

Nurses' Perception Regarding Barriers of Early Mobilization among Critically Ill Patients

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Abstract

Background: Early mobilization among critically ill patients is a safe and effective intervention that can have a significant impact on functional outcomes and prevent immobility complications. **Aim:** This study aimed to assess nurses' perception regarding barriers of early mobilization among critically ill patients. **Design:** A descriptive exploratory design. **Setting:** Medical Intensive Care Unit at El-Demerdash hospital and the Cardiac Intensive Care Unit which affiliated to Ain Shams University Hospitals in Egypt. **Sample:** A convenience sample of 60 nurses working in the previous mentioned setting. **Tools:** 4 tools were used: **Tool I:** Nurses' Self-administered questionnaire. **Tool II:** Nurses' Practice Observation Checklist. **Tool III:** Nurses' attitude Likert Scale. **Tool IV:** Nurses' perception regarding barriers of early mobilization among critically ill patients. **Results:** revealed that, **63.3%** of the studied nurses had unsatisfactory level of knowledge, **65%** of them had un satisfactory level of practices, **58.3%** of them had a negative attitude and **91.7%** of the studied nurses agreed with ICU related barriers. **83.3%** of the studied nurses agreed with nurses related barriers. Moreover, **60%** of the studied nurses agreed with patient related barriers. **Conclusion:** More than two third of the studied nurses had unsatisfactory level of knowledge & practice. Also, majority of them agreed that ICU have highly barriers on early mobilization of critically ill patients. Moreover, more two third of nurses had negative attitude. In addition, there was highly significant correlation between total level of knowledge, attitude, barriers & practice regarding early mobilization among critically ill patients. **Recommendations:** Attend training programs and workshops about early mobilization training to improve their knowledge and competency.

Key Words: Nurses, Barriers, Early Mobilization, Critically Ill Patients.

Introduction

The intensive care unit (ICU) is a medical facility for treating patients with serious illness, postoperative, and multiple organ dysfunction using advanced devices, treatments, and a variety of nursing interventions (*Chen et al., 2022*). Technological advances and progression in critical care patient management have improved intensive care delivery (*Kerlin et al., 2021*).

Critically ill patients that stay in Intensive Care Units (ICUs) for long periods suffer from Post-Intensive Care Syndrome or ICU Acquired Weakness, whose effects can decrease patients' quality of life for years. To prevent such complications and aiming at shortening intensive care treatments, Early Mobilization (EM) has been proposed as an encouraging technique (*Ferre et al., 2021*).

Early mobilization, defined as the application of physical activity as early as the second to the fifth day after the onset of critical illness or injury to reduce the incidence of ICUAW at the point of ICU or hospital discharge, improve patients' unassisted walking distance, and to decrease the overall length of stay at ICU, hospital and rehabilitation facilities (*Semsar et al., 2020*).

Early mobilization (EM) has been recommended as a routine ICU practice but in many countries EM in ICU was only practiced 40% in France, 59% in Germany, 49% in Canada, and 45% in United States (*Sze et al., 2021*). As with other hospitals worldwide, the current global shortage of nurses is the largest in South East Asia and Africa and the local context is also suffering from this shortage especially in ICU settings. The shortage of manpower supports the need for an increase in

ICU nursing staff who needed to perform EM (WHO, 2020).

Significance of the study

Assessment of nurses' knowledge, attitudes and perceptions towards the applying of early mobilization among critically ill patients and its barriers has faced much interest from researchers in last few years. Current evidence appears that 38%-67% of critically ill patients worldwide experienced dysfunctions and impairments, and 62% of the survivors having persistent complications for up to ten years after intensive care unit discharge (Liu et al., 2019).

In spite of the benefits of early mobilization, the implementation of early mobilization in intensive care units remains low, particularly for mechanically ventilated patients, which is a worldwide problem (Zhang et al., 2021).

Aim of the Study

This study aimed to assess nurses' perception regarding barriers of early mobilization among critically ill patients through the following:

- 1- Assess nurses' performance (knowledge, practice and attitude) of early mobilization among critically ill patients.
- 2- Assess nurses' perception regarding barriers of early mobilization among critically ill patients.

Research Question:

What is the nurses' perception regarding barriers of early mobilization among critically ill patients?

Materials and Method

Study Design

A descriptive exploratory design utilized to achieve the aim of this study.

Study Setting

The Medical Intensive Care Unit at El-Demerdash Hospital and the Cardiac Intensive Care Unit, both of which are affiliated with Ain Shams University Hospitals in Egypt, served as the sites for this study. These ICUs are well-equipped with cutting-edge machinery, tools, and the staff needed to care for patients.

- 1- The ground-floor medical intensive care unit, which has 15 beds overall and two isolated rooms with two beds each connected to a monitor and a mechanical ventilator.
- 2- The first-floor cardiac intensive care unit is divided into three rooms, room (A) has six beds, each connected to a monitor, and the room has

two mechanical ventilators. Room (B) has three beds, each connected to a monitor, and Room (C) has two beds, each connected to a monitor.

Subjects

The study included a convenience sample of all the nurses (60) working in the chosen ICUs who were directly involved in patient care and who agreed to participate.

Tools of the study

Four tools were used to achieve the aim of this study included:

Tool I: Nurses' Self-administered questionnaire:

It used to assess nurses' knowledge regarding barriers of early mobilization among critically ill patients and it was developed by the researcher based on reviewing of recent literature (Soni & Sharma, 2021) & (Mohamed et al., 2020) and has two parts:

The first section, which was concerned with the demographic characteristics of the nurses under study, included five closed-ended questions on age, gender, educational attainment, years of ICU work experience, and training programs for EM of CIPs.

2nd Part: was concerned with nurses' knowledge regarding barriers of early mobilization among critically ill patients. This section consisted of five major divisions. It had 39 questions, including 19 multiple-choice and 20 true/false inquiries, about the meaning of mobility (1 question), the significance of EM (12 inquiries), the different kinds of exercises (4 inquiries), the negative effects of immobility (7 inquiries), obstacles to EM (8 inquiries), and the safety issues relating to EM (7 inquiries).

Scoring system: The scoring system for this part was as following: one grade was given for the correct answer and zero for the incorrect answer, with total mark= 39

The total level of nurses' knowledge was categorized as following:

- $\geq 80\%$ was considered satisfactory, it equal 31.2 grade.
- $< 80\%$ was considered unsatisfactory.

Tool II: Nurses' Practice Observation Checklist:

It was used to assess nurses' practice regarding barriers of early mobilization among critically ill patients, this part was adopted from (Audrey, 2022; Patricia, 2020 & Rowden et al., 2019), and had five main sections:

Part I- Early Mobilization of conscious Patient:

This section contains the following questions related, active range-of-motion exercises (27 items), transferring a patient from the bed to a chair (21 items), assisting the patient with ambulation (19 items), assisting the patient with ambulation using a walker (21 items) and deep breathing and coughing exercises (14 items).

Part II- Early Mobilization of Unconscious Patient:

This section contains questions related to turning and positioning the patient in bed (15 items), as well as passive range-of-motion exercises (19 items).

Part III- Early Mobilization of Post-Operative Patient:

This section consists of questions related to exercises for deep breathing (16 items) and coughing, 13 items to help the patient use an incentive spirometer, 12 items to help the patient with foot and leg exercises, and 19 items to help the patient walk.

Part IV- Early Mobilization for Patient with Connective Devices:

This section consists of questions related to assisting a patient with an intravenous (IV) infusion (13 items), assisting a patient with a urinary drainage bag (15 items), assisting a patient with a drainage tube (13 items) and assisting a patient with a closed chest tube drainage system (18 items).

Part V- Early Mobilization for Patient with fractured leg:

This section consists of questions related to assisting the patient with ambulation using crutches this checklist involved (19 items).

Scoring system:

The total score of practice was 300 marks, the response to each item in the procedure was categorized into (done correctly & not done). One grade was given for each correct step and zero for each incorrect or not done.

Total score categorized as the following:

- $\geq 80\%$ was considered satisfactory, it equal 240 grade.
- $< 80\%$ was considered unsatisfactory level.

Tool III: Nurses' attitude Likert Scale

This scale was used to assess nurses' attitude regarding barriers of early mobilization among

critically ill patients. It involved 14 statements, it was adopted from (*Golaszewski, 2019*).

Scoring system:

This part consists of 14 statements with total score 42 marks. Use a Likert scale ranging from 1 to 3. One was given for disagree, 2 was given for partially agree and 3 was given for agree. Calculate the mean score for each participant by summing up the scores for all items and dividing by the number of items.

Tool IV: Nurses' perception regarding barriers of early mobilization among critically ill patients.

It was developed by the researcher based on reviewing of recent literature (*Soni & Sharma, 2021*) & (*Mohamed et al., 2020*) and were include 23 statements divided into: (Patient related barriers, Nurses related barriers and ICU related barriers).

Scoring system:

This part consisted of 23 statements with total score 69 marks. The response for each statement ranged from 1 to 3. One was given for disagree, 2 was given for partially agree and 3 was given for agree. Higher mean scores indicate a positive perception of barriers to early mobilization among critically ill patients, while lower mean scores indicate a negative perception of barriers. Calculate the mean score for each participant by summing up the scores for all items and dividing by the number of items.

The total score was categorized into:

- Positive perception $< 80\%$ it equal 55.2 grade
- Negative perception $> 80\%$

Method of data collection:

The study was done as following:

1- An official hospital permission to carry out the research was got from the responsible authority.

2- Tool development:

The study conducted using four tools.

3- Validity of the tools

Testing validity of the proposed tools by using face and content validity. Face validity aimed at inspecting the items to determine whether the tools measure what supposed to measure content validity was conducted to determine whether the tools cover the aim. Validity was tested through a jury of five experts from critical care nursing department, Ain-Shams university (3 Professors & 2 Assistant professors). The experts reviewed the tools for

relevancy, comprehensiveness, simplicity & applicability, minor modification done.

4. Reliability of the tools

The Cronbach Alpha Test was used to evaluate the proposed tools' dependability (Tool I: 0.867, Tool II: 0.704, Tool III: 0.822, and Tool IV: 0.786).

5. A pilot study

A pilot study was conducted on 10% of the study subjects in order to test applicability of the study tools, clarity of the included questions as well as estimations of the average time needed to complete all questions. Results obtained were studied & analyzed. Accordingly, modifications were done for the final development of the study tools. Nurses selected for the pilot study were included in the study.

Field work

Prior to any written data collection, included interviews with 60 nurses who were caring to critically ill patients who were immobilized in the previously described setting. These interviews were conducted in order to explain the study's objectives, assess how they would affect their performance and the quality of care provided to the patients, and obtain their consent to participate in the study.

Data collection took about 4 months start from the beginning of January 2023 until the end of April 2023. The data were collected by the investigator through 3 days/week (Sundays, Tuesdays & Wednesdays) during the morning and afternoon shifts, each nurse was interviewed individually by the investigator.

Ethical Consideration

- The research approval obtained from the ethical committee before starting the study.
- The investigator obtained the objectives & aim of the study to nurses included in the study.
- The investigator assured maintaining anonymity & confidentiality of subjects' data.
- Nurses were informed that they allowed choosing to participate or withdraw from the study at any time.

Statistical analysis

After the data collection process was complete, the statistical package for social sciences, version 22.0 (SPSS Inc., Chicago, Illinois, USA) was used to analyze the recorded data. The mean and standard

deviation (SD) were used to express quantitative data. Frequency and percentage were used to express qualitative data.

Results

Table (1): Reveals that, 83.3% of the studied nurses were less than 30 years old while 13.3% of them aged from 30 to 35 years old with mean age (27.33 ± 5.19). 63.3% of them were male while, 36.7% were female and 71.7% of them were single. Regarding educational level, 70.0% of them were Technical Nursing Institute while, 26.7% of them were BSc Nursing. 75.0% of them less than 10 years of ICU working experience. Moreover, all of the studied nurses were Not attended training programs or workshops about early mobilization of critically ill patients and there is no protocol for early mobilization of the patient in the intensive care unit in the selected ICUs.

Table (2): Reveals that, 60%, 68.3%, 73.3% & 61.7% of the studied nurses had unsatisfactory answer regarding the definition of mobility and the importance of EM, the early mobilization exercises, the complications of immobility & the Safety considerations for EM among critically ill patients. While, 51.7% of them had satisfactory answer regarding the barriers of EM among critically ill patients.

Table (3): Reveals that, 70% of the studied nurses had unsatisfactory performance of practice regarding early mobilization of unconscious patient. 66.7% of them had unsatisfactory performance of practice regarding early mobilization of conscious patient. Moreover, 65% of them had unsatisfactory performance of practice regarding early mobilization of Post-operative Patient. 63.3% of the studied nurses had unsatisfactory performance of practice regarding early mobilization for patient with fractured leg. Also, 58.3% of them had unsatisfactory performance of practice regarding early mobilization for Patient with Connective Devices.

Figure (1) Shows that, 63.3% of the studied nurses had unsatisfactory total level of knowledge regarding early mobilization among critically ill patients. While, 36.7% of them had satisfactory total level of knowledge regarding early mobilization among critically ill patients.

Figure (2) Shows that, 65% of the studied nurses had unsatisfactory total level of practice.

While, 35% of them had satisfactory total level of practice.

Figure (3) Shows that, 58.3% of the studied nurses had a negative attitude regarding early mobilization among critically ill patients. While, 41.7% of them showed positive attitude.

Table (4): Reveals that, **36.7%** of the studied nurses' perception agreed that patient's related barriers regarding early mobilization among critically ill patients were had high patient's barriers. While, **40%** of them disagreed with patient's related barriers. Regarding nurses' perception about nurses related barriers, **0.75%** of them had highly barriers of early mobilization among critically ill patients. While, **16.7%** of them disagreed with these barriers. In addition, nurses' perception regarding ICU related barriers (100%,70%&96.7%respectively) agreed that no early mobilization protocol, lack of special mobility chair & need for doctor's order had highly barriers of early mobilization among critically ill patients.

Table (1): Number and percentage distribution of the studied nurses according to their demographic data (N=60).

Table (5): Reveals that, there were highly statistical significance positive correlation between total knowledge and practice at (p-value<0.001) & r (0.230 & 0.342 respectively). While, there is highly statistical significance negative correlation between total level of knowledge and nurses' opinion at (r =0.656). Also, results reveals that there is a highly statistical significance negative correlation between nurses' opinion about barriers and their knowledge, attitude & practice respectively at (p-value=0.00) & (r= -0.656, -0.419, & -0.638 respectively). Moreover, results reveals that there is a highly statistical significance positive correlation between nurses' practice and their knowledge & attitude at (p-value<0.001) & (r= 0.342 & 0.392 respectively). While there is a highly negative correlation between nurses' practice and their opinion about barriers at (p-value<0.001) & (r= -0.638).

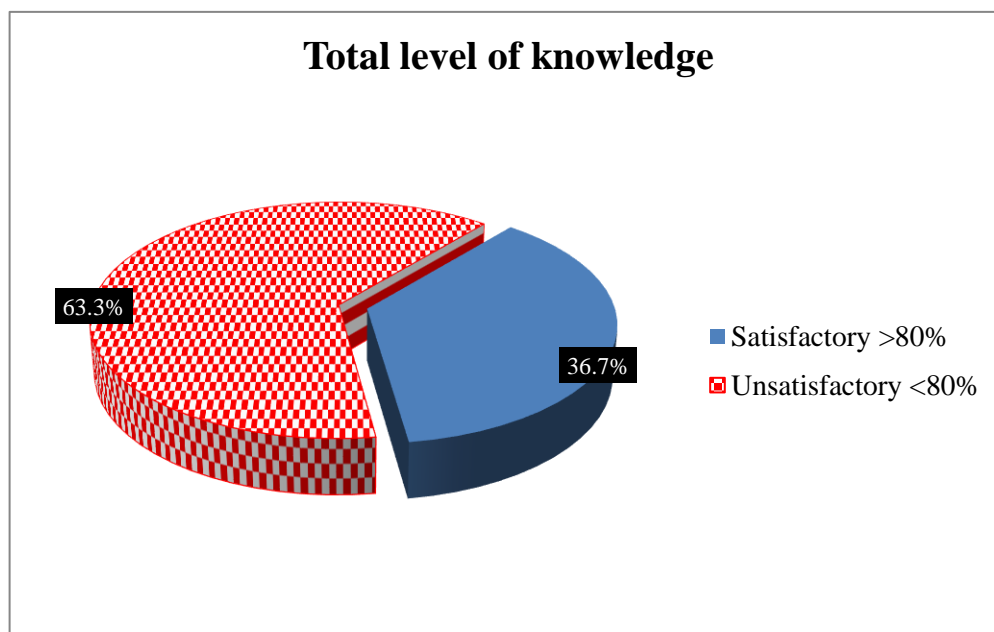
Demographic data	No.	%
Age (years)		
<30 years	50	83.3
30-35 years	8	13.3
>35 years	2	3.4
Mean±SD	27.33±5.19	
Gender:		
Female	22	36.7
Male	38	63.3
Education level		
Secondary nursing school	2	3.3
Technical Nursing Institute	42	70.0
BSc Nursing	16	26.7
Post graduate study	0	0.0
Years of experience		
<10 years	45	75.0
10-15 years	15	25.0
>15 years	0	0.0
Attending training programs regarding early mobilization of critically ill patients		0.0
Yes	0	0.0
No	60	100.0
Is there a protocol for early mobilization of the patient in the intensive care unit in which you work		
Yes	0	0.0
No	60	100.0

Table (2): Number and percentage distribution of the total studied nurses' knowledge regarding early mobilization among critically ill patients (N=60).

Items	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Definition of mobility and the importance of EM	24	40.0	36	60.0
Early mobilization exercises	19	31.7	41	68.3
Complications of immobility	16	26.7	44	73.3
Barriers of EM among critically ill patients	31	51.7	29	48.3
Safety considerations for EM among critically ill patients	23	38.3	37	61.7

Table (3): Number and percentage distribution of the level of studied nurses' practice regarding early mobilization among critically Ill patients (N=60).

Domains of practice	Satisfactory practice >80%		Unsatisfactory practice <80%	
	No.	%	No.	%
Early Mobilization of Conscious Patient	20	33.3	40	66.7
Early Mobilization of Unconscious Patient	18	30.0	42	70.0
Early Mobilization of Post-operative Patient	21	35.0	39	65.0
Early Mobilization for Patient with Connective Devices	25	41.7	35	58.3
Early Mobilization for Patient with fractured leg	22	36.7	38	63.3

**Figure (1):** Percentage distribution of the total level of studied nurses' knowledge regarding early mobilization among critically ill patients (N=60).

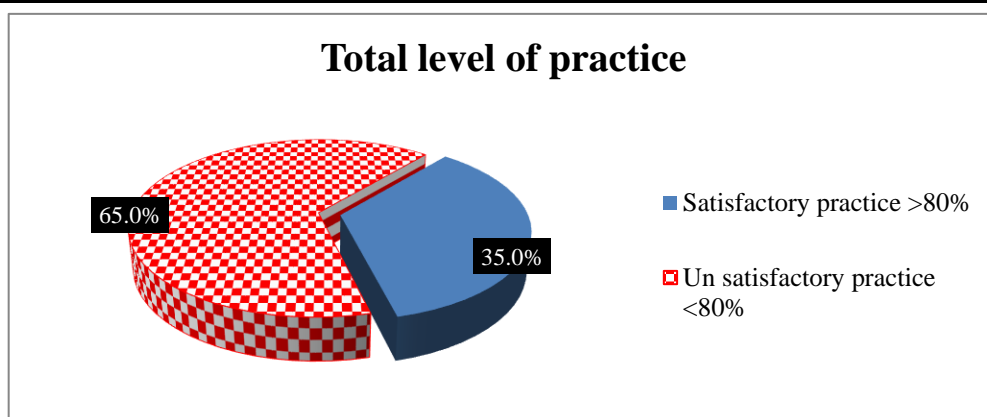


Figure (2): Percentage distribution of the total level of studied nurses' practice regarding early mobilization among critically Ill patients (N=60).

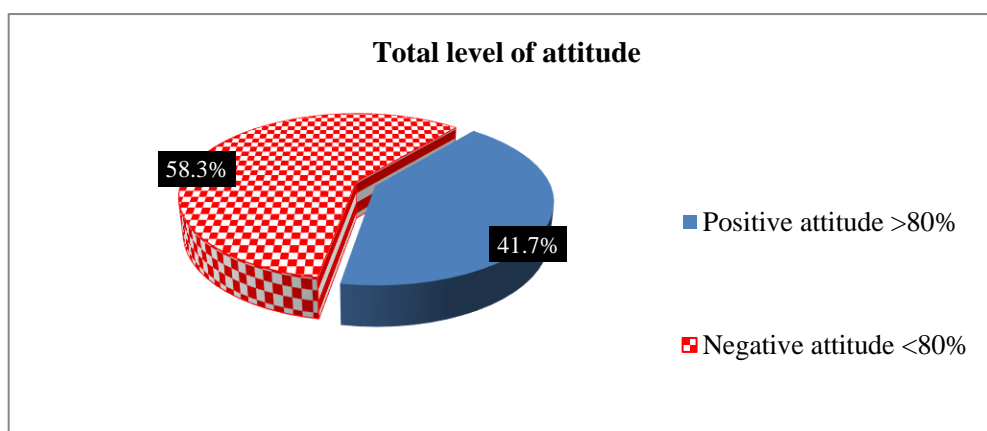


Figure (3): Percentage Distribution of the Studied nurses according to their total level of attitude regarding early mobilization among critically ill patients (N=60).

Table (4): Number and percentage distribution of the studied nurses' perception regarding barriers of early mobilization among critically ill patients (N=60).

Items	Agree		Partially agree		Disagree	
	No.	%	No.	%	No.	%
*Nurses' perception regarding barriers early mobilization among critically ill patients						
I-Patient related barriers						
-Hemodynamic instability of patient	22	36.7	10	16.7	28	46.7
-Sedated patient	20	33.3	15	25.0	25	41.7
-Dislodgement of connected devices	30	50.0	9	15.0	21	35.0
-Obese patient	30	50.0	9	15.0	21	35.0
-High severity of pain	35	58.3	15	25.0	10	16.7
-Poly trauma	25	41.7	17	28.3	18	30.0
-Raise the patient's temperature	20	33.3	15	25.0	25	41.7
-Patient with agitation or delirium	17	28.3	20	33.3	23	38.3
-Presence IV connections or drains	33	55.0	10	16.7	17	28.3
-Respiratory instability/dyspnea	11	18.3	15	25.0	34	56.7
-The patient's belief that bed rest and immobility equals recovery	35	58.3	18	30.0	7	11.7
Total	22	36.7	14	23.3	24	40.0
II-Nurses related barriers						
-Lack of self-directed learning	33	55.0	10	16.7	17	28.3
-Inadequate training regarding early mobilization	53	88.3	4	6.7	3	5.0
-Lack of nursing skills	50	83.3	2	3.3	8	13.3
-In appropriate nurse patient ratio	10	16.7	13	21.7	37	61.7
-Early mobilization is not a priority	50	83.3	3	5.0	7	11.7
-Fear of harm/ injury to patient	55	91.7	2	3.3	3	5.0
-Excess work	57	95.0	2	3.3	1	1.7
-Not enough time	56	93.3	2	3.3	2	3.3
Total	45	75.0	5	8.3	10	16.7
III-ICU related barriers						
-No early mobilization protocol	60	100.0	0	0.0	0	0.0
-Lack of special mobility chair	42	70.0	5	8.3	13	21.7
-Need for doctor's order	58	96.7	2	3.3	0	0.0
Total	52	86.7	3	5.0	5	8.3

Table (5): Correlation between total level score of nurses' knowledge, practice, attitude & perception about early mobilization among critically ill patients (N=60).

		Total knowledge	Total practice	Total Attitude	Total perception about barriers
Total score knowledge	r		0.342	0.230	-0.656
	p-value		0.009*	0.013*	<0.001**
	N		60	60	60
Total score practice	r	0.342	-0.638	0.392	
	p-value	0.009*	<0.001**	<0.001**	
	N	60	60	60	
Total score Attitude	r	0.230	0.392		-0.419
	p-value	0.013*	<0.001**		<0.001**
	N	60	60		60
Total score perception about barriers	r	-0.656		-0.419	-0.638
	p-value	<0.001**		<0.001**	<0.001**
	N	60		60	60

Discussion

Nurses are the main group of healthcare personnel across all healthcare settings. Accurate assessment, prompt intervention and adequate evaluation by nurses are necessary to better manage immobility complications and improve clinical outcomes for bedridden patients (*Mousa, 2019*).

Positive attitudes and behavioral changes are driven by knowledge and perceptions towards preventive practices. The assessment of nurses' knowledge, attitudes and perceptions towards the implementation of early mobilization and its barriers has gained much interest from researchers from different countries (*Hui et al., 2022*).

As regard gender, the present study showed that more than half of the studied nurses were males and more than two third of them were their age less than 30 years. This finding differs from other studies (*Mohamed et al., 2020 & Kim et al., 2019*) which reported that more than two -third of the studied nurses were females. This result may be due to a national trend to joint males in nursing field to improve the quality of delivery care to CIPs.

The present study result illustrated that, less than three quarters of the studied nurses were had technical nursing institute while, more than one quarter of them were BSc Nursing. From the investigator point of view, this may be because many bedside nurses in governmental hospitals graduated from the nursing technical institute. This may be because there is a national trend to appoint newly bachelor-nursing graduates in ICUs to improve the quality of care delivery to CIPs. This finding is disagreed with study done by (*Mahran, et al., 2019*) and reported that more than half of the studied sample had a bachelor's degree in nursing, agreed with (*Wang et al., 2020*) who found that less than half of the studied nurses had Diploma in nursing while, more than half of them had Bachelor's degree in nursing.

The current study results illustrated that less than two thirds of the studied nurses had unsatisfactory total level of knowledge regarding early mobilization among critically ill patients. While, more than one third of them had satisfactory total level of knowledge regarding early mobilization among critically

ill patients. This finding in agreement with (*Mohamed et al., 2020*) who revealed that all the studied nurses had unsatisfactory knowledge levels about EM pre the educational sessions. While these findings contrasted with (*Jiang et al., 2022*) in a study entitled " Knowledge, attitude, and perceived barriers of newly graduated registered nurses undergoing standardized training in intensive care unit toward early mobilization of mechanically ventilated patients: a qualitative study in Shanghai" revealed that newly graduated registered nurses undergoing standardized training in intensive care units had a high level of awareness of the importance of early mobilization of mechanically ventilated patients and are willing to implement it. However, there is a lack of relevant knowledge and other obstacles that restrict clinical implementation. This may reflect on the ability of younger nurses to absorb novel information and their energy and enthusiasm for understanding and mastering new information. These findings are encouraging, and nursing managers should help young nurses commit to in-depth implementation of early mobilization.

Concerning nurses' practice of early mobilization among critically ill patients, the current study result revealed that less than two thirds of the studied nurses had unsatisfactory total level of practice. While, more than one third of them had satisfactory total level of practice regarding early mobilization among critically ill patients. It may due to lack of patient safety considerations courses for EM among critically ill patients. This result was contrasted with (*Kanom et al., 2020*) studied to explore the level of knowledge, attitudes, and practices of nurses regarding early mobilization of critically ill patients and found that their practices regarding early mobilization of critically ill patients were at a moderate level. And (*Hashim & Wahab, 2022*) studied to evaluate nursing practices of early mobilization for mechanically ventilated patients in the ICU and mentioned that most nurses perform practice mobilization activities on mechanically ventilated patients.

Concerning the nurses' attitude about early mobilization among critically ill patients, the current study result revealed that more than half of the studied nurses had a negative attitude regarding early mobilization among critically ill

patients. While, more than two fifths of them had positive attitude. This result may be due to level of nurses' knowledge and practice that effect of level of attitude

This result was disagreed with (*Dagnachew et al., 2023*) in a study entitled "Clinicians' knowledge and attitude towards early mobilization in intensive care units in Ethiopian tertiary hospitals: A multi-center study" who showed that the majority of the studied sample had fair attitude towards early mobilization in ICU. And contrasted with (*Wang et al., 2020*) and (*Golaszewski, 2019*) showed that more than half of the studied nurses had positive attitudes to early mobilization. Also (*Babazadeh et al., 2021*) study to explore perceived barriers to early mobilization of intensive care unit patients by nurses in hospitals affiliated to Jundishapur University of Medical Sciences of Ahvaz and found that less than three quarters of the nurses had a highly positive attitude towards EM implementation, additionally (*Fontela et al., 2018*) in a study entitled "Clinical attitudes and perceived barriers to early mobilization of critically ill patients in adult intensive care units" and found that the studied sample had favorable attitudes toward early mobilization.

In relation to nurses' perception about barriers of early mobilization among critically ill patients, the current study results revealed that, more than one third of the studied nurses' perception agreed that patient's related barriers regarding early mobilization among critically ill patients were had high patient's barriers. While, two fifths of them disagreed with patient's related barriers. Regarding nurses' perception about nurses related barriers, minority of them had highly barriers of early mobilization among critically ill patients. While, more than one tenth of them disagreed with these barriers. In addition, nurses' perception regarding ICU related barriers, highly percentage of them agreed that no early mobilization protocol, lack of special mobility chair & need for doctor's order had highly barriers of early mobilization among critically ill patients respectively.

This result was contrasted with (*Babazadeh et al., 2021*) who found that nurses believed that the actual EM implementation is associated with challenges such as human resources limitations, equipment-related barriers, and patient-related barriers.

Regarding the Correlation between total level score of nurses' knowledge, practice, attitude and perception regarding early mobilization among critically ill patients, the present study results illustrated that, there were highly statistical significance positive correlation between total knowledge and practice. While, there is highly statistical significance negative correlation between total level of knowledge and nurses' opinion. Also, there is a highly statistical significance negative correlation between nurses' opinion about barriers and their knowledge, attitude & practice respectively. Moreover, there is a highly statistical significance positive correlation between nurses' practice and their knowledge & attitude. While there is a highly negative correlation between nurses' practice and their opinion about barriers.

In the same line with (*Syam et al., 2021*) who showed that there was statistically significant improvement of nurses' knowledge and practice mean scores regarding prevention of immobility complications post implementation of educational nursing guideline. While (*Asfaw et al., 2021*) who showed that nurses' knowledge, attitude, and practice regarding to immobility complications was unsatisfactory.

Conclusions

Less than two thirds of the studied nurses had unsatisfactory total level of knowledge regarding early mobilization among critically ill patients. And less than two thirds of the studied nurses had unsatisfactory total level of practices regarding early mobilization among critically ill patients. Also more than half of the studied nurses had a negative attitude regarding early mobilization among critically ill patients. Additionally, concerning total level of the studied nurses' perception, most of the studied nurses agreed with ICU related barriers of early mobilization among critically ill patients. While, minority of them disagreed with these barriers.

Recommendations

- 1- Critical care nurses should periodically attend training programs and workshops about EM training to maintain their knowledge and competency.
- 2- Applying a protocol for early mobilization of the patients in the medical intensive care unit that affiliated to Ain Shams University.

References

- Akinremi, A.A.; Ogwu, S.; Sanya, A.O.; Sanusi, A.A.; Osinaike, B(2020).** Early Mobilization in the ICU: A Multicenter Survey of Clinicians' Knowledge, Attitude and Practices in Resource-Limited Hospital Settings.
- Amanda M and Golaszewski K. (2019).** Perceived Barriers to Early Mobility Efforts Amongst Intensive Care Nurses (Thesis).
- Anekwe DE, Koo KK, de Marchie M, Goldberg P, Jayaraman D, Spahija J (2019).** Interprofessional survey of perceived barriers and facilitators to early mobilization of critically ill patients.
- Asfaw, M., Wordofa, B., Ayalew, Y., & Habte, T. (2021):** Knowledge, attitude and practice of nurses towards major immobility complications and its associated factors at governmental hospitals in Addis Ababa, Ethiopia: A cross-sectional study.
- Cattani A, Teixeira PP, Silva FM. (2022).** A systematic review on the agreement between Clinical Practice Guidelines regarding the steps of the nutrition care process of adult patients who are critically ill.
- Babazadeh M, Jahani S, Poursangbor T, Cheraghian B(2021):** Perceived barriers to early mobilization of intensive care unit patients by nurses in hospitals affiliated to Jundishapur University of Medical Sciences of Ahvaz in 2019.
- Chen, L, Yin, J, Zheng, Y, et al. (2022).** The effectiveness of music listening for critically ill patients: A systematic review.
- Dagnachew, T. K., Woldegerima Berhe, Y., Yalew Mustofa, S., & Birlie Chekol, W. (2023):** Clinicians' knowledge and attitude towards early mobilization in intensive care units in Ethiopian tertiary hospitals.
- Dikkema, Y.; Nieuwenhuis, M.K.; van der Schans, C.P.; Mouton, L.J. (2020).** Questionnaire to Assess Facilitators and Barriers of Early Mobilization in Critically Ill Patients.
- Ferre, M.; Batista, E.; Solanas, A.; Martínez-Ballesté, A. Smart Health-Enhanced Early Mobilisation in Intensive Care Units.**
- Fontela PC, Forgiarini LA Jr, Friedman G (2018):** Clinical attitudes and perceived barriers to early mobilization of critically ill patients in adult intensive care units.
- Hashim, N., & Wahab, M. (2022):** nursing practices of implementing early mobilisation on patients with mechanical ventilators in the intensive care unit.
- Hui Zhang, Huaping Liu, Zunzhu Li, Qi Li, Xiaoyan Chu, Xinyi Zhou, Binglu Wang, Yiqian Lyu, Frances Lin(2021)**Early mobilization implementation for critical ill patients: A cross-sectional multi-center survey about knowledge, attitudes, and perceptions of critical care nurses.
- Jiang, J., Zhao, S., Han, P., Wu, Q., Shi, Y., Duan, X., & Yan, S. (2022):** Knowledge, attitude, and perceived barriers of newly graduated registered nurses undergoing standardized training in intensive care unit toward early mobilization of mechanically ventilated patients.
- Jones, R. A., Merkle, S., Ruvalcaba, L., Ashton, P., Bailey, C., & Lopez, M. (2020).** Nurse-led mobility program: driving a culture of early mobilization in medical-surgical nursing.
- Kanom, M. ., Somrarnyart, M., & Srirat, C. . (2020):** nurses' knowledge, attitudes, and practices regarding early mobilization of critically ill patients.
- Kerlin M. P., Costa D. K., Kahn J. M. (2021).** The society of Critical Care medicine at 50 Years: ICU organization and management.
- Kim, C., Kim, S., Yang, J., & Choi, M. (2019).** Nurses' perceived barriers and educational needs for early mobilization of critical ill patients.
- Lin, F., Phelan, S., Chaboyer, W. and Mitchell, M. (2020):** Early mobilisation of ventilated patients in the intensive care unit:a survey of critical care clinicians in an Australian tertiary hospital.
- Liu, K., Ogura, T., Takahashi, K., Nakamura, M., Ohtake, H., Fujiduka, K., et al. (2019):** A progressive early mobilization program is significantly associated with clinical and economic improvement.
- Mahran, G. S. K., Abdelrahman, H. A., & Abo-Elmagd, N. S. (2019).** Current practice types of early mobilization in the intensive care units and challenges faced by nurses attempting to translate it into practice.
- Mohamed, A., Kandeel, N., Abosaeda, A., & Ali, W. (2020).** Effect of Educational Sessions about Early Mobilization of Critically Ill Patients on Nurses' Knowledge and Practices.

- Mousa, F, (2019).**" The Effectiveness of Educational Program on Nurses regarding Prevention Complications of Immobility In El Mek Nimer University Hospital Shendi city-Sudan" Doctoral dissertation, Shendi University.
- Parker, A. M., Akhlaghi, N., Malik, A. M., Friedman, L. A., Manthey, E., Albert, K., Glover, M., Dong, S., Lavezza, A., Seltzer, J., & Needham, D. M. (2022).** Perceived barriers to early goal-directed mobility in the intensive care unit.
- Semsar-kazerooni, K., Dima, D., Valiquette, J., Berube-Dufour, J., & Goldfarb, M. (2020).** Early Mobilization in People with Acute Cardiovascular Disease. *Canadian Journal of Cardiology*.
- Soni, K.C., & Sharma, N. (2021):** Nurses' Knowledge and Perceived Barriers Regarding Early Mobilization of Patient Under Mechanical Ventilation In Teaching Hospitals.
- Sze Min Liew; Siti Zubaidah Mordiffi; Yi Jia Arielle Ong; Violeta Lopez; (2021).** Nurses' perceptions of early mobilisation in the adult Intensive Care Unit: A qualitative study.
- Syam, N. M., Gebril, H., Mohamed, H., Mohammed Abed Elazeem, Y. F., & Weheida, S. M. (2021):** Effect of Educational Nursing Guideline About Immobilization Complications Control on Nurses' Knowledge and Safety Practice.
- Wang, J., Xiao, Q., Zhang, C., Jia, Y., & Shi, C. (2020).** Intensive care unit nurses' knowledge, attitudes, and perceived barriers regarding early mobilization of patients.
- WHO (2020).** Nursing and Midwifery Key facts. <https://www.who.int/newsroom/factsheets/detail/nursing-and-midwifery#:~:text=Nurses%20and%20midwives%20account%20for, South%20East%20Asia%20and%20Africa>
- Zang, K., Chen, B., Wang, M., Chen, D., Hui, L., Guo, S., Ji, T., & Shang, F. (2020).** The effect of early mobilization in critically ill patients: a meta-analysis.
- Zhang, H., Liu, H., Li, Z., Chu, X., Zhou, X., Wang, B., Ly, Y., Lin, F. (2021):** Early mobilization implementation for critical ill patients: A cross-sectional multi-center survey about knowledge, attitudes, and perceptions of critical care nurses.