Effectiveness of an Educational Program on Nurses' Knowledge about Postoperative Early Mobilization

فاعلية برنامج تعليمي في معارف الممرضين عن الحركة المبكرة بعد اجراء العملية الجراحية

Ameer Khalid Schandal, MSN [1]
Associate Prof. Serwan Jafar Bakey, PhD [2]

*** Adult Nursing Department, College of Nursing, University of Baghdad, Iraq. Email: ameer.k95@outlook.com**

**** Associate Professor, Adult Nursing Department, College of Nursing, University of Baghdad, Iraq. Email: sjbakey@my.okcu.edu**

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الملخص

الخلفية: يرتبط الاستلقاء المطول في السرير، السكون، وعدم الحركة بالضرر الجسماني واختلال وضيفي عصبي عضلي، يعتبر التحريك المبكر نهجاً فعالا لمعالجة المشاكل التي تم ذكرها، ومن الجدير بالذكر ان التحريك المبكر يتضمن القيام بتمارين لجسم المريض خلال ٢٤ ساعة من اجراء العملية الجراحية. جميع أجهزة الجسم تتحسن بصورة ملحوظة عند اجراء التحريك للمريض. التحريك المبكر يسهم في النتائج القريبة والبعيدة الأمد وكذلك تقليل مدة الرقود في المستشفى.

الأهداف: تهدف الدراسة الى تقويم فاعلية البرنامج التعليمي في معارف الممرضين عن الحركة المبكرة بعد اجراء العملية الجراحية ومعرفة الارتباط بين المعارف والبيانات الاجتماعية الديموغرافية للمشاركين.

المنهجية: تم استخدام تصميم دراسي شبه تجريبي في هذه الدراسة بإجراء اختبارين لمجموعتي البحث قبل وبعد إعطاء محاضرات البرنامج التعليمي لمجموعة الدراسة. تم اجراء الدراسة في مستشفى الحسين العسكري وكذلك مستشفى بغداد التعليمي. تم اختيار (66) عينة بطريقة غير عشوائية من المجموع الكلي للممرضين. تم استخدام استبيان يملئ ذاتيا من قبل العينات لتقييم معارفهم. تم المباشرة بالدراسة من تاريخ ٢٤ من كانون الأول ٢٠٢٣ الى يوم 18 من كانون الاول ٢٠٢٤.

النتائج: اظهرت النتائج بالاعتماد على الوسط الحسابي ان الممرضين كانوا يفتقرون الى المعارف الكافية قبل إلقاء البرنامج التعلمي. بينما أظهرت النتائج تحسنا ملحوظا في مستوى معارف مجموعة الدراسة بعد القاء البرنامج التعليمي لتلك المجموعة.

الاستنتاجات: بينت النتائج تحسنا ملحوظا في معارف مجموعة الدراسة، مما يؤكد إمكانية البرنامج التعليمي على تحسين المعارف للممرضين. وبالإضافة الى عاملان ديموغرافيان فقط أسهما بالتأثير على المعارف.

التوصيات: يوصى للمستشفيات بالإدامة على البرامج التعليمية لتشجيع الممرضين على المشاركة بالورشات التدريبية واعتماد هذه الدورات بالترقية الوظيفية للممرضين. بالإضافة الى تعليم وتثقيف الممرضين الجدد قبل إشغالهم بالردهات الجراحية.

Abstract

Background: Extended bed rest, sedation, and immobility are linked to physical damage and neuromuscular dysfunction. Early mobilization is an effective approach for the aforementioned

problems, notably considering that it involves exercising the patient's body within 24 hours following surgery. Body systems are all significantly improved by performing mobilization. Early mobilization can influence both short and long-term outcomes, and shorter hospital stays.

Objectives: Evaluating the effectiveness of an educational program on nurses' knowledge regarding postoperative early mobilization.

Methodology: A quasi-experimental design was utilized in the present study with the application of a pre-posttest approach for the study and control group after implementation of educational program. The study was conducted at Al-Hussein Military Hospital and Baghdad teaching hospital. purposive sampling of (66) nurses from the total population. A self-reported questionnaire was utilized for knowledge evaluation. The study was initiated from December 24th, 2023 to December 18th, 2024.

Results: Based on the total arithmetic mean score of nurses' knowledge, the findings demonstrated that participants lacked sufficient knowledge. Results obtained following post-intervention showed that the study group's knowledge had significantly improved.

Conclusions: Results demonstrated significant improvement in study group' knowledge, validating the program's capacity to improve knowledge. However, two demographic characteristics had only shown effect on nurses' knowledge.

Recommendations: Hospitals ought to establish ongoing educational programs that encourage nurses to attend regular training sessions while rendering a requirement for carrier advancement. Furthermore, educating fresh nurses prior to allocation in surgical wards.

Keywords: **Nurses' Knowledge, Postoperative Care, Early Mobilization**

Introduction

During 2021, over 1.43 million patients underwent surgery in Iraqi governmental hospitals that includes minor, medium, major, max major, and special surgeries across all Iraqi governorates (1). Despite the fact which have been extensively researched to indicate

bed rest has unfavorable psychological and physiological outcomes on patients, hospital bed rest is still prescribed and often used (2). lack of physical activity during hospitalization due to different medical problems can lead to numerous detrimental effects. The disease severity is increased by neuromuscular dysfunction, metabolic problems, and abnormalities in the functioning of additional organs (3,4).

A medical condition that is known as immobility takes place when an individual is either unable to mobilize at all or has limitations for the purposes of treatment. Immobility adverse effects are time-consuming and expensive for the healthcare systems, in addition to having a detrimental effect on the condition of the patients and their quality of life (5,6,7,8). Early mobilization (EM) is an essential element of enhanced recovery after surgery (ERAS) pathways which reduce the negative physiological outcomes of postoperative stress and immobilization. Postoperative care including early mobilization diminishes the potential of complications following surgical procedures, expedites the restoration of functional walking ability, provides an advantageous effect on various patient-reported outcomes, and decreases the time frame of hospitalization, which contributes to a reduction in healthcare spending (9,10)

Among the most prevalent post-operative consequences that can result from extended immobilization are conditions that include higher levels of pain, atelectasis, pulmonary embolism, pneumonia, deep vein thrombosis, pressure ulcer, and postoperative ileus. musculoskeletal functioning, motility of the gastrointestinal tract, blood circulation, and oxygenation are all significantly improved by mobility. Furthermore, a shorter period of hospitalization and diminished rates of readmission are linked to early mobilization, these negative outcomes have the potential to affect the patient's period of hospitalization as well as their mortality and morbidity, since these factors will significantly influence how their medical condition will improve over time (6, 11, 12, 13).

One of the most crucial aspects of protocols aimed at improving recovery following surgical intervention is postoperative early mobilization. Although the suggestions are primarily based on the

acknowledged adverse consequences of bed rest compared to overwhelming evidence that postoperative movement enhances the results, standard enhanced recovery after surgery programs suggest exercising several hours each day away from bed beginning the day following surgery and for a total of six hours each day until discharge in the days that follow, in accordance with the (ERAS) protocol. (14, 15).

A typical description for mobility is any regulated joint movement, flexion or extension of muscles, or physical activity. Bedside cycle, activities on the bed, lifting device therapy and rotation tables, muscular strengthening and resistance workouts, electromagnetic stimulation of the musculoskeletal system, walking, settling on the perimeter of the bed, transitioning from the bed to a sitting position on a chair, walking on the spot, and alternating between active and passive range of motion (ROM) are some of the measures that could potentially be included in an early mobilization program's executed in cooperation with multidisciplinary team through therapeutic communication, which is a fundamental aspect of patient experiences including the expression of feelings, concepts, and ideas through verbal and non-verbal interactions (16, 17, 18, 19, 20).

Nurses play an essential role in patients care and outcomes (21). Enhancing nurses' understanding of early postoperative mobilization to minimize complications and shorten hospital stays, which lowers healthcare costs, and to determine and address perceived challenges and barriers that surgical nurses encounter when attempting to mobilize hospitalized patients is the intended outcome of the knowledge improvement educational program (6,22, 23).

Methods

Design of the Study

The study employed a quasi-experimental, nonequivalent control group design with the application of a pre-test and post-test approach for the study group and control group after implementation of educational program. The study was initiated from December 24th, 2023 to December 18th, 2024.

Setting of the Study

The study was conducted at the Ministry of Defense, Al-Hussein military hospital, and Baghdad Medical City, Baghdad teaching hospital. The hospitals' surgical wards where the data were collected provide care for patients who had general, Cardiothoracic, Orthopedic, Urological, Otorhinolaryngological, and neuro-spine surgeries.

Sample and Sampling of the Study

Purposive sampling, which is a type of non-probability sampling, was used for the assignment of (79) out of (94) nurses for the current study. Only (66) nurses accepted to be involved and participate in the study; the participants were split into two groups: (33) nurses were assigned to the study group, and another (33) nurses were assigned to the control group. The study group was exposed to the pretest, implementation of the educational program, and posttest, while the control group, in contrast to the study group, did not participate in the educational program and was only exposed to the pretest and posttest.

Inclusion and Exclusion Criteria

Criteria for inclusion in the current study were nurses employed in the surgical wards with a minimum of one year of experience, various educational backgrounds, different age groups, male and female nurses.

Criteria for exclusion in the current study were nurses that declined or did not finish the posttest following the educational program, had less than one year of experience, and missed one or more of the educational program sessions (study group).

Study Instruments and Data Collection Procedure

This study implemented a developed self-administrated questionnaire which was formed based on Carides' study (2021) "Nurse's Knowledge of Early Ambulation of the Post Operative Patient and Complication Prevention: A Quality Improvement Project" (6). The developed questionnaire format was utilized as a means of data collection for the pre-test and post-test to assess nurses' knowledge regarding postoperative patient early mobilization and to evaluate the effectiveness of the educational program on nurses' knowledge regarding postoperative patient early mobilization. The instrument consisted of three parts. **Part I:** This part is concerned with the collection of socio-demographic data and experience in the surgical field, which includes (8) items related to socio-demographic data and experience. questions provided response options in the form of fill-in fields and checkboxes **Part II:** This part of the study questionnaire is concerned with assessing nurses' knowledge and evaluating the effectiveness of the educational program on nurses' knowledge regarding postoperative early mobilization of patients. This section is comprised of 10 items that were answered as multiple-choice questions. Each question had 4 possible answers, only one answer was correct, and the three other answers were incorrect. **Part III:** This segment of the study questionnaire is composed of 10 nursing knowledge and opinion-based statements regarding postoperative early mobilization that employ a Likert scale for respondents to indicate their responses. To facilitate analysis of the data, the answers were scored on a scale from 1 to 5. 1- strongly disagree, 2- disagree, 3- neutral, 4- agree, and 5- strongly agree were the responses that were indicated by these numbers.

The researcher distributed the questionnaire with a consent form to the selected respondents and were given (15–20) minutes to complete the questionnaire after the briefing. Each (MCQ) answer was given (1) score for correct and (0) for incorrect answer. The answers for the Likert scale questions were scored on a scale from (1-5). 1- strongly disagree, 2- disagree, 3- neutral, 4- agree, and 5- strongly agree were the responses that were indicated by these

numbers. The respondents submitted the completed questionnaire to the researcher after completion.

Validity of the Study Instrument

The validity of the questionnaire had been determined by a panel of 14 experts who received consideration to review the questionnaire across various fields of expertise, including nursing and medicine to submit the expert's valuable notes regarding the study instrument. A copy of the study instruments has been distributed to each expert who was subsequently requested to examine and assess the instruments for content clarity, adequacy, and validity for the study subject. As for the years of experience of the experts, they ranged from 9 to 24 years in the field of specialization. The panel of experts comprised of 9 faculty members from the College of Nursing, university of baghdad 5 experts form adult nursing department, 3 experts from fundamentals of nursing department, and 1 from pediatrics nursing department), 4 specialists from Al-Hussein military hospital 1 general surgeon, 1 anesthesiologist and intensive care specialist, 1 kidney and urinary tract surgeon, 1 respiratory physician, and 1 expert who has a PhD in nursing from the directorate of military medical affairs, ministry of defense.

Reliability of the Study Instrument

The reliability of the questionnaire was assessed in order to confirm the stability and consistency of the study instrument through the use of Cronbach alpha coefficient for the internal consistency and test-retest reliability approaches. The internal consistency reliability analysis indicated a good result for the knowledge scale (MCQ) questions (0.822) and the nursing knowledge and opinion-based Likert scale statements (0.831) and this suggests that the questionnaire demonstrated a satisfactory level of internal consistency and equivalent measurability. The test-retest reliability analysis demonstrated that the Pearson correlation value for the knowledge scale (MCQ) questions is (0.810) indicating a strong association. Similarly, the nursing knowledge opinion-based Likert scale statements showed a correlation coefficient of (0.852) which is also considered strong, which indicates that the instrument

exhibited an appropriate degree of stability and reliability across a period of time.

Administrative and Ethical Considerations

Ethical approval has been obtained from the research ethics committee of faculty of nursing, university of Baghdad. Administrative acquisitions were taken from college of nursing, university of Baghdad regarding the study protocol. The thorough study protocol description was presented by the researcher, which included the following sections: research title, objectives, and the study's instrument, to the ministry of planning, central statistical organization. Medical city directorate, ministry of health, and directorate of scientific qualification and combat development, ministry of defense was also officially contacted to obtain the official confirmation to carry out the study in the surgical wards. Subsequently, the consent of each directorate was presented to the corresponding hospital to gain approval and cooperation which facilitated access to the facilities to accomplish the data collection. Respondents in this study were on a voluntary basis, and agreed to participate were asked to sign the consent form after explanations regarding the procedure involved in this study, anonymity and privacy have been assured.

Data Analysis

The data were analyzed using Statistical Package for Social Science (SPSS) version 0.26 Descriptive and inferential statistical procedures were used in this study (e.g., mean, standard deviation, frequency, and percentage). ANOVA it was used to determine the association between sociodemographic characteristics and the nurses' knowledge Statistically significant when the p-value is < (0.05).

Result

Table (1): The Distribution of the Study Samples according to their Demographic characteristics.

Variable	Groups		Study		Control	
			Freq.	%	Freq.	%
Age	Baghdad Teaching Hospital	Mean ± SD	28.13	6.63	29	2.98

	AL Husain Military Hospital	**Mean ± SD**	**25.27**	**2.08**	**24.9**	**1.18**
Sex	**Baghdad Teaching Hospital**	**Male**	**5**	**33.3**	**2**	**11.8**
		Female	**10**	**66.7**	**15**	**88.2**
	AL Husain Military Hospital	**Male**	**14**	**77.8**	**15**	**93.8**
		Female	**4**	**22.2**	**1**	**6.3**
Residence	**Baghdad Teaching Hospital**	**Urban**	**15**	**100**	**17**	**100**
		Rural	**0**	**0**	**0**	**0**
	AL Husain Military Hospital	**Urban**	**17**	**94.4**	**14**	**87.5**
		Rural	**1**	**5.6**	**2**	**12.5**
Level of Education	**Baghdad Teaching Hospital**	**Preparatory school in Nursing**	**2**	**13.3**	**0**	**0**
		Diploma in Nursing	**7**	**46.7**	**9**	**52.9**
		Bachelors in Nursing	**6**	**40**	**8**	**47.1**
	AL Husain Military Hospital	**Bachelors in Nursing**	**18**	**100**	**16**	**100**
Years of Service in Nursing Field	**Baghdad Teaching Hospital**	**Mean ± SD**	**5.06**	**2.2**	**7.41**	**3.3**
	AL Husain Military Hospital	**Mean ± SD**	**3.1**	**2.1**	**2.06**	**.44**
Years of Experience in Surgical Wards	**Baghdad Teaching Hospital**	**Mean ± SD**	**2.66**	**1.23**	**3.41**	**1.66**
	AL Husain Military Hospital	**Mean ± SD**	**2**	**.59**	**1.87**	**.34**
Participation in Training sessions regarding early mobilization of patients after surgery	**Baghdad Teaching Hospital**	**Yes**	**9**	**60**	**9**	**52.9**
		No	**6**	**40**	**8**	**47.1**
	AL Husain Military Hospital	**Yes**	**6**	**33.3**	**7**	**43.8**
		No	**12**	**66.7**	**9**	**56.3**
Self-	**Baghdad Teaching**	**Yes**	**13**	**86.7**	**15**	**88.2**

learning about fundamentals of nursing at surgical ward	Hospital	No	2	13.3	2	11.8
	AL Husain Military Hospital	Yes	17	94.4	12	75
		No	1	5.6	4	25

Table (2): Distribution of Nurses' Knowledge about Early Mobilization (Study group/ Baghdad Teaching Hospital)

List	First Domain (Nurses Knowledge about Postoperative Early Mobilization)	Study group			
		Pretest		Posttest	
		Mean	Ass.	Mean	Ass.
1	It is not an early patient mobilization procedure.	.26	P	1	G
2	Which of the following complications results from patients not being mobilized after surgery?	.46	F	1	G
3	Obstacles to mobilize patients after surgery include all options except:	.33	P	1	G
4	When is the right time to do early mobilization after surgery?	.4	F	1	G
5	Which of these effects on pain control have been reported in studies of early mobilization?	.4	F	.86	G
6	Which of the following options represents the role of early movement in the case of ileus?	.33	P	1	G
7	Increases the risk of orthostatic hypotension during early mobilization?	.53	F	1	G
8	What is the main purpose of early mobilization after abdominal surgery?	.33	P	1	G
9	Which of the following statements is true regarding early mobilization of patients?	.66	F	1	G
10	What role does early mobilization play in reducing the incidence of pulmonary atelectasis?	.46	F	1	G
Second Domain (Nursing Knowledge and Opinion-Based Statements regarding Postoperative Early Mobilization)					
1	Mobilizing patients is an important part of post-operative care.	4.1	A	5	SA
2	It is the nurse's duty to ensure that adequate mobilization of patients is carried out.	4	A	4.8	SA
3	There is enough time during the shift to ensure that adequate patient mobilization is carried out.	3.8	A	4.2	A
4	Patients should be educated about the benefits of mobilization after surgery.	4	A	4.7	SA

5	I am confident that I know how to mobilize my patient safely after surgery.	**4.2**	**A**	**4.46**	**SA**
6	The benefits of early mobilization outweigh its undesirable effects on patients after surgery.	**3.7**	**A**	**4.1**	**A**
7	Early mobilization should be individualized and different for each patient depending on the type of surgery and the patient's status.	**3.9**	**A**	**4.8**	**SA**
8	Communication and cooperation between medical staff are essential elements to achieve the optimal benefit from early mobilization.	**4**	**A**	**4.8**	**SA**
9	There are not enough appropriate tools available to perform early mobilization of patients after surgery.	**3.7**	**A**	**3.9**	**A**
10	I document patients' physical activities and events after surgery.	**4**	**A**	**4.9**	**SA**

Cut point of table (3.3.) First Domain = 0.33, Ass. = Assessment level, P = Poor knowledge (0 – 0.33), F = Fair knowledge (0.34 – 0.66), G = good knowledge (0.67 – 1). For Second domain = .8 (5 points Likert scale), 1 – 1.8 =strongly disagree, 1.81 – 2.6 = disagree, 2.7 – 3.4 = neutral, 3.5 – 4.2 = agree, 4.3 – 5 = strongly agree.

Table (3): Distribution of Nurses' Knowledge about Early Mobilization (Study group/ Al Hussain Military Hospital)

List	First Domain (Nurses Knowledge about Postoperative Early Mobilization)	Study group			
		Pretest		Posttest	
		Mean	Ass.	Mean	Ass.
1	It is not an early patient mobilization procedure.	**.44**	**F**	**.83**	**G**
2	Which of the following complications results from patients not being mobilized after surgery?	**.38**	**F**	**.94**	**G**
3	Obstacles to mobilize patients after surgery include all options except:	**.16**	**P**	**1**	**G**
4	When is the right time to do early mobilization after surgery?	**.44**	**F**	**.94**	**G**
5	Which of these effects on pain control have been reported in studies of early mobilization?	**.27**	**P**	**1**	**G**
6	Which of the following options represents the role of early movement in the case of ileus?	**.27**	**P**	**.94**	**G**
7	Increases the risk of orthostatic hypotension during early mobilization?	**.38**	**F**	**.94**	**G**
8	What is the main purpose of early mobilization after abdominal surgery?	**.11**	**P**	**.88**	**G**
9	Which of the following statements is true regarding early mobilization of patients?	**.61**	**F**	**.94**	**G**

10	What role does early mobilization play in reducing the incidence of pulmonary atelectasis?	**.16**	**P**	**.94**	**G**
Second Domain (Nursing Knowledge and Opinion-Based Statements regarding Postoperative Early Mobilization)					
1	Mobilizing patients is an important part of post-operative care.	**4.4**	**SA**	**4.7**	**SA**
2	It is the nurse's duty to ensure that adequate mobilization of patients is carried out.	**3.9**	**A**	**4.6**	**SA**
3	There is enough time during the shift to ensure that adequate patient mobilization is carried out.	**3.6**	**A**	**4.3**	**SA**
4	Patients should be educated about the benefits of mobilization after surgery.	**4.5**	**SA**	**4.7**	**SA**
5	I am confident that I know how to mobilize my patient safely after surgery.	**3.3**	**N**	**4.2**	**A**
6	The benefits of early mobilization outweigh its undesirable effects on patients after surgery.	**3.6**	**A**	**4.7**	**SA**
7	Early mobilization should be individualized and different for each patient depending on the type of surgery and the patient's status.	**4.2**	**A**	**4.9**	**SA**
8	Communication and cooperation between medical staff are essential elements to achieve the optimal benefit from early mobilization.	**4.1**	**A**	**4.7**	**SA**
9	There are not enough appropriate tools available to perform early mobilization of patients after surgery.	**3.05**	**N**	**4.4**	**SA**
10	I document patients' physical activities and events after surgery.	**3.8**	**A**	**4.6**	**SA**

Cut point of table (3.3.) First Domain = 0.33, Ass. = Assessment level, P = Poor knowledge (0 – 0.33), F = Fair knowledge (0.34 – 0.66), G = good knowledge (0.67 – 1). For Second domain = .8 (5 points Likert scale), 1 – 1.8 =strongly disagree, 1.81 – 2.6 = disagree, 2.7 – 3.4 = neutral, 3.5 – 4.2 = agree, 4.3 – 5 = strongly agree.

Table (4): Distribution of Nurses' Knowledge about Early Mobilization (control group/ Baghdad Teaching Hospital)

List	First Domain (Nurses Knowledge about Postoperative Early Mobilization)	Control group			
		Pretest		Posttest	
		Mean	Ass.	Mean	Ass.
1	It is not an early patient mobilization procedure.	**.29**	**P**	**.29**	**P**
2	Which of the following complications results from patients not being mobilized after surgery?	**.52**	**F**	**.64**	**F**
3	Obstacles to mobilize patients after surgery include all options except:	**.35**	**F**	**.35**	**F**
4	When is the right time to do early mobilization after surgery?	**.76**	**G**	**.52**	**F**
5	Which of these effects on pain control have been reported in studies of early mobilization?	**.35**	**F**	**.58**	**F**

6	Which of the following options represents the role of early movement in the case of ileus?	**.29**	**P**	**.58**	**F**
7	Increases the risk of orthostatic hypotension during early mobilization?	**.52**	**F**	**.58**	**F**
8	What is the main purpose of early mobilization after abdominal surgery?	**.58**	**F**	**.41**	**F**
9	Which of the following statements is true regarding early mobilization of patients?	**.7**	**G**	**.58**	**F**
10	What role does early mobilization play in reducing the incidence of pulmonary atelectasis?	**.47**	**F**	**.41**	**F**
Second Domain (Nursing Knowledge and Opinion-Based Statements regarding Postoperative Early Mobilization)					
1	Mobilizing patients is an important part of post-operative care.	**4.4**	**SA**	**4.2**	**A**
2	It is the nurse's duty to ensure that adequate mobilization of patients is carried out.	**4.1**	**A**	**3.8**	**A**
3	There is enough time during the shift to ensure that adequate patient mobilization is carried out.	**3.7**	**A**	**3.7**	**A**
4	Patients should be educated about the benefits of mobilization after surgery.	**3.7**	**A**	**3.9**	**A**
5	I am confident that I know how to mobilize my patient safely after surgery.	**3.7**	**A**	**3.5**	**A**
6	The benefits of early mobilization outweigh its undesirable effects on patients after surgery.	**3.4**	**N**	**3.7**	**A**
7	Early mobilization should be individualized and different for each patient depending on the type of surgery and the patient's status.	**3.5**	**A**	**3.8**	**A**
8	Communication and cooperation between medical staff are essential elements to achieve the optimal benefit from early mobilization.	**3.5**	**A**	**3.8**	**A**
9	There are not enough appropriate tools available to perform early mobilization of patients after surgery.	**3.6**	**A**	**3.7**	**A**
10	I document patients' physical activities and events after surgery.	**3.5**	**A**	**3.5**	**A**

Cut point of table (3.4.) First Domain = 0.33, Ass. = Assessment level, P = Poor knowledge (0 – 0.33), F = Fair knowledge (0.34 – 0.66), G = good knowledge (0.67 – 1). For Second domain = .8 (5 points Likert scale), 1 – 1.8 =strongly disagree, 1.81 – 2.6 = disagree, 2.7 – 3.4 = neutral, 3.5 – 4.2 = agree, 4.3 – 5 = strongly agree.

Table (5): Distribution of Nurses' Knowledge about Early Mobilization (control group/ Al Hussain Military Hospital)

List	First Domain (Nurses Knowledge about Postoperative Early Mobilization)	Control group			
		Pretest		Posttest	
		Mean	Ass.	Mean	Ass.
1	It is not an early patient mobilization procedure.	.18	P	.31	P
2	Which of the following complications results from patients not being mobilized after surgery?	.37	F	.56	F
3	Obstacles to mobilize patients after surgery include all options except:	.25	P	.25	P
4	When is the right time to do early mobilization after surgery?	.5	F	.81	G
5	Which of these effects on pain control have been reported in studies of early mobilization?	.31	P	.37	F
6	Which of the following options represents the role of early movement in the case of ileus?	.18	P	.25	P
7	Increases the risk of orthostatic hypotension during early mobilization?	.5	F	.5	F
8	What is the main purpose of early mobilization after abdominal surgery?	.12	P	.37	F
9	Which of the following statements is true regarding early mobilization of patients?	.5	F	.56	F
10	What role does early mobilization play in reducing the incidence of pulmonary atelectasis?	.43	F	.25	P
Second Domain (Nursing Knowledge and Opinion-Based Statements regarding Postoperative Early Mobilization)					
1	Mobilizing patients is an important part of post-operative care.	4.3	SA	4.2	A
2	It is the nurse's duty to ensure that adequate mobilization of patients is carried out.	3.8	A	4.2	A
3	There is enough time during the shift to ensure that adequate patient mobilization is carried out.	3.5	A	3.7	A
4	Patients should be educated about the benefits of mobilization after surgery.	4.6	SA	4	A
5	I am confident that I know how to mobilize my patient safely after surgery.	3.5	A	2.8	N
6	The benefits of early mobilization outweigh its undesirable effects on patients after surgery.	3.7	A	3.1	N
7	Early mobilization should be individualized and different for each patient depending on the type of surgery and the patient's status.	4.3	SA	4.1	A
8	Communication and cooperation between medical staff are essential elements to achieve the optimal benefit from early mobilization.	4.4	SA	4.4	SA
9	There are not enough appropriate tools available to perform early mobilization of patients after surgery.	3.8	A	3.3	N

10	I document patients' physical activities and events after surgery.	**4**	**A**	**3.5**	**A**

Cut point of table (3.5.) First Domain = 0.33, Ass. = Assessment level, P = Poor knowledge (0 – 0.33), F = Fair knowledge (0.34 – 0.66), G = good knowledge (0.67 – 1). For Second domain = .8 (5 points Likert scale), 1 – 1.8 =strongly disagree, 1.81 – 2.6 = disagree, 2.7 – 3.4 = neutral, 3.5 – 4.2 = agree, 4.3 – 5 = strongly agree.

Table (6): Comparative Significance of pretest and posttest knowledge scores for the study sample (Study and control groups)

Groups	M	SD	Df	t	P.value	Sig.
First Domain knowledge pretest and posttest of the study groups	**.36 .96**	**.18 .07**	**32**	**16.4**	**.000**	**H.S**
Second domain knowledge pretest and posttest study groups	**3.9 4.6**	**.5 .24**	**32**	**7.8**	**.000**	**H.S**
First domain knowledge pretest and posttest control groups	**.41 .43**	**.15 .21**	**32**	**1.16**	**.25**	**N.S**
Second domain knowledge pretest and posttest control groups	**3.8 3.7**	**.47 .39**	**32**	**.79**	**.43**	**N.S**
First domain knowledge pretest study and control groups	**.36 .41**	**.18 .15**	**32**	**1.04**	**.3**	**N.S**
First domain knowledge posttest study and control groups	**.96 .46**	**.07 .21**	**32**	**14.1**	**.000**	**H.S**
Second domain knowledge pretest study and control groups	**3.9 3.8**	**.51 .47**	**32**	**.23**	**.8**	**N.S**
Second domain knowledge posttest study and control groups	**4.6 3.7**	**.24 .39**	**32**	**10.9**	**.000**	**H.S**

N= number, M = mean of score, SD= standard deviation, NS =non-significant at P>0.05, S= significant at P<0.05

Table (6) presented highly significant differences between pretest and posttest knowledge of the study group about all domains at P= .000 at both hospitals. And other significant differences were presented between posttest levels of all domains of the study group and control group at P = .000.

Table (7): Correlation between demographic characteristics of the study group with their knowledge at pretest and posttest levels.

Spearman rho		Knowledge of the first domain at pretest	Knowledge of the first domain at posttest	Knowledge of the second domain at pretest	Knowledge of the second domain at posttest
Age	Correlation Coefficient Sig. (2-tailed) N	-.095 .599 33	-.246 .167 33	.119 .509 33	.200 .265 33
Level of Education	Correlation Coefficient	.317	.178	-.023	-.194
	Sig. (2-tailed)	.072	.321	.898	.278
	N	33	33	33	33
Years of Experience in Nursing	Correlation Coefficient	-.272	-.398*	.161	.187
	Sig. (2-tailed)	.126	.022	.369	.296
	N	33	33	33	33
Years of Experience in Surgical wards	Correlation Coefficient	-.193	-.472**	.073	.116
	Sig. (2-tailed)	.282	.005	.688	.251
	N	33	33	33	33

Point Biserial		Knowledge of the first domain at pretest	Knowledge of the first domain at posttest	Knowledge of the second domain at pretest	Knowledge of the second domain at posttest
Sex	Pearson Correlation Sig. (2-tailed) N	-.323 .066 33	-.124 .493 33	-.184 .306 33	-.065 .718 33
Participation in Training Sessions	Pearson Correlation	-.022	.023	.197	.031
	Sig. (2-tailed)	.905	.897	.271	.864
	N	33	33	33	33
Self-learning	Pearson Correlation	-.119	.026	.241	.108
	Sig. (2-tailed)	.509	.886	.176	.549
	N	33	33	33	33
Residence	Pearson Correlation	.029	.095	.065	-.013
	Sig. (2-tailed)	.873	.600	.720	.941
	N	33	33	33	33

Results in table (7) reflected the correlations between demographic variables with their knowledge about mobility, in which there was significant correlation between years of experience in nursing and years of experience in surgical wards demographic variables with their levels of knowledge.

Discussion

The results of table (1) showed that the mean age of the study group at Baghdad teaching hospital was (28.13) years old, (25.27) years old for study group at Al Hussain military hospital, (29.05) years old for the control group at Baghdad teaching hospital, and (24.9) years old for control group at Al Hussain military hospital.

The study found that the highest percentage of the study group at Baghdad teaching hospital (66.7) percent were females within the study group and (88.2) percent were also females within the control group, while (77.8) percent were males within study group and (93.8) percent were also males within the control group at Al Hussain military hospital.

All the study samples within Baghdad teaching hospital were lived in urban areas, while the majority of nurses within Al Hussain military Hospital, (31) out of (34), nurses were lived in urban areas too.

The current study revealed that all the study participants at Al Hussain military hospital had bachelor's degree in nursing, while majority of them at Baghdad teaching hospital have diploma degree in nursing (46.7) percent for the study group, and (52.9) percent for the control group. bachelor's in Nursing is (40) percent for the study group, and (47.1) percent for the control group. Preparatory school in Nursing is (13.3) percent for the study group, while there were no participants who had a such degree in the control group.

The average years of experience among the nurses in the study group at Baghdad teaching hospital was (5.06) years, (3.1) years for study group at Al Hussain military hospital, (7.41) years for the control group at Baghdad teaching hospital, and (2.06) years for the control group at Al Hussain military hospital.

The average years of experience in surgical wards among the nurses in the study group at Baghdad teaching hospital was (2.66) years, (2)

years for study group at Al Hussain military hospital, (3.41) years for the control group at Baghdad teaching hospital, and (1.87) years for the control group at Al Hussain military hospital.

The present study revealed that in terms of training courses, the study group at Baghdad teaching hospital were (9) participants who participated in training courses and (6) did not participated, for Al Hussain military hospital participants who participated in training courses were (6), while (12) did not participate at all. The control group at Baghdad teaching hospital was (9) participants who participated in training courses and (8) did not participated, for Al Hussain military hospital participants who participated in training courses was (7), while (9) participants did not participate int training courses at all.

Regarding Self-learning about fundamentals of nursing at surgical field, the results showed that study group at Baghdad teaching hospital was (13) participants taking responsibility self- learning and (2) did not, for Al Hussain military hospital participants taking responsibility self- learning were (17), while (1) did not. The control group at Baghdad teaching hospital was (15) participants taking responsibility self- learning and (2) do not, for Al Hussain military hospital participants taking responsibility self- learning were (12), and (4) participants do not.

The tables (2) and (3) showed mean knowledge for the study groups of Baghdad teaching hospital and Al Hussein military hospital about postoperative early mobilization pretest and posttest. According to the results of the mean scores, participants' knowledge of both settings improved substantially from fair and poor at the pretest to good at the posttest for the first domain of the questionnaire, and from good and very good at the pretest to very good and excellent for the second domain. The findings indicated that nurses' knowledge at the pretest was insufficient in the study group prior to the program's implementation, and most nurses were lacking knowledge about postoperative early mobilization. Less than five years of experience in surgical wards is regarded as an insignificant amount of time required to acquire a general understanding about postoperative early mobilization and ineffective training that led the nurses to have

insufficient knowledge, in addition of insufficient Iraqi national studies and guidelines for postoperative mobilization. Based on the study's outcomes, nurses in the study groups had a greater understanding of postoperative early mobilization of patients. This suggests that the educational program has proven the effectiveness according to the findings obtained from evaluating the study groups in both settings after the implementation of the educational program.

The Tables (4) and (5) revealed the mean knowledge for the control groups of Baghdad teaching hospital and Al Hussein military hospital about postoperative early mobilization at pretest and posttest. The results of the mean scores indicates that participants' knowledge of both settings slightly shifted forward and backward for some statements of the first and second domains of both settings.

The table (6) demonstrated that the study groups' knowledge of postoperative early mobilization in both domains of the questionnaire was improved significantly between the pretest and posttest at (P = .000) showing high significant after the implementation of the educational program. Additionally, posttest results for both domains in the study group and control group showed highly significant differences at (P = .000).

The table (7) reflects the associations between participants pretest and posttest knowledge of postoperative early mobilization and demographic characteristics. The results revealed that years of experience in nursing and years of experience in the surgical wards are the only demographic characteristics that are associated with nurses' knowledge regarding postoperative early mobilization.

Conclusions

1. The study demonstrated that, at pretest, all of the nurses in the study and control group participants lacked information regarding postoperative early mobilization.
2. There were significant changes in the study groups' pretest and posttest results. This indicates that nurses' understanding of postoperative early mobilization has greatly increased as a result of the educational program.

3. In both settings, there were no established procedural guidelines or recommendations for the early mobilization of patients following surgery.
4. The study group participant's knowledge was improved and achieved statistical significance after receiving the educational program on early mobilization. This demonstrates how educational interventions can help participants' knowledge progression.
5. The postoperative early mobilization education program had been determined to have a very effective approach.

Recommendations

1. Postoperative early mobilization educational programs should be commenced periodically to enhance and reinforce nurses' knowledge in all Iraqi hospitals and healthcare educational collages and institutes of the ministry of higher education and scientific research.
2. The study suggests that further investigations should be conducted on this topic in order to comprehend and promote nurses' knowledge and expertise.
3. Promoting multidisciplinary cooperation amongst physicians, nurses, physical therapists, and other medical specialists who participate in postoperative care.
4. improving patients' awareness of the benefits of early mobilization, potential complications, and follow-up instructions by creating educational materials and resources tailored for patients and motivating healthcare professionals to participate in interactive patient educational sessions.
5. Take advantage of technological advances to incorporate modern appliances like virtual simulations, mobilization devices, and e-learning that could enhance patient mobilization techniques and education.

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Conflict of interest

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