

Exploring Barriers To Early Mobilization Of Patients Admitted To The Intensive Care Unit (ICU) In Omdurman Teaching Hospital. Khartoum State. 2025

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Abstract

Early mobilization (EM) refers to the implementation of a physiotherapy program (passive mobilization, active mobilization and respiratory muscle training) or new mobilization techniques .The study aimed to explore the barriers to early mobilization of patients admitted to the intensive care unit (ICU) in Omdurman teaching hospital. Khartoum state. 2025 ,and find association of demographic data and these barriers. Material and methods: descriptive cross sectional hospital based study .66 nurses selected by systematic random sampling who enrolled in the study who worked in ICU . majority of them were females with BSC certificates . The survey addressed patient-related barriers, structural related barriers, cultural related barriers, and process-related barriers. Results: majority of nurses reported that Respiratory instability/distress, ventilator asynchrony 10 (15.2%), Limited staff, Lack of early mobility program/protocol (e.g., no routine delivery of Physiotherapy), limited guidelines, no eligibility criteria (54.3%), Lack of planning and coordination (60.9%), Inadequate staff training 19 (28.9%) represented major barriers for EM. **Conclusion:** Early mobilization protocols can be implemented in ICUs after adequate addressing of potential barriers that can face healthcare workers, prepare the ICU environment with equipment and trained personnel. We suggest that successful implementation programmers of early mobilization, significant culture change is required and relies on involvement from all members of the multidisciplinary team. And having access to the right tools, training and processes is key. This study aimed to explore Barriers to Early Mobilization of Patients Admitted to the Intensive Care Unit at Omdurman Teaching Hospital, Khartoum State 2025

Keywords: Early mobilization, Barriers, ICU, Omdurman teaching hospital

1- Background:

The process of the Intensive Care Units in connection with greater equipment due to the improvement of the technology, and the specialized, qualitative care retired to the seriously ill, participates to the increase of survivors in the ICU (Engel et al., 2013)

For ICU patients, the term "early mobilization" (EM) refers to the implementation of a physiotherapy program (passive mobilization, active mobilization and respiratory muscle training) or new mobilization techniques (ergometer cycle, or neuromuscular electrical stimulation) at an early stage of a patients stay at the hospital (less than 5-7 days).

Despite of the limitation, the immobilization, the mechanical support, using drugs the extended bed rest cause serious physical and psychological damage to the ICU patients, although they are crucial parts of the provided care (Drolet et al., 2012). Published reviews indicate that early

mobilization in ICU can be make safely and most efficient and can ameliorate patient outcomes (J. Adler et al .2012)[J. Adler and D. Malone, 2012 "Early mobilization in the intensive care unit: a systematic review.," *Cardiopulm. Phys. Ther. J.*, vol. 23, no. 1, pp. 5–13, Mar.]. while there is only ,gap in understanding and implementing strategies for early mobilization. (S. Hempel et al.2014). A study done by (Hopkins et al., 2010) agreed that ambulation of critically ill patients is difficult and potentially dangerous but with a dedicated and trained team, early mobility can be both safe and feasible. It has been noticed that, during their hospitalizing and after their discharge from the unit, the patients often showed neuromuscular weakness, decreased cognitive functionality and different psychological side effects. These effects command to main changes in patients' daily life and reduce their quality of life for a long time after their discharge from the unit (Herridge et al., 2011).

The number of critically ill individuals, involvement of illness, and cost of care continue to increase with time (**Bauman & Hyzy 2012**)

Intensive care unit (ICU) patients frequently have extreme disturbance of their physiological function. There is careful attention on aggressive life support, connected with persistent monitoring and treatment for organ failure(. While obtaining this care, ICU management of the critically ill patient has traditionally involved supine or semi recumbent positioning and bed rest, mechanical ventilation, analgesia, and sedation but with historically little attention placed on long-term outcomes and in particular neuromuscular function. Bed rest in ICU is not benign (**Truong et al., 2009**). Within less than 24 hours many body systems are affected by interrelated pathophysiological changes associated with immobility and critical illness. The most common of these are associated with the systems of respiration (e.g. atelectasis and delayed weaning from mechanical ventilation (**De Jonghe et al 2007**))

Lack of movement and protracted bed rest have considerable effects on all body systems musculoskeletal, cardiovascular, respiratory, integumentary, and cognitive systems.

Well known hospitalized patients are usually, old and may be obese. These may increase the challenges correlated with mobilization.

Routine procedures, like deep sedation for bed rest, are hold out to achieve critically ill patients in many intensive care units (ICUs) (**A. Leditschke, M. et al., 2012**),those patients, especially mechanically ventilated ones suffer long periods of immobilization and weak performance (**S. E. Jolley, et al., 2014**). This prolong sitting can relocate a lot of stuning such as reducing muscle strength, increased duration of mechanical ventilation, consequently prolonged hospital stay (**M. Roberts, L. et al., 2014**). And as a result can reduce the quality of life post ICU

Early mobilization can be carried in ICUs after adequate treatment of possible barriers that can meet nurses, prepare the ICU environment with equipment and trained personnel.

Researchers classify barriers to early mobilization including patient-related, cultural-related, and structurally related ones (D. M. Needham et al., 2010) ,many of them primarily

search for physician-reported barriers or patient-specific physiological barriers (**S. Dafoe, et al., 2015**). There is little research regarding barriers perceived by nurses towards early ICU mobility Nurses in critical care units play an important role in improving the quality of patient care and their understanding of patients' conditions and needs. So, nurses understand regard early mobilization and lack of training are considerable barriers to early mobilization in ICU more than other healthcare professionals.

Lastly early mobilization is crutial measure to prevent elaboration for patients hospitalized in ICU. Although it is not always possible to carry out it because problems and barriers are constantly emerging (**Koukourikos, et al., 2014**).

This study aimed to explore the barriers to early mobilization of patients admitted to the intensive care unit (ICU) in Omdurman teaching hospital. Khartoum state. 2025 and find association of demographic data and these barriers.

Research questions:

What are the barriers to early mobilization of patients admitted to the intensive care unit (icu) in omdurman teaching hospital. khartoum state.

Significance of the study:

Lack of physical activity and prolonged bed rest have significant effects on musculoskeletal, cardiovascular, respiratory, integumentary, and cognitive systems. (**Garzon-Serrano J, Ryan C, Waak K, et al., 2011**)

In addition, hospitalized patients are often older, and many are obese. These patient characteristics increase the challenges associated with mobilization. (**Menendez-Tellez PA et al., 2012**)

And some studies have shown that skeletal muscle strength declines by 1% to 1.5% per day when strict bed rest begins.29,30 Over time, the loss of lean tissue contributes to a decrease in muscle strength and power, which can affect balance and increase the occurrence of falls while reducing aerobic capacity.(**Parry SM .(215)**)

2- Study design:

2-1. Research Design:

The study design selected for the study was descriptive exploratory hospital based study

2.2 Study area and setting:

- ICU.CCU department Omdurman in Khartoum state that have direct services TI ICU and CCU patients 2025

2.3 Target population:

Nurses working all units and have inclusive and patients in ICU.CCU and considered as one of the barrier criteria as follows:

Inclusion criteria:

1. Nurses who agree to participate in study
2. Both sexes
3. Nurses who have direct services with ICU and CCU patients

Exclusion criteria:

1. Nurses refused to participate in study.
2. Nurses who are working in those departments which do not have direct patient care or services.

2.4 Sample size: total coverage 66

2.5 Sampling Techniques: by census sampling (66 nurses work in different units in Omdurman teaching hospital)

3.6 Description of the Tool Face to face questionnaire sheet

The interview schedule was designed with two parts pertaining to the demographic variables of the respondents such as age, sex, educational status, and years of experience.

And barriers of Physical barriers items. Consisted of 8 items High severity of illness, patients "too sick" Hemodynamic instability, Arrhythmias, pain, Respiratory instability/distress, ventilator asynchrony, and other questions for nurses regard Barriers Neuropsychological barriers, ICU devices and equipment, 5 other barriers related to structural, and 5 question related to cultural barriers and 5 Process related barriers

3.6.4 Tool of data collection:

It was used after translation to Arabic language and make some modifications To be suitable for population, beliefs, values, culture.

The association between selected demographic variables (age, gender, education

level, years' experience and their exploring regard these barriers

3.6.5 Statistical analysis:

The data collection was terminated by thanking the participants, then data were collected, cleaned, entering, arranged, tabulated and analyzed according to the type of each data and entered into a database file. Pair test analysis performed by using the SPSS 26 computer software statistical package. Data described by summary tables. (descriptive statistic frequency, percentage and, mean, standard deviation) and inferential statistics for measuring the barriers (chi square and p value .001 consider significantly) used for analysis of data which based on objectives.

Ethical approval:

Before starting the study ethical approval was obtained, written consent were taken from participants after explaining the purpose of the study and explained that it has no any risks for them and they have right to withdraw from the study at any time without giving any reasons, researcher coded every responses from the participants

Results:

This is descriptive exploratory based hospital survey study, where 66 nurses enrolled in study from table (1). We found that 37(56.1%) their age more than 40 years while the rest percent their age less than 40 years, same, percent represent female while the rest are male, the majority of them with M.Sc. (47%) and (33.3%) and only (19.7) with diploma certificate. As we said, we divided the barriers as patient's related barriers, structure, culture and process barriers. In table (2) nurses responses towards perceived barriers which belonged to patient-related conditions such as physical barriers, nurses reported: high severity of illness High severity of illness, patients "too sick" 5(7.6%) hemodynamic instability 4 (6.1%). Arrhythmias and Obesity (e.g., BMI >30) same percent 8(12.1%) respiratory instability in the form of distress or ventilator desynchronize if the patient is ventilated 10(15.2%), the patient being in pain represented a barrier in 15(22.7%). Regard poor nutritional status represented 11(16.7%). In same table obtained the results regard Patient-related neurophysiologist barriers such as deep sedation and/or paralysis we

found nurses response as follows represented 16(24.2%), delirium and patient being agitated 10(15.2%), patient refusal of movement, while response regard question of patient sense due lack of motivation, anxiety 12(18.2%), patient complaining fatigue, in need for rest, experience sleepiness 17(25.8%), and tier response of question for patients admitted in ICU for palliative care represented barrier for 11(16.7%) of participants. Regarding patient-related barriers due to ICU devices and equipment: hemodynamic monitoring equipment represented a barrier for 16(24.2%) while other ICU-related devices represented a barrier for the majority of them, their response 50(75.8%) of participants. Regard the responses of our participants, in structural related barriers 19 (28.8%) Lack of early mobility program/protocol (e.g., no routine delivery of Physiotherapy), limited guidelines, no eligibility criteria is high response related structural barriers same percent for Inadequate staff training represent 13(19.7), and early discharge (before mobilization) and Limited

equipment 7 (10.6%) respectively . Regard Cultural related barriers in same table we found that lack of mobility culture (e.g., inadequate staff buy-in, lack of multidisciplinary culture) 19(28.8%), Lack of staff knowledge and expertise about risks or benefits of mobility 18 (27.3%) are considers as high nurses responses while, early mobility not a priority during ICU stay 34(37%), lack of support or staff buy-in education 11(16.7%) lack of patient/family knowledge about benefits of early mobilization 6 (9.1%). In table (4) our participants regard process related barriers showed that 18(27.3%) regard lack of planning and coordination, and regard missing/delayed daily screening for eligibility, and standing bed rest order their response 15(22.7%), while 16 (24.2%) reported that risks for mobility providers (stress, injuries) Table (5). From the previous results, the researcher found that the relation between these barriers and nurses socio demographic data is insignificant for all barriers

Table (1): Socio demographic data

Variable	Frequent	Percent
Age by years		
25-30	29	43.9
More than 30 and less than 40	37	56.1
gender		
male	29	43.9
Female	37	56.1
education level		
diploma certificate	13	19.7
BSc	22	33.3
MSc	31	47.0
Years of experience		
1-3 years	27	40.9
more than 3 years	39	59.1

Table (2): Patients related barriers no (66)

Items	Frequency		%
Physical barriers			
High severity of illness, patients “too sick”	5		7.6
Hemodynamic instability	4		6.1
Arrhythmias	8		12.1
Respiratory instability/distress, ventilator asynchrony	10		15.2
pain	15		22.7
Poor nutritional status	11		16.7
Obesity (e.g., BMI >30)	8		12.1
Baseline or new immobility/weakness	5		7.6
Neuropsychological barriers			
Deep sedation and/or paralysis	16		24.2
Delirium, agitation	10		15.2
Patient refusal, lack of motivation, anxiety	12		18.2
Fatigue, need for rest, sleepiness	17		25.8
Palliative care	11		16.7
ICU devices and equipment			
Hemodynamic monitoring equipment	16		24.2
ICU related devices	50		75.8
item	Mean	SD	P value
Total patient related barrier	4.7576	1.93001	.115

Table (3) Response of Nurses towards structural related barriers and cultural related barriers no (66)

Item	Frequency		%
structural related barriers			
Limited staff, time constraints	13		19.7
Lack of early mobility program/protocol (e.g., no routine delivery of Physiotherapy), limited guidelines, no eligibility criteria	19		28.9
Inadequate staff training	19		28.9
Limited equipment	7		10.6
Early discharge (before mobilization)	7		10.6
cultural related barriers			
Lack of mobility culture (e.g., inadequate staff buy-in, lack of multidisciplinary culture)	19		28.8
Lack of staff knowledge and expertise about risks/benefits of mobility	18		27.3
Early mobility is not a priority	12		18.2
Lack of support or staff buy-in Education	11		16.7
Lack of patient/family knowledge	6		9.1
item	Mean	SD	P.value
Total related structure and culture	4.5379	1.236	5.036

Table (4): Response of nurses towards Process related barriers no (66)

Item	Frequency		%
Lack of planning and coordination	18		27.3
Unclear expectations, roles, and responsibility	17		25.8
Missing/delayed daily screening for eligibility, and standing bedrest order	15		22.7
Risks for mobility providers (stress, injuries)	16		24.2
item	Mean	SD	P.value
Total process related barrier	2.4394	1.13854	8.697

Discussion:

Our descriptive study carried in ICU in Omdurman teaching hospital where 66 nurses enrolled in the study. Most of them their age less than 40 years females and with BSc

Patients related barriers:

From literature we found that early mobilization manifest to be effective and safe ICU patients in many researches, in spite of the evidence, many surveys and studies of early mobilization practice have shown limited penetration, spatially in patients undergoing mechanical ventilation, (MV), and early mobilization is not implemented in the daily practice in many ICUs (J. Grimm, A. et al.2019).

From our results we found that of nurses see that some barriers related patients as coma or deep degree of sedation is a major patients barrier in early mobilization in critical care units this came in same line with in study done in ben suif hospital where there study reach the same results (Mostafa, B.etal.2022) .Again we found other barriers related to patients to (EM) implementation in this study fatigue, need for rest, sleepiness, this is opposite to study done by (Truong et al 2009). Who were suggested that bed rest in ICU is not benign within less than 24 hours because many body systems are affected by interrelated pathophysiological changes associated with immobility and critical illness. (Truong A, Fan E, Brower R et al (2009) .Again another patient related barriers our participants responded that ICU related devices are most patient related barrier, the results from other studies reported that mechanical ventilation, endotracheal tube as the major patient-related barriers to

(EM)implementation (R. N. Bakhru, .etal. 2015) ,which are similar to our findings from this result regarding patient weight and mobilization of mechanically ventilated patients require education and direction about patient techniques and a better understanding of the prospective assistance in mobilization equipment (R. N. Bakhru, .etal. 2015)

Structural related barriers:

Different studies have shown that nurses reported a lack of training as a major barrier to (EM) in the patient (E. H. Hoyer.2015) .Which

consistent with our findings, where the participants reported the lack of trained staff in (EM) implementation in ICU patients as structural related barriers. This is a very important component of (EM) in clinical (.W. D. Schweickert et al.2009). For this effective, adequate training is crucial and remarkable ingredient for the successful implementation of (EM) protocols.

Process related barriers:

Again lack of planning and coordination and unclear expectations, roles, and responsibility all these decrease effectiveness of treatment and nursing care in intensive care units and represent as process related barriers finding study done by (S. E. Jolley,etal.2014). Support our finding

Finally there no association with nurses response and all barriers of early mobilization p value more than .001 as we hypothesize in our methodology

Conclusion and recommendation:

Early mobilization protocols can be implemented in ICUs after adequate addressing of potential barriers that can face healthcare workers, prepare the ICU environment with equipment and trained personnel. We suggest that successful implementation programmers of early mobilization, significant culture change is required and relies on involvement from all members of the multidisciplinary team. And having access to the right tools, training and processes is key.

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