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The Perceived Barriers to Early Mobilization among Healthcare Providers in Critical Care Units

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Abstract

Background: Early mobilization (EM) is an evidence-based approach that promotes physical activity in critically ill patients in intensive care units, though its implementation remains challenging. ***Aims:*** To examine the perceived barriers to EM and assess differences according to clinical role, unit type, and years of experience among healthcare providers in critical care units. ***Methods and Materials:*** A cross-sectional, survey-based design was used. Using convenience sampling, 376 healthcare providers were recruited from critical care units across Saudi Arabia. Data were collected via the validated Patient Mobilization Attitudes and Beliefs Survey for Intensive Care Unit (PMABS-ICU). Descriptive statistics and one-way analysis of variance (ANOVA) were used for analysis. ***Results:*** Participants were 39.1% male and 60% female. Respiratory therapists reported the highest overall perceived barriers ($M = 40.4$, $SD = 7.4$), followed by nurses ($M = 38.5$, $SD = 9.3$), physicians ($M = 36.1$, $SD = 8.1$), and physical/occupational therapists ($M = 33.7$, $SD = 8.1$); ($p = 0.001$). Attitude-related barriers had the highest mean score ($M = 39.6$, $SD = 11.7$), followed by knowledge ($M = 37.7$, $SD = 16.8$) and behavior ($M = 37.3$, $SD = 9.5$). Significant associations were observed between barriers and clinical role ($p = 0.001$), unit type ($p < 0.001$), and years of experience ($p = 0.001$). ***Conclusions:*** Findings highlight that attitude-related barriers were the highest among healthcare providers. Therefore, targeted training programs are essential to strengthen healthcare providers' confidence and competence in implementing safe mobilization practices for critically ill patients.

Keywords: Perceived barriers, early mobilization, healthcare providers, critical care units.

1 | INTRODUCTION

Patients in intensive care units (ICUs) are often exposed to prolonged immobility due to critical illness and its treatments (Mohan *et al.,* 2021). Accumulating evidence has demonstrated that prolonged immobility is associated with significant adverse physical outcomes, including muscle atrophy, generalized weakness, pressure injuries, and pneumonia (Al-Dorzi *et al.,* 2023; Sartori *et al.,* 2021). Beyond its physical consequences, immobility has also been linked to important psychological complications, such as depression and anxiety (Singam *et al.,* 2024; Zang *et al.,* 2019). Early mobilization (EM) has emerged as an evidence-based intervention aimed at mitigating these complications and is generally defined as the initiation and progression of physical activity within the first 2 to 5 days of critical illness (Hodgson *et al.,* 2012; Rosa *et al.,* 2023).

Despite substantial evidence supporting the role of EM in preventing clinical complications, its implementation remains inconsistent across ICUs worldwide (Alqahtani *et al.,* 2022; Pires-Neto *et al.,* 2015). For example, only 29% of patients in a Brazilian ICU participated in out-of-bed activities, with mobilization occurring more frequently among tracheostomized patients than among those with an endotracheal tube (27% vs. 2%), respectively (Pires-Neto *et al.,* 2015). Similarly, a national survey conducted across 205 ICUs in Saudi Arabia (SA) reported that EM was implemented in only 47% of ICUs, with 64% of practitioners having received no prior training in EM and 55% reporting the absence of written mobilization protocols (Alqahtani *et al.,* 2022).

Early mobilization of critically ill patients involves assisting them in performing progressive physical activities, such as sitting on the edge of the bed without back support, transferring to a chair, and ambulating with or without assistive devices and ICU staff support (Zhang *et al.,* 2021). In the present study, consistent with previous literature, mobilization is defined specifically as getting patients out of bed or

facilitating ambulation (Goodson *et al.,* 2018; Parker *et al.,* 2021).

Evidence suggests that EM offers numerous clinical benefits, including reduced muscle weakness, a shorter duration of mechanical ventilation, and decreased ICU and hospital length of stay (Hodgson *et al.,* 2022; Singam, 2024). Early mobilization is considered generally safe in ICU settings (Nydahl *et al.,* 2017), although adverse events such as oxygen desaturation, falls, or hemodynamic instability may occur (Sakai *et al.,* 2020). Established safety criteria and mobilization guidelines help minimize these risks (Da Conceicao *et al.,* 2017; Hodgson *et al.,* 2014).

Despite the proven benefits of EM, multiple barriers challenge its implementation. These include organizational barriers such as the absence of standardized EM protocols (Akhtar & Deshmukh, 2021; Babazadeh *et al.,* 2021) and limited availability of specialized equipment (Dikkema *et al.,* 2022; Fontela *et al.,* 2018). Furthermore, patient-related clinical factors, including coma, deep sedation, delirium, hemodynamic instability, and general safety concerns, significantly hinder progress (Babazadeh *et al.,* 2021; Dikkema *et al.,* 2022). These difficulties are compounded by critical workforce challenges, including inadequate staffing, a lack of trained personnel, and insufficient time during shifts (Babazadeh *et al.,* 2021).

Early mobilization in the ICU necessitates a well-coordinated, multidisciplinary team approach (Green *et al.,* 2016; Oike *et al.,* 2024; Wahab *et al.,* 2015). This team typically includes ICU clinicians such as physicians, physician assistants, nurses, physical therapists (PTs), occupational therapists (OTs), and respiratory therapists (RTs) (Wahab *et al.,* 2015). Therefore, the primary and secondary objectives of this study are as follows:

Primary objective:

To examine healthcare providers' perceived barriers to implementing EM within critical care units in the Eastern Region of SA.

Secondary objective:

To assess differences in perceived barriers to EM among healthcare providers according to clinical role, unit type, and years of experience.

Research questions:

1. What are the perceived barriers to EM across the three domains (knowledge, attitude, and behavior) among healthcare providers in critical care units in SA?
2. What are the differences in perceived barriers to EM according to clinical role, unit type, and years of experience among healthcare providers in critical care units in SA?

2 | METHODS

2.1 | Study Design

This study utilized a descriptive cross-sectional survey design.

2.2 | Participants and setting

The participants were healthcare providers working in adult critical care areas, including critical care nurses, physicians, RTs, PTs, and OTs. A non-probability convenience sampling method was used due to feasibility and accessibility during the data collection period. Participants were recruited from the general ICU, medical ICU (MICU), surgical ICU (SICU), and cardiac care unit (CCU) at two large hospitals (King Fahad University Hospital [KFUH] and King Fahad Specialist Hospital Dammam [KFSH-D]**)** in the Eastern Region of SA. The inclusion criteria included healthcare providers who had worked in adult critical care units for at least 6 months and provided direct patient care. The exclusion criteria included healthcare providers in administrative roles and interns.

2.3 | Sample size calculation

The sample size was determined based on the calculated number of critical care nurses using a 95% confidence level, 5% margin of error, and 50% response distribution, resulting in a required sample of 200 nurses. A formal sample size calculation was not performed for other healthcare providers due to the unavailability of accurate population estimates; therefore, they were recruited using non-probability convenience sampling.

2.4 | Instrument

A self-reported questionnaire was utilized, comprising two sections. The first section consisted of participants' demographic information and work-related characteristics, and the second section incorporated the validated 26-item Patient Mobilization Attitudes & Beliefs Survey for the Intensive Care Unit (PMABS-ICU) tool (Goodson *et al.,* 2018; publicly accessible via https://www.johnshopkinssolutions.com/solution/amp/activity-mobility-promotion-amp-icu/). This instrument employs a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Additionally, an open-ended question was included to allow participants to provide free-text responses regarding any further concerns related to patient mobility. The total PMABS-ICU score and the scores for its three subscales—knowledge (4 items), attitudes (9 items), and behaviors (13 items)—were calculated. For analysis, subscales and total scores were standardized to a 0 to 100 scale using the following formula:

$$Transformed\ score = \frac{Total\ possible\ score - Observed\ sum}{Total\ possible\ score} * 100$$

This transformation allows for consistent interpretation and comparison of scores across subscales and the overall scale. The higher scores reflect greater perceived barriers. Reverse scoring was applied to Items 1, 3, 4, 7, 10, 12, 13, 15, 17, 19, 21, and 23, whereby a score of 5 becomes 1, 1 becomes 5, 4 becomes 2, and 2 becomes 4. The psychometric properties of the tool were evaluated in a previous study, which reported a Cronbach's alpha of 0.82 (Goodson *et al.,* 2018). In the present study, internal consistency was assessed using Cronbach's alpha, yielding a value of 0.813 (Appendix Table A1). This indicates good reliability, consistent with the original validation study. The corresponding validity analysis is presented in Appendix Table A2.

2.5 | Data collection

The questionnaire was administered electronically using the QuestionPro platform. Participants were recruited through posters displayed within the participants' critical care units, private social media networks, and direct contact. Data collection occurred between March and April 2025. An introductory statement at the beginning of the survey provided detailed information about the study and its purpose. Participants were required to provide informed consent before beginning the questionnaire. A screening process was included to ensure that only individuals who met the predefined inclusion criteria could proceed. All survey items were mandatory, and the platform did not permit submission of incomplete responses. Upon completion and submission, responses were automatically stored on the QuestionPro platform, and all responses were anonymized and securely managed. The average time to complete the questionnaire was approximately 10 minutes.

2.6 | Data analysis

The Statistical Package for Social Sciences (SPSS v.23) was utilized to perform the data processing and statistical analysis. For descriptive analysis, participant demographics and work-related characteristics were measured as categorical variables and summarized using frequencies (*n*) and percentages (%), whereas barrier scores to EM in critical care settings were treated as continuous variables and reported as means (*M*) and standard deviations (*SD*). To check the data normality, the Shapiro–Wilk test was used, from which the insignificant results indicated that the data were normally distributed. Hence, parametric tests were used for inferential analysis. To explore the association between subscales and the overall score of the PMABS-ICU with the independent variables with more than two categories, one-way ANOVA was used. The Tuckey post-hoc test was used for pairwise comparison when significant results were found from one-way ANOVA. A multiple linear regression model was used to predict the score of subscales and the overall scale with work-related variables. All survey items were mandatory; therefore, no missing data were present. A p-value of <0.05 was considered statistically significant.

2.7 | Ethical consideration

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of Imam Abdulrahman Bin Faisal University (IAU) in the Eastern Region of SA (IRB number: IRB-PGS-2025-04-0192) to permit data collection at the KFUH-affiliated teaching hospital. Additional approval was secured from the IRB of KFSH-D in the same region (IRB number: NED0428). Participants were informed of the study's purpose, and the research involved no procedures that posed potential harm. Participation was entirely voluntary, and the anonymity and confidentiality of all respondents were strictly maintained.

3 | RESULTS

3.1 | Participants' demographics

The online questionnaire was completed by a total of 376 participants. Table 1 presents the frequency distribution of demographic and work-related characteristics of the participants. Most of the participants were nurses (n = 231, 61.4%). A greater proportion of participants were female (n = 229, 60.9%). Most respondents worked in the general ICU (n = 249, 66.2%). Nearly two-fifths had more than 9 years of experience (n = 147, 39.1%). Additionally, 243 participants (64.7%) reported not receiving EM training. Moreover, 180 (47.9%) participants reported that an EM protocol was unavailable in their hospitals, and 173 (46%) reported having no prior experience with EM.

Table 1: Demographic and Work-Related Characteristics of Participants (N = 376)

Variables	*n*	%
Demographic Characteristics		
Age Groups		
<25	15	4.0
25-34	182	48.4
35-39	101	26.9
≥ 40	78	20.7
Gender		
Male	147	39.1
Female	229	60.9
Nationality		
Saudi	221	58.8

Variables	***n***	***%***
Non-Saudi	155	41.2
Marital Status		
Single	104	27.7
Married	261	69.4
Divorced/Separated	7	1.9
Widowed	4	1.1
Work-Related Characteristics		
Clinical Role		
Nurse	231	61.4
Respiratory therapist	74	19.7
Physical/occupational therapist	36	9.6
Physician	35	9.3
Unit Type		
General ICU	249	66.2
MICU	30	8.0
SICU	47	12.5
CCU	34	9.0
Other (rotating)	16	4.3
Experience		
1 to 3 years	64	17.0
4 to 6 years	99	26.3
7 to 9 years	66	17.6
>9 years	147	39.1
Early mobilization protocol implemented in your ICU		
Yes	196	52.1
No	180	47.9
Received in-service training		
Yes	133	35.4
No	243	64.6
Previous experience in early mobilization in ICU		
Yes	203	54.0
No	173	46.0
Note: *General ICU= Mixed Intensive Care Unit (Medical & Surgical ICU), MICU= Medical Intensive Care Unit, SICU= Surgical Intensive Care Unit, CCU= Cardiac Care Unit. n= frequency, % = percentage.*		

3.2 | Overall barriers and subscale scores across clinical roles

Table 2 shows the PMABS-ICU overall and subscale scores (knowledge, attitude, behavior) by clinical role. The highest overall barriers score was reported by RTs ($M = 40.4$, $SD = 7.4$), followed by nurses ($M = 38.5$, $SD = 9.3$) and physicians ($M = 36.1$, $SD = 8.1$), whereas the lowest score was reported by PTs and OTs ($M = 33.7$, $SD = 8.1$). The highest knowledge barriers score was also observed among RTs ($M = 43.1$, $SD = 16.3$), while the lowest score was reported by PTs and OTs ($M = 32.5$, $SD = 16.4$). For attitude barriers, the highest score was reported by nurses ($M = 41.2$, $SD = 11.9$) and the lowest score by PTs and OTs ($M = 32.3$, $SD = 10.1$). The behavioral subscale showed the highest barriers among RTs ($M = 40.4$, $SD = 7.4$) and the lowest score among PTs and OTs ($M = 33.7$, $SD = 8.1$).

Table 2: PMABS-ICU Overall and Subscale Scores (Knowledge, Attitude, Behavior) by Clinical Role (N = 376)

Scale	**Nurse**	**Respiratory therapist**	**Physical /occupational therapist**	**Physician**	**P-value**
Knowledge	37.1(16.9) [a]	43.1(16.3) [a, b]	32.5(16.4) [b]	35.4(15.8)	0.007*
Attitude	41.2(11.9) [a]	39.4(10.4) [b]	32.3(10.1) [a, b]	37.1(10.9)	0.001*
Behavior	37.0(9.8) [a]	40.2(9.1) [a, b]	35.3(8.1) [b]	35.5(8.9)	0.019*
Overall	38.5(9.3) [a]	40.4(7.4) [b]	33.7(8.1) [a, b]	36.1(8.1)	0.001*
Note: ** $p < 0.05$ indicates statistical significance.* *Values sharing the same lowercase letter within a row are not significantly different at the 0.05 level.*					

3.3 | Leading perceived barriers according to PMABS-ICU by clinical role

Table 3 presents the average scores for all barrier items by clinical role. The most prominent knowledge barrier was insufficient training on how to safely mobilize patients (Item 2), with nurses reporting the lowest agreement (M = 2.5, SD = 1.1). The second highest knowledge barrier was uncertainty regarding which patients are appropriate for referral to occupational therapy (Item 6), which was most pronounced among PTs and OTs (M = 2.7, SD = 1.1).

Regarding attitudinal barriers, the highest-scoring item was lack of confidence in the ability to mobilize patients (Item 21), with nurses reporting the highest agreement (M = 3.4, SD = 1.1), followed by RTs, PTs, and OTs, while physicians reported the lowest agreement. The second highest attitudinal barrier was uncertainty about when it is safe to mobilize patients (Item 19), again with nurses reporting the highest agreement (M = 3.2, SD = 1.0).

Among behavioral barriers, concerns regarding adequacy of nurse-to-patient staffing (Item 9) were identified, with PTs and OTs reporting the lowest agreement (M = 2.3, SD = 1.1). Lack of time to mobilize patients (Item 23) was also highly rated, particularly among nurses (M = 3.1, SD = 1.1).

Table 3: PMABS-ICU Item Scores by Clinical Role of Participants (N = 376)

Item No.	Item Summary	Nurse N= 231	Respiratory therapist N= 74	Physical /occupational therapist N= 36	Physician N= 35
Knowledge		***M* ± *SD***	***M* ± *SD***	***M* ± *SD***	***M* ± *SD***
2	I have received training on how to safely mobilize my patients	2.5(1.1)	2.6(1.3)	2.6(1.1)	2.8(1.3)
5	I understand which patients are appropriate to refer to PT	3.1(1.4)	2.9(1.3)	3.0(1.4)	3.0(0.8)
6	I understand which patients are appropriate to refer to OT	3.0(1.3)	2.8(1.2)	2.7(1.1)	2.9(1.4)
25	I educate patients to exercise/increase activity (if no contraindication)	3.9(0.9)	3.9(0.8)	3.8(0.9)	4.1(1.1)
Attitude					
1	My patients are too sick to be mobilized*	2.7(1.1)	2.6(1.1)	2.6(1.0)	2.6(1.2)
3	Increasing mobilization will be harmful to patients (e.g., falls, IV-line removal) *	2.9(1.1)	2.8(0.9)	3.0(1.1)	2.6(1.2)
4	A PT/OT should be the primary provider to mobilize*	2.2(0.9)	2.2(1.0)	2.8(1.0)	1.9(1.2)
12	Increasing mobilization will be more work for nurses*	2.5(1.1)	2.3(0.9)	2.2(0.8)	2.3(0.9)
13	Increasing mobilization will be more work for PT/OT*	3.0(1.1)	2.8(0.9)	2.6(0.9)	2.8(0.9)
18	Mobilized patients (at least once daily) have better outcomes	4.3(0.7)	4.3(0.8)	4.4(0.7)	4.3(0.7)
19	I am not sure when it is safe to mobilize my patients*	3.2(1.0)	2.9(1.1)	3.1(1.1)	2.9(1.1)
21	I do not feel confident in my ability to mobilize patients*	3.4(1.1)	3.3(1.1)	3.2(1.2)	3.1(1.3)
26	Patients have time during the day to be mobilized at least once daily	3.6(1.0)	3.6(0.9)	3.6(0.9)	3.8(0.9)
Behavior					
7	We lack proper equipment/furnishings to mobilize patients*	2.4(1.1)	2.5(1.1)	2.3(1.1)	2.4(1.3)
8	Physical functioning is regularly discussed among healthcare providers	3.6(1.0)	3.7(1.1)	3.2(0.9)	3.8(0.8)
9	Nurse-to-patient staffing is adequate to mobilize my patients	2.7(1.2)	2.9(1.2)	2.3(1.1)	2.5(1.1)
10	My patients often have contraindications to be mobilized*	2.5(0.9)	2.6(0.9)	2.4(0.9)	2.4(0.9)
11	Patients are mobilized at least once daily by nurses (if no contraindication)	3.2(1.1)	3.4(1.2)	2.8(1.1)	3.3(1.2)
14	My leadership is very supportive of patient mobilization	3.5(1.0)	3.6(1.0)	3.3(0.8)	3.6(1.0)

Item No.	Item Summary	Nurse N= 231	Respiratory therapist N= 74	Physical /occupational therapist N= 36	Physician N= 35
15	Increasing mobilization frequency increases my risk for injury*	2.8(1.1)	2.8(1.1)	2.5(0.9)	2.8(1.1)
16	Patients usually have appropriate physician orders to be mobilized	3.9(0.8)	4.0(0.7)	3.7(0.9)	4.0(0.7)
17	Patients are resistant to being mobilized*	2.9(0.9)	2.9(1.0)	2.9(1.0)	2.9(1.0)
20	Family members are frequently interested to help mobilize patients	3.2(1.0)	3.5(0.9)	3.2(0.9)	3.5(0.9)
22	I document physical functioning status during my shift/work day	3.8(1.0)	3.7(0.9)	3.8(1.0)	4.1(0.9)
23	I do not have time to mobilize patients during my shift/work day*	3.1(1.1)	2.9(1.0)	2.9(1.3)	3.0(0.9)
24	I mobilize patients at least once during my shift/work day (if no contraindication)	2.4(1.6)	2.6(1.6)	2.4(1.5)	2.3(1.6)

Note: *Descriptive statistics are based on Likert Scale responses for each item. 5 = Strongly Agree. 4 = Agree. 3 = Neutral. 2 = Disagree. 1 = Strongly Disagree.*
**Reverse coded items, score of 5 becomes 1, 1 becomes 5, 4 becomes 2, 2 becomes 4.*

3.4 | Association between barriers and clinical role, unit type, and years of experience

Table 4 shows the association between work-related factors and the overall PMABS-ICU scores. In this study, clinical role was significantly associated with perceived EM barriers (P = 0.001). Furthermore, unit type was significantly associated with perceived EM barriers (P = 0.001), with the highest overall scores observed among participants working in SICU (M = 41.7, SD = 10.2) and the lowest, among those in the CCU (M = 32.4, SD = 10.8). Additionally, participants with more than 9 years of experience reported the lowest barrier scores (M = 36.9, SD = 8.9), and this difference was statistically significant (P = 0.001).

Table 4: Association Between Work-Related Factors with Overall PMABS-ICU Scale (N = 376)

Clinical Role	***n***	***M***	***SD***	***t/f***	***p-value***
Nurse	231	38.5	9.3	5.47	0.001*
Respiratory therapist	74	40.4	7.4		
Physical /occupational therapist	36	33.7	8.1		
Physician	35	36.1	8.1		
Unit Type					
General ICU	249	38.2	7.8	6.414	0.001*
MICU	30	40.1	9.5		
SICU	47	41.7	10.2		
CCU	34	32.4	10.8		
Experience					
1 to3 years	64	38.7	6.8	5.543	0.001*
4 to 6 years	99	39.8	9.1		
7 to 9 years	66	40.5	9.1		
>9 years	147	36.9	8.9		

Note: *n= frequency, M= Mean, SD= Standard deviation, t / F = t-statistic from independent samples t-test, F-statistic from one-way (ANOVA).*
** $p < 0.05$ indicates statistical significance.*

3.5 | Impact of protocol availability on perceived barriers

Table 5 illustrates the multivariable linear regression analysis of PMABS-ICU scores by the presence of EM protocols in the ICU. The researchers revealed that the absence of an EM protocol was significantly associated with higher perceived barriers because participants from ICUs without a protocol reported greater overall barrier scores than those from units with established protocols (β = 0.41, P = 0.000).

Table 5: Multivariable Linear Regression Analysis of PMABS-ICU Scores by the Presence of EM Protocol in the ICU (N = 376)

Early mobilization protocol implemented in your ICU								
	Knowledge		**Attitude**		**Behavior**		**Overall**	
	β	***p-value***	**β**	***p-value***	**β**	***p-value***	**β**	***p-value***
Yes	Reference							
No	0.27	0.001*	0.25	0.001*	0.40	0.001*	0.41	0.001*
Note: **p < 0.05 indicates statistical significance.*								

3.6 | Free-text responses

Qualitative responses were obtained from 24 of the 376 participants and revealed prominent organizational barriers to EM, particularly the absence of clear criteria, limited availability of equipment, understaffing, and lack of dedicated EM teams and training (Table 6).

Table 6: Additional Factors Influencing Patient Mobility Reported by Participants (N=24)

Theme	**Specific issue**	***n***
Organizational level	Criteria for early mobilization	6
	Teams for early mobilization and train them	4
	Lack of equipment	5
	Under staffing	4
Individual level	Lack of physical therapist support	1
	Lack of communication between different specialties	1
Patient-related	Patients' and family awareness	1
	Challenges with intubated patients	2
Note: *n= frequency.*		

4 | DISCUSSION

This study aims to evaluate healthcare providers' barriers toward EM of critically ill patients in the ICU in SA and to assess potential differences in perceived barriers to EM across healthcare providers' clinical roles, unit types, and years of experience. This study revealed multiple barriers, categorized into three domains: knowledge, attitude, and behavior. Attitudinal barriers were the most prominent, suggesting gaps in the healthcare providers' perceptions and willingness to engage in EM. Similar findings were reported in Korea, where attitudinal barriers were the highest (Kim *et al.,* 2018).

In the present study, RTs demonstrated the highest overall perceived barriers, similar to the findings by Aljohani *et al.,* (2024). In contrast, PTs and OTs reported the lowest overall EM barrier scores. This finding is consistent with previous studies indicating that PTs and OTs, who typically have greater expertise in mobility practices, perceive fewer barriers to mobilization (Aljohani *et al.,* 2024; Yeung *et al.,* 2022). These differences may reflect variations in professional roles and training because PTs and OTs are primarily trained in functional mobility.

The current study indicates that RTs exhibited the highest knowledge barrier scores, aligning with findings by Aljohani *et al.,* (2024), who similarly reported greater knowledge-related barriers among RTs. In the current study, insufficient training in safe patient mobilization emerged as a key knowledge barrier, indicating gaps in EM education. Parker *et al.,* (2021) reported that use of the PMABS-ICU tool in quality improvement initiatives reduced knowledge barriers and improved EM practice, while Johnson *et al.,* (2017) showed that pre- and post-test educational programs effectively reduced EM knowledge gaps. Uncertainty regarding appropriate referral to occupational therapy was another knowledge barrier in the current study, most pronounced among PTs and OTs. This may reflect a lack of standardized referral protocols and inconsistent interdisciplinary collaboration, as emphasized by Kvande *et al.,* (2021).

Moreover, nurses reported the highest attitudinal barrier scores, consistent with previous studies that demonstrated similar findings regarding EM attitude barriers among nurses (Lewis *et al.,* 2021; Yeung *et al.,* 2022). Among all healthcare providers, nurses expressed the greatest lack of confidence in mobilizing patients, suggesting reduced self-efficacy in implementing EM, which is potentially related to limited training and practical experience. Similarly, Aljohani *et al.,* (2024) reported low confidence in patient mobilization among healthcare providers, including nurses. Uncertainty about when it is safe to mobilize patients was another prominent attitudinal barrier, underscoring the need for clear EM protocols to enhance clinical confidence. Evidence indicates that implementing standardized, evidence-based protocols improves EM safety and feasibility and reduces perceived barriers (Bakhru *et al.,* 2016; Taito *et al.,* 2016).

In addition, this study identified that the behavioral subscale showed the highest barriers among

RTs and the lowest among PTs and OTs. This finding is consistent with Aljohani *et al.,* (2024), who also reported higher behavioral barriers among RTs. Furthermore, Lewis *et al.,* (2021) reported lower behavioral barriers among PTs and OTs in the United Kingdom, suggesting contextual differences in professional roles. Perceived inadequacy of nurse-to-patient staffing was a major behavioral barrier in this study. Greater EM implementation in ICUs has been associated with higher nurse-to-patient ratios, highlighting the importance of adequate staffing (Bakhru *et al.,* 2016). In addition, this study revealed that the lack of time to mobilize patients was another key barrier, with nurses reporting the highest agreement. It has been reported that heavy workloads and competing demands in ICUs negatively affect care quality (Almenyan *et al.,* 2021).

In the present study, unit type was significantly associated with perceived EM barriers. Higher barriers observed in the SICU may be attributed to the complexity and postoperative instability of patients, which can limit healthcare providers' ability to safely mobilize patients. This finding is consistent with Yeung *et al.,* (2022), who also reported variability in barrier scores across unit types, although their results did not reach statistical significance. Furthermore, in this study, experience level also significantly influenced barrier perceptions. This aligns with Goodson *et al.,* (2018) and Aljohani *et al.,* (2024), who both found that more experienced providers reported fewer barriers, in contrast to Lewis *et al.,* (2021) and Yeung *et al.,* (2022), who both observed no significant association between experience and EM barriers.

Furthermore, the absence of an EM protocol was significantly associated with higher perceived barriers in the current study, underscoring the role of standardized protocols in facilitating EM practice. Similar findings were reported in Korea, where units without protocols demonstrated higher barrier scores (Kim *et al.,* 2018). Evidence shows that written guidelines and structured protocols improve mobilization practices (Ho *et al.,* 2022; Ling *et al.,* 2020; Linke *et al.,* 2020).

5 | STRENGTHS AND LIMITATIONS

This study offers insight into perceived EM barriers among healthcare providers working with critically ill patients. A key strength is the use of the validated PMABS-ICU instrument, which assesses knowledge, attitude, and behavioral barriers and demonstrates good internal consistency. However, the cross-sectional design limits causal inference, and convenience sampling may introduce selection bias and limit generalizability. Self-reported data also introduce potential social desirability and recall bias.

6 | IMPLICATIONS FOR PRACTICE AND RESEARCH

Based on the current study findings, recommendations to enhance EM in critical care span clinical, educational, and administrative domains. Clinically, standardized EM protocols with clear criteria for ventilated and non-ventilated patients should be implemented to ensure safe and consistent practice, supported by structured tools such as the Johns Hopkins Activity and Mobility Promotion (JH-AMP) program (McLaughlin *et al.,* 2022). Educationally, targeted training programs are needed to strengthen critical care healthcare providers' competence and confidence in safe mobilization. Administratively, institutional support and leadership engagement are essential to facilitate protocol adoption and sustain EM implementation. Future research should evaluate the impact of EM protocols on reducing perceived barriers and improving EM practices across ICUs and examine factors influencing long-term sustainability and EM adherence.

7 | CONCLUSIONS

This multisite study identified significant perceived barriers to EM among healthcare providers in Saudi critical care units across knowledge, attitude, and behavioral domains. Attitudinal barriers were most prominent, with RTs reporting the highest overall scores. Key barriers included insufficient training, uncertainty about occupational therapy referrals and safe mobilization, inadequate staffing, and limited time. Perceived barriers were significantly associated with clinical role, unit type, and years of experience.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Conflict of Interest Statement

The author declares that there are no conflicts of interest related to this work.

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REFERENCES

- Mohan, S., Patodia, S., Kumaravel, S., & Vijayaraghavan, B. K. T. (2021). Improving mobility in critically ill patients in a tertiary care ICU: Opportunities and challenges. *Indian Journal of Critical Care Medicine*, *25*(1), 34–42. https://doi.org/10.5005/jp-journals-10071-23438
- Al-Dorzi, H. M., AlQahtani, S., Al-Dawood, A., Al-Hameed, F. M., Burns, K. E. A., Mehta, S., Jose, J.,

Alsolamy, S. J., Abdukahil, S. A. I., Afesh, L. Y., Alshahrani, M. S., Mandourah, Y., Almekhlafi, G. A., Almaani, M., Bshabshe, A. A., Finfer, S., Arshad, Z., Khalid, I., Mehta, Y., Arabi, Y. M. (2023). Association of early mobility with the incidence of deep-vein thrombosis and mortality among critically ill patients: A post hoc analysis of PREVENT trial. *Critical Care*, *27*(1). https://doi.org/10.1186/s13054-023-04333-9

- Sartori, M., Favaretto, E., & Cosmi, B. (2021). Relevance of immobility as a risk factor for symptomatic proximal and isolated distal deep vein thrombosis in acutely ill medical inpatients. *Vascular Medicine*, *26*(5), 542–548. https://doi.org/10.1177/1358863x21996825
- Singam, A. (2024). Mobilizing progress: A comprehensive review of the efficacy of early mobilization therapy in the intensive care unit. *Cureus*, *16*(4), e57595. https://doi.org/10.7759/cureus.57595
- Zang, K., Chen, B., Wang, M., Chen, D., Hui, L., Guo, S., Ji, T., & Shang, F. (2019). The effect of early mobilization in critically ill patients: A meta-analysis. *Nursing in Critical Care*, *25*(6), 360–367. https://doi.org/10.1111/nicc.12455
- Hodgson, C. L., Berney, S., Harrold, M., Saxena, M., & Bellomo, R. (2012). Clinical review: Early patient mobilization in the ICU. *Critical Care*, *17*, Article 207. https://doi.org/10.1186/cc11820
- Rosa, D., Negro, A., Marcomini, I., Pendoni, R., Albabesi, B., Pennino, G., Terzoni, S., Destrebecq, A., & Villa, G. (2023). The effects of early mobilization on acquired weakness in intensive care units. *Dimensions of Critical Care Nursing*, *42*(3), 146–152. https://doi.org/10.1097/dcc.0000000000000575
- Alqahtani, J. S., Alahamri, M. D., Alqahtani, A. S., Alamoudi, A. O., Alotaibi, N. Z., Ghazwani, A. A., Aldhahir, A. M., Alghamdi, S. M., Obaidan, A., Alharbi, A. F., Sreedharan, J. K., Rabeeah, S. M. A., & Zahrani, E. M. A. (2022). Early mobilization of mechanically ventilated ICU patients in Saudi Arabia: Results of an ICU-wide national survey. *Heart & Lung*, *56*, 167–174. https://doi.org/10.1016/j.hrtlng.2022.07.010
- Pires-Neto, R. C., Lima, N. P., Cardim, G. M., Park, M., & Denehy, L. (2015). Early mobilization practice in a single Brazilian intensive care unit. *Journal of Critical Care*, *30*(5), 896–900. https://doi.org/10.1016/j.jcrc.2015.05.004
- Zhang, H., Liu, H., Li, Z., Li, Q., Chu, X., Zhou, X., Wang, B., Lyu, 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. *International Journal of Nursing Sciences*, *9*(1), 49–55. https://doi.org/10.1016/j.ijnss.2021.10.001
- Goodson, C. M., Friedman, L. A., Mantheiy, E., Heckle, K., Lavezza, A., Toonstra, A., Parker, A. M., Seltzer, J., Velaetis, M., Glover, M., Outten, C., Schwartz, K., Jones, A., Coggins, S., Hoyer, E. H., Chan, K. S., & Needham, D. M. (2018). Perceived barriers to mobility in a medical ICU: The Patient Mobilization Attitudes & Beliefs Survey for the ICU. *Journal of Intensive Care Medicine*, *35*(10), 1026–1031. https://doi.org/10.1177/0885066618807120
- Parker, A. M., Akhlaghi, N., Malik, A. M., Friedman, L. A., Mantheiy, E., Albert, K., Glover, M., Dong, S., Lavezza, A., Seltzer, J., & Needham, D. M. (2021). Perceived barriers to early goal-directed mobility in the intensive care unit: Results of a quality improvement evaluation. *Australian Critical Care*, *35*(3), 219–224. https://doi.org/10.1016/j.aucc.2021.05.002
- Hodgson, C. L., Bailey, M., Bellomo, R., Brickell, K., Broadley, T., Buhr, H., Gabbe, B. J., Gould, D. W., Harrold, M., Higgins, A. M., Hurford, S., Iwashyna, T. J., Neto, A. S., Nichol, A. D., Presneill, J. J., Schaller, S. J., Sivasuthan, J., Tipping, C. J., Webb, S., & Young, P. J. (2022). Early Active Mobilization during Mechanical Ventilation in the ICU. *New England Journal of Medicine*, *387*(19), 1747–1758. https://doi.org/10.1056/nejmoa2209083
- Nydahl, P., Sricharoenchai, T., Chandra, S., Kundt, F. S., Huang, M., Fischill, M., & Needham, D. M. (2017). Safety of patient mobilization and rehabilitation in the intensive care unit: Systematic review with meta-analysis. *Annals of the American Thoracic Society*, *14*(5), 766–777. https://doi.org/10.1513/annalsats.201611-843sr
- Sakai, T., Hoshino, C., Okawa, A., Wakabayashi, K., & Shigemitsu, H. (2020). The safety and effect of early mobilization in the intensive care unit according to cancellation criteria. *Progress in Rehabilitation Medicine*, *5,* Article 20200016. https://doi.org/10.2490/prm.20200016
- Da Conceição, T. M. A., Gonzáles, A. I., De Figueiredo, F. C. X. S., Vieira, D. S. R., & Bündchen, D. C. (2017). Safety criteria to start early mobilization in intensive care units: Systematic review. *Revista Brasileira De Terapia Intensiva*, *29*(4), 509–519. https://doi.org/10.5935/0103-507x.20170076
- Hodgson, C. L., Stiller, K., Needham, D. M., Tipping, C. J., Harrold, M., Baldwin, C. E., Bradley, S., Berney, S., Caruana, L. R., Elliott, D., Green, M., Haines, K., Higgins, A. M., Kaukonen, K., Leditschke, I. A., Nickels, M. R., Paratz, J., Patman, S., Skinner, E. H., Webb, S. A. (2014). Expert consensus and recommendations on safety criteria for active mobilization of mechanically ventilated critically ill adults. *Critical Care*, *18*, Article 658. https://doi.org/10.1186/s13054-014-0658-y
- Akhtar, P. M., & Deshmukh, P. K. (2021). Knowledge, attitudes, and perceived barriers of healthcare providers toward early mobilization of adult critically ill patients in intensive care unit.

Indian Journal of Critical Care Medicine, *25*(5), 512–518. https://doi.org/10.5005/jp-journals-10071-23835

- 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. *Journal of Medicine and Life*, *14*(1), 100–104. https://doi.org/10.25122/jml-2019-0135
- Dikkema, Y., Mouton, L., Cleffken, B., De Jong, E., Van Baar, M., Pijpe, A., Niemeijer, A., Van Der Schans, C., Scholten, S., Van Der Steen-Dieperink, M., & Nieuwenhuis, M. (2022). Facilitators & barriers and practices of early mobilization in critically ill burn patients: A survey. *Burns*, *49*(1), 42–54. https://doi.org/10.1016/j.burns.2022.08.023
- Fontela, P. C., Júnior, L. A. F., & Friedman, G. (2018). Clinical attitudes and perceived barriers to early mobilization of critically ill patients in adult intensive care units. *Revista Brasileira De Terapia Intensiva*, *30*(2), 187–194. https://doi.org/10.5935/0103-507x.20180037
- Green, M., Marzano, V., Leditschke, I. A., Mitchell, I., & Bissett, B. (2016). Mobilization of intensive care patients: A multidisciplinary practical guide for clinicians. *Journal of Multidisciplinary Healthcare*, 2016(9), 247–256. https://doi.org/10.2147/jmdh.s99811
- Oike, K., Ishibashi, O., Nosaka, N., & Hirota, S. (2024). The impact of multidisciplinary team intervention for early mobilization of patients with aneurysmal subarachnoid hemorrhage in stroke care unit: A retrospective cohort study. *Physical Therapy Research*, *27*(3), 166–172. https://doi.org/10.1298/ptr.e10297
- Wahab, R., Yip, N. H., Chandra, S., Nguyen, M., Pavlovich, K. H., Benson, T., Vilotijevic, D., Rodier, D. M., Patel, K. R., Rychcik, P., Perez-Mir, E., Boyle, S. M., Berlin, D., Needham, D. M., & Brodie, D. (2015). The implementation of an early rehabilitation program is associated with reduced length of stay: A multi-ICU study. *Journal of the Intensive Care Society*, *17*(1), 2–11. https://doi.org/10.1177/1751143715605118
- Kim, C., Kim, S., Yang, J., & Choi, M. (2018). Nurses' perceived barriers and educational needs for early mobilisation of critical ill patients. *Australian Critical Care*, *32*(6), 451–457. https://doi.org/10.1016/j.aucc.2018.11.065
- Aljohani, H. Y., Alammar, S., Alnawmasi, S., Alfawzan, R., Alotaibi, N., Mumenah, N., Alruwaili, A., Algrani, S. S., Alotaibi, T. F., Alqahtani, M. K., Alqahtani, M. M., Alanazi, A. M., Ismaeil, T., Almalki, S., & Alotaibi, J. (2024). Perceived barriers of clinical roles towards intensive care unit mobility. *Rehabilitation Research and Practice*, *2024*(1). https://doi.org/10.1155/2024/5551184
- Yeung, M. T., Tan, N. K., Lee, G. Z., Gao, Y., Tan, C. J., & Yan, C. C. (2022). Perceived barriers to mobility in the intensive care units of Singapore: The Patient Mobilisation Attitudes and Beliefs Survey for the intensive care units. *Journal of the Intensive Care Society*, *24*(1), 32–39. https://doi.org/10.1177/17511437221099791
- Johnson, K., Petti, J., Olson, A., & Custer, T. (2017). Identifying barriers to early mobilisation among mechanically ventilated patients in a trauma intensive care unit. *Intensive and Critical Care Nursing*, *42*, 51–54. https://doi.org/10.1016/j.iccn.2017.06.005
- Kvande, M. E., Angel, S., & Nielsen, A. H. (2021). "Humanizing intensive care: A scoping review (HumanIC)." *Nursing Ethics*, *29*(2), 498–510. https://doi.org/10.1177/09697330211050998
- Lewis, M., Cumming, L., & Twose, P. (2021). Comparison of perceptions and barriers to mobilization in critical care: A comparison of nursing staff and physiotherapists—A single-site service evaluation. *Nursing in Critical Care*, *28*(6), 1196–1203. https://doi.org/10.1111/nicc.12625
- Bakhru, R. N., McWilliams, D. J., Wiebe, D. J., Spuhler, V. J., & Schweickert, W. D. (2016). Intensive care unit structure variation and implications for early mobilization practices: An international survey. *Annals of the American Thoracic Society*, *13*(9), 1527–1537. https://doi.org/10.1513/annalsats.201601-078oc
- Taito, S., Sanui, M., Yasuda, H., Shime, N., & Lefor, A. K. (2016). Current rehabilitation practices in intensive care units: A preliminary survey by the Japanese Society of Education for Physicians and Trainees in Intensive Care (JSEPTIC) Clinical Trial Group. *Journal of Intensive Care*, *4*, Article 66. https://doi.org/10.1186/s40560-016-0190-z
- Almenyan, A. A., Albuduh, A., & Al-Abbas, F. (2021). Effect of nursing workload in intensive care units. *Cureus,* *13*(1), e12674. https://doi.org/10.7759/cureus.12674
- Ho, L., Tsang, J. H. C., Cheung, E., Chan, W. Y., Lee, K. W., Lui, S. R., Lee, C. Y., Lee, A. L. H., & Lam, P. K. N. (2022). Improving mobility in the intensive care unit with a protocolized, early mobilization program: Observations of a single center before-and-after the implementation of a multidisciplinary program. *Acute and Critical Care*, *37*(3), 286–294. https://doi.org/10.4266/acc.2021.01564
- Ling, X. W., Lim, Y. H., Ong, H. K., Palanichamy, V., Leong, K. B. R., Ling, X. Y., Lee, K. C. H., & Ho, V. K. (2020). Mobilising intensive care patients early. *Proceedings of Singapore Healthcare*, *30*(3), 193–199. https://doi.org/10.1177/2010105820963292
- Linke, C. A., Chapman, L. B., Berger, L. J., Kelly, T. L., Korpela, C. A., & Petty, M. G. (2020). Early mobilization in the ICU: A collaborative, integrated approach. *Critical Care Explorations*, *2*(4), e0090. https://doi.org/10.1097/cce.0000000000000090

- McLaughlin, K. H., Friedman, M., Hoyer, E. H., Kudchadkar, S., Flanagan, E., Klein, L., Daley, K., Lavezza, A., Schechter, N., & Young, D. (2022). The Johns Hopkins Activity and Mobility Promotion program. *Journal of Nursing Care Quality*, *38*(2), 164–170. https://doi.org/10.1097/ncq.0000000000000678

APPENDIX

Table A1: PMABS-ICU Scale Cronbach Alpha (26 items)

Scale	No of items	Cronbach's Alpha
Knowledge	4	0.59
Attitude	9	0.74
Behavior	13	0.70
Overall	26	0.813

Table A2: Inter-item Correlation Matrix (item-total correlations) and Significance for the Barriers to Early Mobility Scale (N = 376)

Item No.	Item Summary	Correlation With Total Score	*p* -value
1	My patients are too sick to be mobilized	0.312	<0.001***
2	I have received training on how to safely mobilize my patients	0.333	<0.001***
3	Increasing mobilization will be harmful to patients (e.g., falls, IV-line removal)	0.356	<0.001***
4	A PT/OT should be the primary provider to mobilize	0.081	<0.001***
5	I understand which patients are appropriate to refer to PT	0.249	<0.001***
6	I understand which patients are appropriate to refer to OT	0.275	<0.001***
7	We lack proper equipment/furnishings to mobilize patients	0.340	<0.001***
8	Physical functioning is regularly discussed among healthcare providers	0.506	<0.001***
9	Nurse-to-patient staffing is adequate to mobilize my patients	0.308	<0.001***
10	My patients often have contraindications to be mobilized	0.334	<0.001***
11	Patients are mobilized at least once daily by nurses (if no contraindication)	0.434	<0.001***
12	Increasing mobilization will be more work for nurses	0.514	<0.001***
13	Increasing mobilization will be more work for PT/OT	0.376	<0.001***
14	My leadership is very supportive of patient mobilization	0.504	<0.001***
15	Increasing mobilization frequency increases my risk for injury	0.442	<0.001***
16	Patients usually have appropriate physician orders to be mobilized	0.177	<0.001***
17	Patients are resistant to being mobilized	0.218	<0.001***
18	Mobilized patients (at least once daily) have better outcomes	0.270	<0.001***
19	I am not sure when it is safe to mobilize my patients	0.492	<0.001***
20	Family members are frequently interested to help mobilize patients	0.219	<0.001***
21	I do not feel confident in my ability to mobilize patients	0.481	<0.001***
22	I document physical functioning status during my shift/work day	0.324	<0.001***
23	I do not have time to mobilize patients during my shift/work day	0.499	<0.001***
24	I mobilize patients at least once during my shift/work day (if no contraindication)	0.185	<0.001***
25	I educate patients to exercise/increase activity (if no contraindication)	0.375	<0.001***
26	Patients have time during the day to be mobilized at least once daily	0.422	<0.001***

Note: *PT= Physical Therapist, OT= Occupational Therapist. P-value definition *p <0.05 = statistically significant, **p < 0,01 highly significant, ***p <0.001 very highly significant.*