9.09		
Mean (SD)	69.21 (5.82)		70.79 (5.95)			

Table 1. Comparison of the demographic characteristics according to groups (N = 66) (Cont.)

Demographic characteristics	Control group (n = 33)		Experimental group (n = 33)		Chi-square test	p-value
	n	%	n	%		
Marital status					0.954[b]	.621
Single	2	6.06	4	12.12		
Married	27	81.82	24	72.73		
Divorced	4	12.12	5	15.15		
Education level					1.053[b]	0.591
Primary	23	69.70	23	69.70		
Secondary	9	27.27	10	30.30		
Bachelor's degree	1	3.03				
Underlying diseases					0.000[b]	1.00
None	3	9.09	4	12.12		
Present	30	90.91	29	87.88		
Hypertension	14	42.43	12	36.37		
Diabetes & hypertension	9	27.27	11	33.33		
Diabetes, hypertension, & hyperlipidemia	8	24.24	7	21.21		
Others (e.g., COPD, thyroid)	2	6.06	3	9.09		
Diagnosis					0.366[b]	0.985
Stomach	6	18.18	6	18.18		
Liver	2	6.06	2	6.06		
Pancreas	1	3.03	2	6.06		
Small intestine	8	24.24	8	24.24		
Colon	16	48.48	15	45.45		
Type of surgery					1.699[b]	0.791
Gastric surgery	6	18.18	6	18.18		
Hepatobiliary surgery	2	6.06	4	12.12		
Whipple procedure	1	3.03	0	0		
Small bowel surgery	8	24.24	8	24.24		
Colorectal surgery	16	48.48	15	45.45		
Duration of surgery (hours)					1.097[a]	0.578
< 2	6	18.18	4	12.12		
2-3.5	20	60.61	24	72.73		
> 3.5	7	21.21	5	15.15		
Wound length (cm.)					0.262[a]	0.609
11-15	20	60.61	22	66.67		
16-20	13	39.39	11	33.33		
Number of postoperative drainage bottles					1.634[a]	0.442
None	8	24.24	12	36.36		
1	19	57.58	14	42.42		

Note. a = Chi-Square test, b = Fisher's exact test

Recovery: Following the intervention on day 5 post-surgery, the mean scores for overall recovery and for each of the four domains—pain, gastrointestinal function, emotional status, and activity — were significantly greater than in the control group ($p < 0.001$) (**Table 2**). In addition, the effect size of overall recovery was huge: Cohen's $d = 4.57$, 95% CI [3.64, 5.50].

Incidents of falls and pressure ulcers: Neither group experienced any incidents of falls or pressure ulcers during hospitalization or the 5-day postoperative period.

Table 2. Comparison of the postoperative recovery according to groups (N = 66)

Recovery	Control group (n = 33)		Experimental group (n = 33)		Independent t-test
	Mean	SD	Mean	SD	
Pain	77.25	4.72	86.62	2.31	10.232***
Gastrointestinal function	45.99	9.79	80.78	3.90	18.952***
Emotional status	69.75	11.43	81.32	4.67	5.384***
Activity	27.90	9.93	53.09	6.53	12.163***
Total	220.90	22.61	301.83	10.78	18.556***

Note. *** $p < 0.001$

Discussion

This study indicated that the Recovery Promotion Program with Family Support is effective in enhancing recovery, with an extremely large effect size, among older adults who have undergone abdominal surgery. These findings support the applicability of King's Goal Attainment Theory, which emphasizes purposeful interaction, effective communication, and shared goal-setting among nurses, patients, and family members.[15] Their collaboration enhanced patient confidence and sustained participation in recovery activities, such as early mobilization, respiratory exercises, and pain management, thereby promoting more efficient recovery.[15]

Family involvement serves as an essential psychosocial support that can motivate patients to have better health behaviors and emotional well-being.[7] The study findings align with previous studies, demonstrating improvements in recovery when family members are involved in perioperative care.[13,20] Likewise, a previous study reported that patients who received structured postoperative recovery programs had significantly less wound pain and bloating, highlighting the benefit of early, guided activity.[21]

The four steps of nursing actions in this study, based on the Goal Attainment Theory, could effectively promote postoperative recovery in older adults undergoing abdominal surgery. First, mutual perception: nurses educated patients and their families about abdominal surgery and provided information on how to take care of themselves during the pre- and postoperative periods. These activities could be the starting point for purposeful interaction, which in turn could foster trust and enhance physical and psychological readiness for recovery. Second, goal setting: nurses, patients, and families work together as a team to set clear recovery goals. Consequently, patients felt inspired and cooperated in their care practices, which supported recovery. Third, exploration of means and agreement on means: patients received training and demonstrated recovery techniques, such as deep breathing, effective coughing, and safe mobilization, along

with return demonstrations to ensure correct practices. In the meantime, families knew how to support older adults in both psychological and physical aspects. Therefore, older adults felt secure and boosted their confidence. Fourth, transaction and action: in the postoperative phase, they implemented the agreed-upon plan, focusing on pain management, encouraging deep breathing, effective coughing, spirometer use, and early mobilization. This aligned with a previous systematic review and meta-analysis, which reported that nursing programs guided by the Goal Attainment Theory significantly improved outcomes across all four domains.[35]

Considering each subdomain, first, pain recovery in the intervention group was greater than in the control group. A plausible explanation is that older adults received preoperative counseling in pain management in the ERAS protocol, aligned with having a shared goal of pain management in King's theory, and perceived reinforcement from family members. This study finding was congruent with recent perioperative care guidelines and a previous study, which recommended that comprehensive preoperative counselling was important as patients often experience anxiety related to the uncertainty of surgery. Therefore, providing accurate and comprehensive information might alleviate subsequent pain.[14,17] For gastrointestinal function, the ERAS included early fluids and diet advancement and early ambulation, and family-prompted scheduled activities might be helpful.[16] Similarly, for emotional recovery, a 30-minute pre-op session and 40-minute daily coaching by nurses might reduce uncertainty through communication and interaction, as mentioned by the King's Theory.[36] Meanwhile, family presence, reassurance, and hygiene support improved anxiety and concentration.[6] Finally, activity recovery, ERAS early mobilization was translated into concrete milestones. For instance, sitting out of bed twice daily or ambulating 3-5 times/day, which was co-set and reviewed with older adults as described in the Goal Attainment Theory, is a key point, combined with family assisting transfers/activities of daily living, guarding lines and drains, and cueing safe technique.[4]

In contrast, the hypothesis that older adults who received the intervention program would demonstrate greater safety than those receiving routine care was not supported. The study findings showed that no falls or pressure ulcers were observed in either group. This may be attributed to the fact that standard nursing protocols already include well-established fall prevention and pressure ulcer measures in both groups. For instance, in the experimental group, fall prevention strategies were incorporated into the intervention, as all participants were assessed for their readiness prior to commencing the recovery sessions. In addition, nurses also educated older adults and families on safe mobility and closely monitored them. Similarly, in the control group, clinical nurses always asked older adults if they were ready for mobility. This study's finding was consistent with the protocol for preventing falls in hospitalized patients, which suggests that multi-component interventions are most effective in improving fall risk.[37]

Pressure sores were not observed in both groups. This might be because both groups received pressure sore prevention strategies, including scheduled repositioning every two hours, use of pressure-relieving mattresses, and enhanced early ambulation as part of the hospital's routine care in line with existing clinical guidelines. This finding is consistent with a protocol for pressure sore prevention in hospitalized patients, such as repositioning every two hours, and pressure-reducing mattresses, which enhance patient safety.[38] Therefore, although the control group did not receive the Recovery

Promotion Program with Family Support, they still received standard routine care. Consequently, both groups were safe from falls and pressure sores.

Limitations

Some weaknesses exist in this study. Firstly, the generalization is limited because the participants were recruited from only one tertiary hospital in the lower northern part of Thailand. Secondly, only recovery in the secondary phase was measured; thus, further research with long-term follow-up till participants have fully recovered is needed. Thirdly, this study was conducted in the control group first, and then in the experimental group, which may threaten internal validity if the events between these two time points differ and affect the recovery outcomes. Therefore, in future research, randomized controlled trials with larger, multi-center samples may be useful to strengthen the evidence base and enhance generalizability. Additionally, multiple follow-up points are needed to evaluate the sustainability. Finally, exploring broader patient outcomes, such as quality of life or mental well-being, to capture the full impact of the program will be interesting.

Conclusion and Implications for Nursing Practice

This Recovery Promotion Program with Family Support can serve as a systematic approach for managing postoperative recovery in older adults. Nurses can apply it to promote recovery in other surgical patient populations, such as those with urological or gynecological conditions. However, this program should be carefully tailored for older adults with comorbidities by assessing their physical and cognitive capacities and ensuring that activities match their individual health conditions. Nurse educators can also adapt family-supported recovery teaching in nursing curricula, both in simulation classes and in clinical settings.

Author Contributions

Conceptualization, Method and design, Data analysis and interpretation, and Final approval of the submitted version: K.P., A.W., S.K.
Data collection: K.P.
Drafting, Revising, and Editing the manuscript: K.P., A.W.

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Appendix

Table A1. Description of the content of the Recovery Promotion Program with Family Support

Session	Schedule activities	Duration (Minutes)
One day before surgery	**Mutual perception** - Build rapport with older adults and family members - Share information - Teach pre-/postop self-care using teach-back **Mutual goal setting** - Agree on the shared aim: safe, timely recovery after abdominal surgery with clear daily targets **Co-selection and agreement** - Choose the methods - Practice together (return-demonstration) - Provide a recovery handbook	30
Day of surgery	**Psychological support from nurses and family members during OR transfer** - Provide calm reassurance and briefly explain next steps - Coach slow breathing	5
Postoperative day 1	**4) Implement the agreed methods** - Assess readiness: check vital signs, pain, nausea/dizziness, and orders - Pain management: cold compress; if pain ≥ 4 out of 10, give analgesic per plan; reassess - Manage nasogastric tube and Foley catheter - Respiratory exercises: deep breathing, coughing, incentive spirometry; supine with knees flexed or sitting/head of the bed elevated - Early mobilization: sit up; walk 10 meters × 3, 5-min apart * Family and nurse: monitor fall risk and encourage mobility.	40
Postoperative day 2	**4) Implement the agreed methods** - Assess readiness - Pain management - Manage nasogastric tube and Foley catheter - Respiratory exercises: deep breathing, coughing, incentive spirometry; supine with knees flexed or sitting/head of the bed elevated - Early mobilization: sit up in bed, then ambulate 50 meters from the bed, 3 rounds with 5-minute intervals between rounds * Family and nurse: monitor fall risk and encourage mobility.	40

Table A1. Description of the content of the Recovery Promotion Program with Family Support (Cont.)

Session	Schedule activities	Duration (Minutes)
Postoperative day 3	**4) Implement the agreed methods** - Assess readiness - Pain management - Nasogastric off: check distension/flatus; if adequate, advance diet per protocol - Foley out: monitor voiding and ensure safe toileting - Respiratory exercises: deep breathing, coughing, incentive spirometry; supine with knees flexed or sitting/head of the bed elevated - Early mobilization: sit up in bed, then ambulate 100 meters from the bed, 3 rounds with 5-minute intervals between rounds * Family and nurse: monitor fall risk and encourage mobility.	40
Postoperative day 4	**4) Implement the agreed methods** - Assess readiness - Pain management - Monitor diet and voiding - Respiratory exercises: deep breathing, coughing, incentive spirometry; supine with knees flexed or sitting/head of the bed elevated - Early mobilization: sit up in bed, then ambulate 200 meters from the bed, 3 rounds with 5-minute intervals between rounds * Family and nurse: monitor fall risk and encourage mobility.	40
Postoperative day 5	**4) Implement the agreed methods** - Assess recovery	30

Note. Activities start every day at 9.00 AM

ผลของโปรแกรมส่งเสริมการฟื้นฟูสภาพร่วมกับแรงสนับสนุนจากครอบครัวต่อการฟื้นตัวในผู้สูงอายุหลังผ่าตัดช่องท้อง

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บทคัดย่อ : ผู้สูงอายุที่ได้รับการผ่าตัดช่องท้องอาจพบปัญหาการฟื้นตัวหลังผ่าตัดที่ช้ากว่าปกติเนื่องจากการเปลี่ยนแปลงทางร่างกายและจิตใจ นอกจากนี้ กระบวนการในการมีส่วนร่วมของครอบครัวเพื่อส่งเสริมการฟื้นตัวของผู้สูงอายุที่เข้ารับการผ่าตัดช่องท้องในประเทศไทยยังไม่ชัดเจน การวิจัยกึ่งทดลองชนิดสองกลุ่มวัดผลหลังการทดลองครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาผลของโปรแกรมส่งเสริมการฟื้นฟูสภาพร่วมกับแรงสนับสนุนจากครอบครัวต่อการฟื้นตัวในผู้สูงอายุหลังผ่าตัดช่องท้อง กลุ่มตัวอย่างในการศึกษาครั้งนี้ ได้แก่ ผู้สูงอายุที่ได้รับการรักษาด้วยวิธีการผ่าตัดช่องท้อง แผนกศัลยกรรม โรงพยาบาลตติยภูมิแห่งหนึ่งในเขตภาคเหนือตอนล่าง ประเทศไทย จำนวน 66 คน กลุ่มควบคุม (n = 33) ได้รับการคัดเลือกแบบเจาะจงเพื่อดำเนินการวิจัยเป็นลำดับแรก จากนั้นจึงคัดเลือกกลุ่มทดลอง (n = 33) โดยใช้วิธีจับคู่รายบุคคลเพื่อให้มีความใกล้เคียงกับกลุ่มควบคุมในด้านเพศ อายุ และชนิดการผ่าตัด เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล ได้แก่ แบบเก็บข้อมูลส่วนบุคคล แบบประเมินการฟื้นตัวหลังผ่าตัด แบบประเมินความสามารถในการปฏิบัติกิจวัตรประจำวัน แบบประเมินความพร้อมก่อนปฏิบัติกิจกรรม แบบประเมินความปวด แบบประเมินความเสี่ยงต่อการพลัดตกหกล้ม และแบบประเมินความเสี่ยงต่อการเกิดแผลกดทับ ข้อมูลได้รับการประมวลผลด้วยสถิติเชิงพรรณนาและวิเคราะห์โดยใช้การทดสอบไคสแควร์และทีแบบอิสระ

ผลการวิจัยพบว่า พบว่าในวันที่ 5 หลังการผ่าตัด กลุ่มผู้สูงอายุที่ได้รับโปรแกรมส่งเสริมการฟื้นฟูสภาพร่วมกับแรงสนับสนุนจากครอบครัว มีการฟื้นตัวสูงกว่ากลุ่มผู้สูงอายุที่ได้รับการพยาบาลตามปกติอย่างมีนัยสำคัญทางสถิติ ในด้านความปลอดภัย พบว่าภายหลังการทดลองมีความปลอดภัยไม่แตกต่างกัน เมื่อพิจารณาการเปรียบเทียบอุบัติการณ์การพลัดตกหกล้มและแผลกดทับ กลุ่มตัวอย่างทั้งสองกลุ่มมีความปลอดภัยร้อยละ 100 โดยไม่พบรายงานเหตุการณ์ไม่พึงประสงค์ เช่น อาการปวดรุนแรง คลื่นไส้หรืออาเจียนต่อเนื่อง หรือหายใจลำบาก ผลการวิจัยครั้งนี้แสดงให้เห็นว่าโปรแกรมส่งเสริมการฟื้นฟูสภาพร่วมกับแรงสนับสนุนจากครอบครัวสามารถเพิ่มการฟื้นฟูสภาพผู้สูงอายุหลังผ่าตัดช่องท้อง พยาบาลสามารถใช้โปรแกรมนี้เพื่อส่งเสริมการฟื้นตัวของผู้สูงอายุกลุ่มนี้ได้ อย่างไรก็ตาม ก่อนนำไปใช้ในวงกว้างจำเป็นต้องมีการทดสอบเพิ่มเติมในการศึกษาหลายศูนย์

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