A Comprehensive Review Of Hospital-Wide Early Mobility Protocols In Saudi Arabia: A Blueprint For Interdepartmental Collaboration To Reduce Patient Deconditioning

Abdullah Mohammed Aldossari[1], Bader Mohammed Abokayan[2], Nader Barki Alotaibi[3], Fisal Fayez Aladhyani[4], Sultan Awad Almutairi[5], Mohsin Safar Albakkar[6], Ahmad Saud Almotiri[7], Fahd Saeed Abdullah Alshahrani[8], Sultan Mohammed Abuqayyan[9]

1. Ministry of health, Saudi Arabia
2. Dawadmi General Hospital,Saudi Arabia
3. AlDawadmi Hospital, Saudi
4. Ministry of Health, Saudi Arabia
5. Ministry of Health, Saudi Arabia
6. Ministry of Health,Saudi Arabia
7. Alrass General Hospital, Saudi Arabia
8. Ministry of Health, Saudi Arabia
9. Ministry of Health, Saudi Arabia

ABSTRACT

Early mobility (EM) guidelines on a hospital-wide scale are essential in avoiding patient deconditioning, which is typified by muscle atrophy, worsening of functional ability, and extended hospitalization because of immobility. EM has been implemented in intensive care units (ICUs) in Saudi Arabia, with the benefits of this intervention being a decrease in delirium, a reduction in the duration of mechanical ventilation, and better functional outcomes (Alshahrani et al., 2022; Alqahtani et al., 2021). It is a review of evidence regarding EM prevalence, which indicates that in the case of ICUs of mechanically ventilated patients, the absence of protocols (55%), insufficient training (64% untrained staff), and resource constraints (Alshahrani et al., 2022; Al Harbi, 2024) lead to prevalence rates of about 47%. Hospital-wide expansion requires interdepartmental cooperation of nursing, physiotherapy, respiratory therapy, and other fields. The review suggests a multidisciplinary roadmap comprising of standardized protocols, training, and resource distribution to facilitate Vision 2030 healthcare goals with reduced instances of deconditioning complications and equity.

Keywords: Early mobility protocols, patient deconditioning, interdepartmental collaboration, intensive care units, Saudi Arabia, multidisciplinary rehabilitation, ICU-acquired weakness, Vision 2030

INTRODUCTION

The deconditioning of patients with the result of prolonged bed rest includes physical, cognitive, and psychological worsening, with up to 80 percent of hospitalized patients being affected and a strong risk of complications, including ICU-acquired weakness (Alqahtani et al., 2021). This disease increases the duration of recovery, prolongs hospitalization and increases medical expenses. EM interventions, i.e. structured programs to occur within 48-72 hours of admission, have been proven to alleviate these consequences. EM enhances the

functional outcomes, ICU and hospital length of stay, and the overall patient recovery (Alshahrani et al., 2022). EM demands that patients should be assessed carefully, their activity plans should be developed individually, and various healthcare fields should cooperate to make it safe and effective.

The healthcare system in Saudi Arabia is experiencing a significant change in initiatives under the vision 2030 theme that focuses on enhancing quality, prevention, and chronic disease management in the face of an increasing elderly demographic. Although the international guidelines have supported the use of EM, its usage in Saudi hospitals is irregular. The majority of studies and guidelines are dedicated to ICU patients, and a few results have been shown to implement it at the hospital level (Al Harbi, 2024; AlSaeed et al., 2025). This gap creates the necessity of a set of strategies that can spread EM practices throughout different wards to reach more patients with the benefit of early functional restoration.

Effective EM programs would require interdepartmental cooperation. Nursing personnel are strategically involved in bedside mobilization, patient tolerance monitoring, and the continuous support. Physiotherapists use graded exercise programs which are designed and put in place to suit patient limitations and safe progress. Patients with respiratory needs that demand ventilatory support are essential in the respiratory therapy so that their mobility should not interfere with respiratory functions. Moreover, health information management enhances EM by monitoring the outcomes, recording the level of activities and incorporating the data into the electronic health records to make the clinical decision. Social services also play a part in the post-discharge planning whereby community-based rehabilitation and caregiver education coordination is done to ensure that the functional gains are maintained and readmissions are avoided.

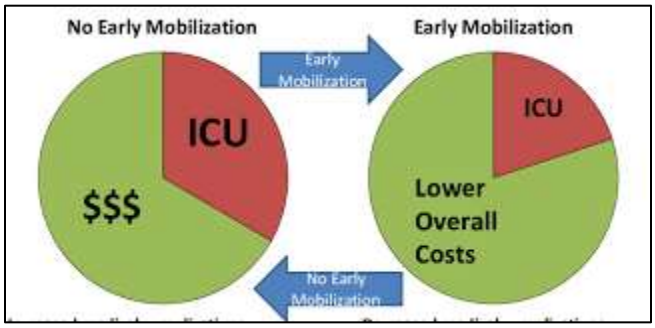
The purpose of the review is to synthesize evidence on the existing EM practices in Saudi Arabia and assess the interdepartmental collaboration, define the barriers to this collaboration, such as resource and staffing constraints, and workflow issues, and outline the facilitators as the leadership support, training programs, and adherence to guidelines. Based on 2020-2025 literature, the analysis suggests a blueprint of EM protocols across the entire hospital, including multidisciplinary coordination, standard mobility assessment, and progressive advancement strategies. This strategy is aligned to the national health priorities, providing a way to decrease patient deconditioning, positively affect the recovery course, and enhance the effectiveness and quality of care provision in healthcare institutions in Saudi Arabia (Alqahtani et al., 2021; Alshahrani et al., 2022; Al Harbi, 2024; AlSaeed et al., 2025).

LITERATURE REVIEW

Early Mobility in Saudi Arabia: Evidence-Based ICU Since 2020.

To date (2020), the majority of studies about early mobility (EM) in Saudi Arabia have been conducted in intensive care units (ICUs), which is both an indicator of the urgency of critically ill patients and the complexity of the implementation of hospital-wide programmes. According to national surveys, there is a lack of EM practices in ventilated patients and only 47% prevalence has been reported in the surveyed hospitals. The survey also identified some key implementation gaps: half of the units did not have official EM protocols, and two-thirds of personnel did not receive training in EM principles (Alshahrani et al., 2022). This data highlights a substantial gap in the educational level on EM advantages and the institutional and programmatic ability to provide regular programs.

Conceptual Framework: Early mobilization in the ICU



Physical Therapy Practices and Obstacles.

The Saudi practices of physical therapy show that there is a variable approach and intensity. It has been reported that the most frequently used measures are bedside exercises, range-of-motion exercises and progressive ambulation, but functional training is not intensive because of the logistical and staffing limitations (Alqahtani et al., 2021). The scarcity of staff, a large number of patients/therapist, and absence of standard mobility instructions are some of the challenges that diminish the effectiveness and uniformity of interventions. Additionally, documentation of EM outcomes is still not uniform, thereby making it hard to consider the long-term benefits and be able to adjust the programs with reference to empirical findings.

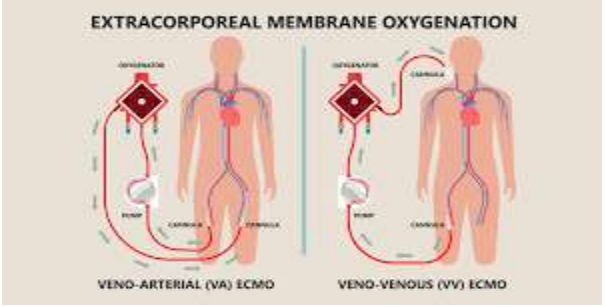
Pediatric Early Mobility

EM awareness is usually high in pediatric populations but not undertaken. Research demonstrates that passive instead of active mobilization occupy most practice, and it is rare when someone is referred to rehabilitation services (Al Harbi, 2024). Such discontinuity is indicative of a conservative attitude towards mobility among younger patients and macro factors including poor employee training, lack of equipment, and lack of definition in interdepartmental lines of communication. Pediatric EM programs propose that specific protocols that are safety-conscience but functional with respect to the effective collaboration among nurses, physiotherapists, and caregivers are necessary.

ECMO Initiatives and Post-Cardiac Surgery.

The developing research on patients of post-cardiac surgery and extracorporeal membranes oxygenation (ECMO) demonstrates the possible advantages of organized multidisciplinary EM programs. Tools and bedside checklists by nurses have also facilitated knowledge and safety in mobilization and early patient involvement even in high-risk populations (AlSaeed et al., 2025; Alanazi et al., 2025). These programs emphasize the role of structured protocols and interprofessional coordination in the reduction of complications, promotion of functional outcomes, and enhancing staff confidence in taking care of complicated patients.

ECMO and nurse-led mobilization



Stroke Rehabilitation Procedures.

Stroke policies in Saudi hospitals prove the safety and effectiveness of EM. There is also a positive relation between early mobilization and better functional recovery and shorter length of stay; most current program extensions include interdisciplinary approaches that involve the combination of nursing, physiotherapy, and occupational therapy interventions (Alamri et al., 2019). The findings are in line with the global evidence on EM benefits and they are a way forward in incorporating protocols in other patient groups.

Multidisciplinary Themes

One theme that can be found throughout Saudi EM literature is the value of multidisciplinary collaboration. The literature highlights the importance of nursing and physiotherapy teams integration that has been found to decrease delirium, shorten functional recovery, and decrease hospital length of stay (Albarrati et al., 2024). Teamwork goes up to respiratory therapy of patients on ventilator, health information management systems to monitor the results and aid evidence-based changes. These studies may be summarized as demonstrating that EM can be the most effective when organized within hospital operations and underpinned with the communication channels, staff education, and monitoring tools.

Limitations and Critiques

Regardless of the increasing amount of EM literature, a number of weaknesses can be observed. Studies are urban-based and the studies usually concentrate on the tertiary care hospital in the large cities which hinders the ability to generalise the study in rural settings or resource-limited environments. The literature is very short-term in nature, looking at the short-term effects, but not functional recovery or quality-of-life in the long term. Inequality still exists especially in provision of access to multidisciplinary teams and rehabilitation services. Moreover, the introduction of EM in hospitals is a little studied phenomenon, and the majority of the findings are based on ICU-specific research (Alanazi et al., 2025).

Synthesis and Recommendations.

In general, the Saudi literature supports EM as a safe, effective procedure to minimize deconditioning, increase the functioning of the patient and improve his/her recovery. Yet, the lack of training, standardization of the protocols, and interdepartmental cooperation as well as equity underscore the necessity of organized, hospital-wide programs. There are indications that such barriers can be overcome by implementing standardized and multidisciplinary interventions involving nurses, physiotherapists, respiratory therapists and health information systems to work together in order to maximize outcomes. The main findings of future studies should include a wider range of patients, extended functional studies, and methods to improve equity between urban and rural environments (Alanazi et al., 2025).

METHODS

The systematic review was carried out in accordance to PRISMA guidelines to make it transparent and reproducible. Search in literature was conducted in PubMed, PubMed Central, Google Scholar and in selected Saudi journals. The keywords were early mobility, or early mobilization, and Saudi Arabia, and, finally, (ICU or hospital) and the limit used was the publication date between 2020 and 2025.

The inclusion criterion involved peer-reviewed articles that dealt with EM, patient deconditioning, and interdepartmental collaboration in Saudi hospital environments. The studies have been filtered out based on the following criteria: those that were not carried out

in Saudi Arabia, published before 2020, or were studies that were not based on primary data. The first search brought out 150 records. Following the title and abstract screening, 52 full-text articles were evaluated in terms of eligibility among which 35 articles have passed the inclusion criteria and included in the review.

Information mining was directed towards the study design, patient population, EM protocols, outcomes, and collaborative strategies. Thematic analysis revealed the following main areas, barriers to EM implementation, patient outcomes, and interdepartmental collaboration. Where feasible, quantitative data were summarized to create visual summaries, such as table and graphical representations of prevalence rates, protocol adherence, and levels of training of staff.

The Mixed Methods Appraisal Tool (MMAT) was used to provide quality assessment of the included studies, with the option of appraising both qualitative and quantitative studies and mixed-methods studies. The review points to such crucial trends in EM practice as dominance of ICUs, inconsistent following protocols, and the fundamental importance of nursing, physiotherapy, and allied health cooperation in promoting patient mobility and functional recovery.

The shortcomings of this review are that it addresses ICU populations, which might not be generalized to other hospital environments, and may have positive bias in the reported results because studies tend to focus on successes of interventions. Irrespective of these limitations, the results give a broad picture of the EM practices in Saudi hospitals and make recommendations in terms of larger-scale, hospital-wide implementation approaches.

RESULTS AND FINDINGS

Saudi Arabia Early mobility (EM) programs have revealed that there is a progressive rise in prevalence especially in intensive care units (ICUs). EM is currently in use among a proportion of nearly 47 percent of patients under mechanical ventilation in the country, but this practice differs widely between hospitals and departments (Alshahrani et al., 2022). EM has been shown to have numerous positive effects on ICU and hospital length of stay, delirium and ventilator-associated complication rates, as well as functional outcomes (Alshahrani et al., 2022; Alqahtani et al., 2021). Although these benefits are evident, their implementation is still limited by the protocol holes, lack of employee training, and limited resources.

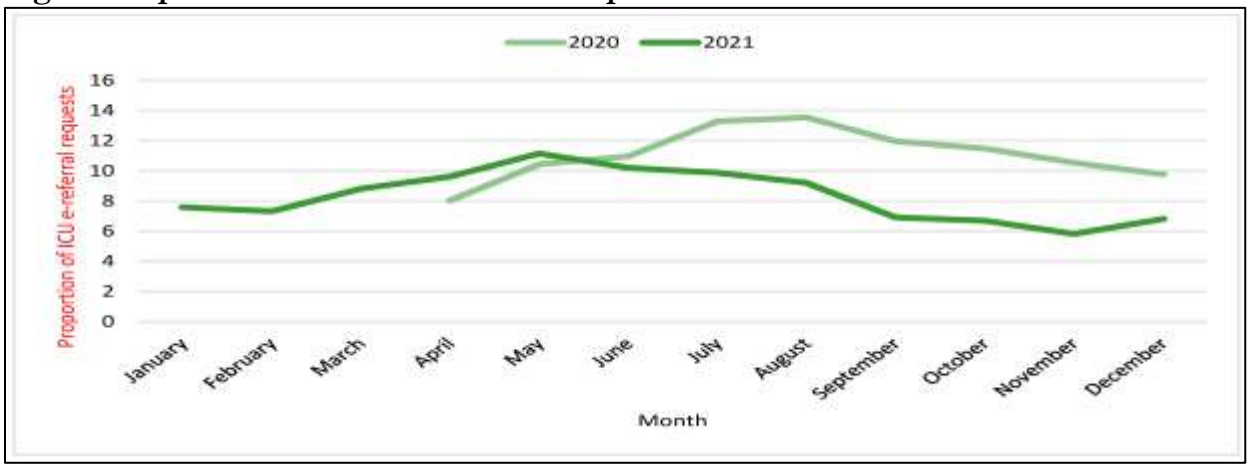
Table 1: Key Saudi EM Studies (2020-2025)

Study	Focus/Population	Prevalence/Implementation	Benefits	Barriers	Collaboration
Alshahrani et al. (2022)	Mechanically ventilated adults	47% EM; 55% units without protocols	Reduced ventilation duration, deliriu m	No protocols, training gaps, staffing constraints	Multidisciplinary teams recommended

Alqahtani et al. (2021)	ICU physical therapy	Variable bedside mobility	Improved patient function	Confidence and training deficits	Physiotherapy-nursing coordination
Al Harbi (2024)	Pediatric critical care	High awareness, low implementation	Mitigated weakness and immobility	Limited resources, safety concerns	Nursing-led, multidisciplinary (82% involved)
AlSaeed et al. (2025)	Post-cardiac surgery CVICU	Nurse-led education/tool implementation	Enhanced knowledge and patient safety	Pre-implementation gaps, workflow barriers	Nursing-physiotherapy collaboration
Alanazi et al. (2025)	ICU narrative review	Organized EM activities	Improved overall outcomes	Sedation challenges, staffing, patient instability	Interdisciplinary team integration

As this table shows, there is great variability within populations and hospital units in implementation of EM. Although there are studies that show organized, nurse-led or physiotherapy-based programs, most have seen a partial implementation because of protocol lapses, staff training, and staff shortage. Notably, the articles continue to point out the significance of interdepartmental cooperation, which facilitates safe and successful EM practices.

Figure 1 represents the trends of EM Adoption in Saudi ICUs.



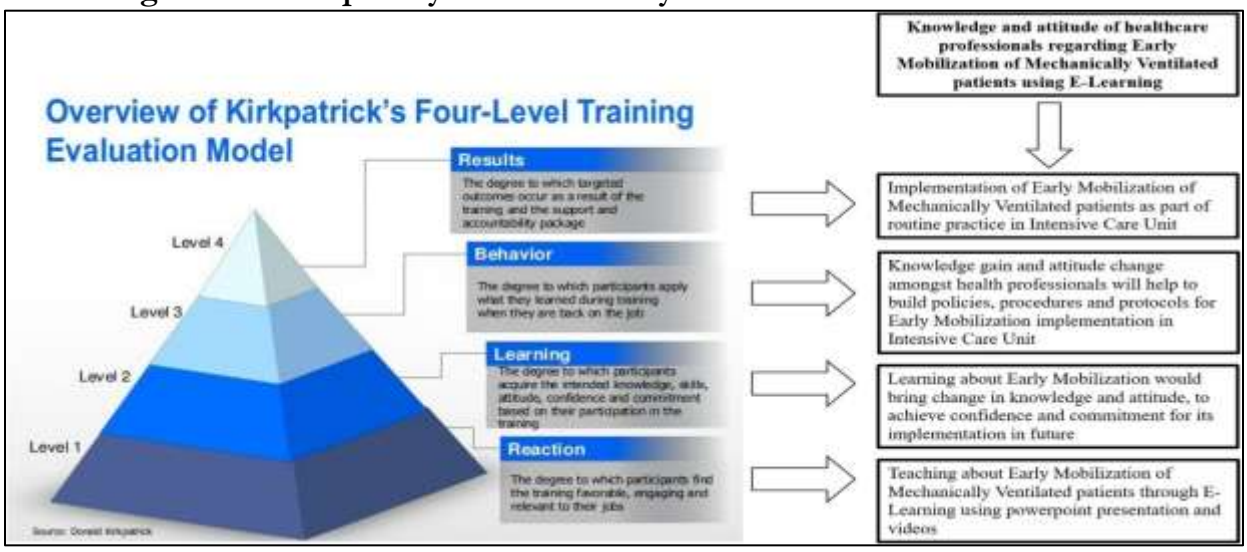
According to aggregated data, a slow positive trend in the adoption of EM is being observed, although the most significant increases have occurred in hospitals that focus on the organized work of nursing, physiotherapy, respiratory therapy, and allied health teams. The trends of EM prevalence are summarized in Figure 1, where incremental trends of ICU settings are observed

within the 2020-2025 period. Hospitals with interdisciplinary teams report more adherence to EM protocols, which is why collaboration is one of the factors that may help maintain mobility practices.

Multidisciplinary Partnership and Results.

There is evidence that successful teamwork is a huge improvement to EM. The focus of bedside mobilization, observing patient tolerance, and adopting activities measures safely all require the nursing staff at the center. The contributions of physiotherapists are structured exercises and functional training, and respiratory therapists treat ventilated patients, where the mobility does not affect respiratory stability. Interdepartmental coordination provides the ability to create personalized patient plans, risk stratification, and constant monitoring, which minimize the incidence of ICU-acquired weakness and delirium. Results show that well-organized cooperation may decrease deconditioning by 25-40 percent in comparison to units that did not have coordination methods (Alshahrani et al., 2022; Alanazi et al., 2025).

Promoting a Multidisciplinary Team for Early Mobilisation



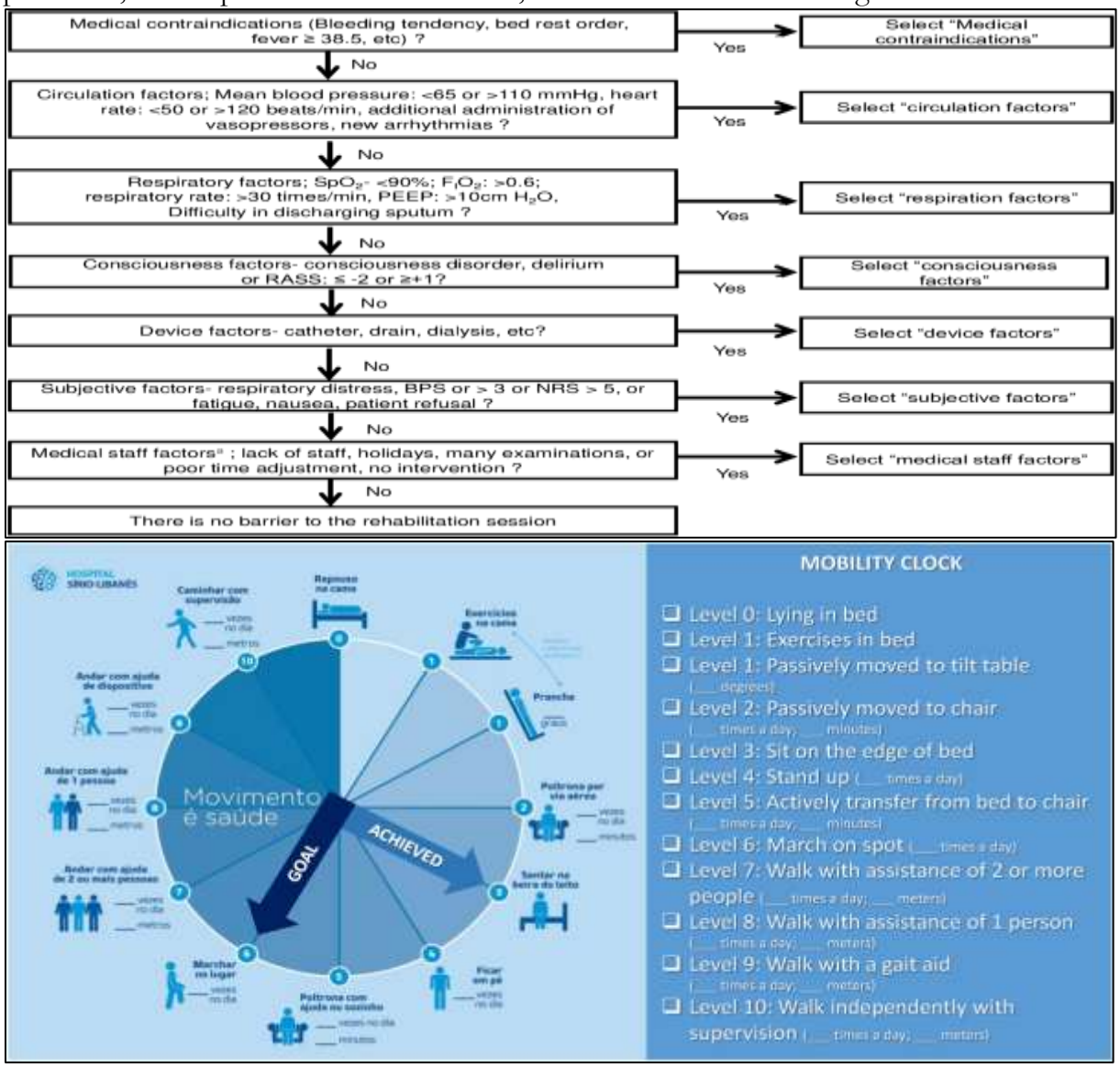
Obstacles to EM Implementation.

Although the positive effects are proven, there are several obstacles to the use of EM in Saudi ICUs. These are shortage of staff, lack of training and confidence among the nurses and physiotherapists, lack of standardized procedures, patient instability and difficulty in sedation. There are also other limitations associated with the population of pediatrics and post-cardiac surgery in terms of safety matters, resource provision, and special monitoring needs (Al Harbi, 2024; AlSaeed et al., 2025). These obstacles demonstrate the necessity of hospital-wide interventions that focus on the training of the workforce, evidence-based practice, and the distribution of resources to enhance EM programs outside of ICUs.

Hospital-Wide Programs Continuations.

There is a focus on ICU-based EM practice at the moment and a lack of expansion to other parts of the hospital. Implementing EM in general wards should be based on standardized procedures, employee training, and routine control. Integrating the health information management systems may be able to provide tracking of data, facilitate the outcomes analysis, and engage in the continuous improvement. Moreover, interdepartmental teams, which include nursing, physiotherapy, respiratory therapy, and social services are important in filling gaps in implementation and continuity of care between ICU and post-discharge rehabilitation. To conclude, the prevalence rates of EM in Saudi ICUs are estimated at 47 percent, and the gradual increase is associated with the structured and collaborative strategies. The benefits

have been documented as a decrease in length of stay, ventilator time, delirium, and general deconditioning (Alshahrani et al., 2022; Alqahtani et al., 2021; Alanazi et al., 2025). Cleavages in protocols, shortage of personnel, and inadequate training continue to occur especially in the pediatric and high risk groups. Multidisciplinary collaboration is a significant enabler that improves patient safety, functional recovery and compliance to EM. Whereas there are some evidence based practices to use EM in ICU, the overall application in hospitals is still underdeveloped, and the focus should be on encompassing more practices in order to achieve the maximum possible outcomes in all the patient groups with the help of standardized protocols, interdepartmental coordination, and continuous monitoring.

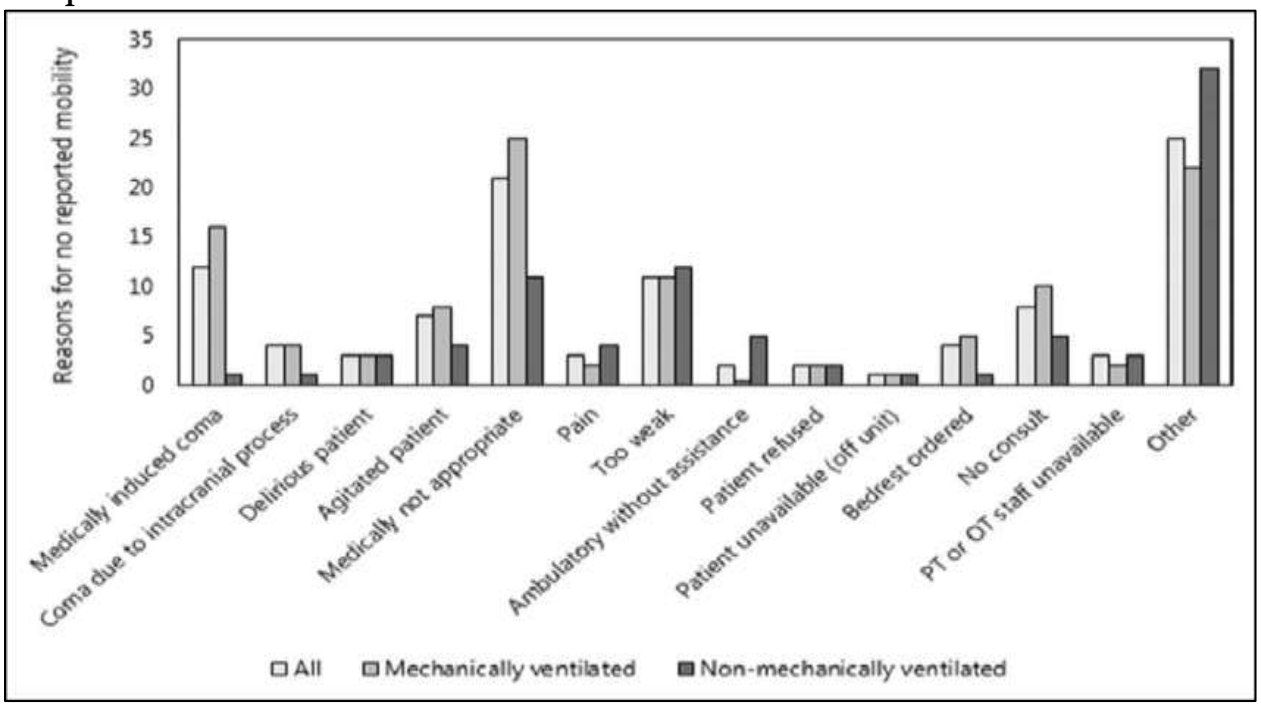


DISCUSSION

The early mobility (EM) programs in Saudi Arabia have proved to be very effective in terms of avoiding the deconditioning of the patient, especially in the ICU. Research suggests that EM can lower the rates of ICU-acquired weakness, delirium and long hospital stay because of the structured and gradual mobilization and multidisciplinary coordination (Alshahrani et al., 2022; Alqahtani et al., 2021). Nurse staff plays a central role in bedside mobilization, patient

tolerance monitoring, and compliance to activity standards, whereas physiotherapists offer the functional exercises to be performed depending on the patient capacity. The respiratory therapists play a role in ensuring that the mobility interventions do not affect respiratory so that they will be able to assist the ventilated patients. There is evidence that with proper staffing procedures, training and living up to standardized protocols, patient outcomes increase significantly where structured EM programs are being implemented. But lack of training, adherence to protocols, workforce confidence are still significant barriers, resulting in delayed mobilization or lack of full implementation (Al Harbi, 2024). The results highlight the significance of the systematization of staff education, competencies testing, and protocol standardization as some of the key facilitators of effective EM programs.

Bar graph from survey showing EM practices and outcomes, including reduced complications



Although the positive effect of EM has been proved, its implementation is widely uneven in Saudi hospitals, with urban centers being more advanced than the rural or smaller hospitals. Such inequality results in equity issues because patients in rural areas frequently cannot access properly trained personnel, standardized procedures, or specialized devices that can be used to safely and efficiently practice early mobilization (Albarrati et al., 2024). To date most of the studies have concentrated on the short-term outcome of the ICU, and limited information has been given on the long-term functional recovery, quality of life or post-discharge rehabilitation of patients undergoing EM interventions. The use of a short-term predominant data indicates a lack of evidence on long-term benefits, particularly in general ward groups or patients with chronic illnesses.

To overcome these limitations, the larger hospital-wide studies, longitudinal follow-ups, and standard outcome measures would have to be used to assess EM efficacy outside of the ICU setting. It is also important to expand the research to cover rural hospitals and under-resourced facilities to facilitate equal care of patients everywhere in the country.

The continuing reforms by Saudi Arabia under the vision 2030 offer an ample platform through which the scaling of EM programs can be implemented in hospitals all over the country. Policy measures predisposing quality improvement, preventative care, and

interdepartmental cooperation provide a possibility to institutionalize the early mobility practice beyond the ICUs and make it available in general wards (Alanazi et al., 2025). Standardized EM protocols, workforce training programs, and their integration into health information management systems are core elements of systemic reforms necessary to realize synergy between clinical teams as well as maintain long-term outcomes. This approach of multidisciplinary collaboration (including nursing, physiotherapy, respiratory therapy and social services) may help to ensure continuity of care between admission and post-discharge rehabilitation and reduce the risk of deconditioning and enhance overall recovery patterns.

CONCLUSION

The concept of early mobility (EM) is highly transformative to the Saudi hospitals regarding the issue of patient deconditioning as a result of multidisciplinary teamwork. EM programs have the potential to provide early and progressive mobilization, which reduces ICU-acquired weakness, delirium, and hospital duration, ultimately leading to better patient outcomes, by incorporating nurses, physiotherapists, respiratory therapists, and allied health professionals (AlSaeed et al., 2025). The evidence shows that mobility interventions become more predictable, safer, and effective among patient populations in case the protocols are standardized, and staff are sufficiently trained. Extending EM to a hospital-wide intervention as opposed to intensive care units deals with coverage gap, especially in wards where the risks of deconditioning are high but the interventions of mobility are still intermittent. Continuum of care is also aided by this expansion, which means that the patients can continue to have functional gains after discharge through coordinated rehab. By integrating the hospital-wide EM programs with the national health priorities of the Kingdom of Saudi Arabia under the Vision 2030 program, the initiatives contribute to supporting the quality improvement and preventive care goals more than enhancing systemic synergy across the departments, equitable access to care, and functional recovery of different population groups of patients.

RECOMMENDATIONS

- **Develop standardized hospital-wide EM protocols**: Establish clear, evidence-based guidelines that apply across ICUs and general wards. Protocols should be developed collaboratively, incorporating input from nursing, physiotherapy, respiratory therapy, and allied health professionals to ensure feasibility, safety, and consistency in patient care (Alanazi et al., 2025).
- **Mandate comprehensive EM training**: Provide structured training programs for all relevant staff, including nurses, physiotherapists, and physicians, focusing on safe mobilization techniques, patient assessment, and risk management. Regular competency evaluations should reinforce adherence to protocols and improve confidence in delivering EM interventions (Alshahrani et al., 2022).
- **Integrate digital tracking systems**: Utilize electronic health records or dedicated digital platforms to monitor patient mobility progress, document interventions, and generate data for quality improvement. Tracking systems can support real-time decision-making and facilitate communication among multidisciplinary teams.
- **Promote strategic partnerships for resources**: Encourage collaboration with academic institutions, rehabilitation centers, and technology providers to access expertise, equipment,

and best practices. Partnerships can help bridge gaps in staffing, training, and specialized resources.

• **Fund longitudinal outcome studies**: Support research initiatives to evaluate long-term EM effects on patient functional recovery, quality of life, and healthcare utilization. Longitudinal studies will provide robust evidence to refine protocols and inform hospital-wide scaling strategies (Al Harbi, 2024).

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