

RESEARCH ARTICLE

Beliefs, attitudes and knowledge of cardiovascular healthcare providers on mobilization

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Email: michael.j.goldfarb@mcgill.ca**Abstract****Aim:** To assess the beliefs, attitudes and knowledge of nurses, physicians and physiotherapists in a cardiovascular intensive care unit (CICU) on patient mobilization.**Design:** Survey of CV healthcare providers in the CICU at two academic tertiary care hospitals.**Methods:** The validated Patient Mobilization Attitudes and Beliefs Survey was distributed to CV providers. The survey is a 26-item self-administered questionnaire that assesses providers' perceived barriers in three domains: attitude, behaviour and knowledge.**Results:** Participants ($N = 142$) completed the survey (nurses, $N = 67$, physicians, $N = 59$ and physiotherapists, $N = 16$; 155 eligible participants, 91.6% overall completion rate). Nurses had lower overall knowledge, attitude and behaviour barriers to mobilization than physicians, but higher than physiotherapists (all $p < .001$). The highest barriers to mobilization for nurses were adequate staffing, patient-level and time restraint. These findings should inform efforts to overcome existing barriers and to transform acute cardiovascular mobility culture.**KEYWORDS**

beliefs, cardiac intensive care unit, knowledge, mobilization, nursing, survey

1 | INTRODUCTION

Bed rest and immobilization has been part of the culture of care in acute cardiology for over a century (Wenger, 1980). Mobilizing patients with an acute myocardial infarction or heart failure episode was considered dangerous due to the risk of coronary ischaemia and arrhythmia. As a result, patients were often confined to prolonged periods of bed rest. Despite improvement in acute cardiovascular (CV) care over the past few decades, involuntary bed rest and delayed mobilization continues to be a common part of acute care cardiology practice (Cortes et al., 2015).

Previous studies have explored barriers to mobilization of healthcare providers in the intensive care unit (ICU) and other inpatient

settings (Anekwe et al., 2017; Goddard et al., 2018; Goodson et al., 2018). However, the perspectives of acute CV healthcare providers towards patient mobilization is uncertain. In particular, the attitudes, behaviours and knowledge about mobilization have not been explored. Understanding the perspectives of CV healthcare providers is needed to define and to create systemic changes to overcome barriers to mobilizing people with acute CV disease.

1.1 | Background

Early mobilization (EM) describes progressive mobilization activities that start immediately on haemodynamic and respiratory stabilization, typically within 24 hr of hospital admission. EM is

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associated with increased muscle strength and physical function, decreased rates of delirium, shortened critical care and hospital length of stay and reduced hospital readmissions (Adler & Malone, 2012; Burtin et al., 2009; Morris et al., 2011). Early mobilization is safe, feasible and beneficial in critically ill patients (Nydahl et al., 2017; Zang et al., 2019). There is emerging evidence that EM also is safe and feasible in older adults with acute CV disease (Goldfarb et al., 2018). Yet, a lack of healthcare provider knowledge is a known barrier for EM programme implementation (Anekwe et al., 2017). In addition, the historical resistance to mobilization in acute CV care may have an impact on acute CV care providers' attitudes and behaviours towards earlier mobilization. Thus, our objective was to assess the perspectives of nurses, physicians and physiotherapists involved in acute CV care on mobilization. Our results will inform stakeholders of the barriers that need to be addressed to transform acute care cardiology mobility culture.

2 | METHODS

2.1 | Study design, participants and setting

The Patient Mobilization Attitudes and Beliefs Survey (PMABS) was distributed to nurses, physicians (attending staff, fellows, residents and medical students) and physiotherapists (PTs) working in the cardiovascular intensive care unit or the cardiovascular ward at two academic tertiary care centres from June 2019–August 2019. Both centres admit cardiac and postcardiac surgical patients (surgical patients are typically admitted 1–2 days after care in the general critical care unit) and have advanced CV and non-CV critical care therapy capability (i.e. mechanical ventilation and vasoactive medication). One cardiovascular intensive care unit also manages patients requiring percutaneous mechanical circulatory support. In both centres, nurse to patient ratio ranges from 1:1 to 1:3 based on staff availability and the patient's critical care needs. There were no dedicated PTs for the units during the study period, although PT consultation could be requested as needed. One centre had a structured nurse-driven EM programme in place during the study period. Nurses with EM experience had undergone a formal training programme and had at least 3 months of EM practice. The training programme consisted of in-service training sessions for nursing staff by a nurse educator about the potential benefits of earlier mobilization and instruction on how to perform mobilization activities (Dima et al., 2020). Nurses were also instructed on how to include family members in mobilization activities. Feedback was elicited from nurses, and periodic audits were performed to ensure that the EM programme was performed according to protocol.

To encourage participation of all potential eligible healthcare providers, the survey was distributed by the nurse educators to bedside nurses on several non-consecutive dates during the study period and during both the day and evening shifts. Once per week, medical students, residents, cardiology fellows and attending staff

rotating in the cardiovascular intensive care units were approached for participation in the study. Physicians who regularly round in the cardiovascular intensive care unit (as defined as ≥ 4 weeks per year on the unit schedules), but who did not rotate in the unit during the study period, were sent emails to participate in the study. PTs who provide consultation services for patients in the cardiac care units were approached for participation. All participants were given the option of completing a printed copy of the survey or an online version of the survey (SurveyMonkey.com). Eligible participants who did complete the survey on the first approach were sent up to two email reminders during the study period. Informed consent was obtained for all study participants. There was no financial incentive provided to survey participants. The checklist for reporting results of surveys is available in Appendix S1.

2.2 | Survey instrument

The PMABS is a 26-item self-administered questionnaire that assesses providers' perceived barriers in three domains: attitude, behaviour and knowledge (Goodson et al., 2018). The psychometric properties of the PMABS have been validated and have shown good reliability in the ICU, general medical ward and rehabilitation settings (Goodson et al., 2018; Hoyer et al., 2015; Mudge et al., 2020). The attitude section assesses providers' self-efficacy and perceptions of other providers' attitudes towards mobilization. The behaviour section assesses external and internal barriers to mobilization. The knowledge section assesses provider education and training about mobilizing patients. Within these domains, the survey includes items to assess perceived patient-level, equipment, institutional support, staffing, communication, time restraint, physician orders and mobilization opportunity barriers. The survey also includes questions of provider characteristics (discipline and years of clinical experience). Survey responses are recorded using a 5-point Likert scale for responses. Scale results were transformed to a 0–100 scoring system using the methodology described by the survey authors. Higher scores indicate increased barrier to mobilization, and lower scores indicate less barriers to mobilization.

2.3 | Analysis

Descriptive statistics were used to describe survey responses. The overall and subscale score distributions were assessed by discipline, and between group differences were tested with the ANOVA test. All *p*-values are two-sided with values $\leq .05$ indicating statistical significance. Statistical tests were done using the SPSS 24.0 statistical software (IBM Corp).

2.4 | Ethics

Institutional research ethics approval was obtained for this study.

3 | RESULTS

There were 142 participants who completed the survey (nurses, $N = 67$, physicians, $N = 59$ and PTs, $N = 16$) out of 155 eligible participants (91.6% completion rate). Table 1 summarizes the overall and subscale scores of nurses, physicians and PTs.

All eligible nurses (67/67) responded to the survey (100% completion rate). Nurses had an overall barrier score of 34.2 with the highest barrier in mobilization behaviours (40.0) and the lowest barriers in knowledge and attitude towards mobilization (26.8 and 29.2, respectively).

There were 59 physicians who completed the survey out of 68 eligible physicians (87% completion rate). Attending staff had 10.7 ± 10.6 years of clinical experience. Physicians had an overall barrier score of 44.2 with high barriers in mobilization behaviours (46.6), knowledge (42.9) and attitude (41.3) towards mobilization. Table S1 shows the distribution of physicians and barrier score by clinical role. Most participants were attending staff ($N = 24$; 40%) and residents ($N = 19$; 32%).

There were 16 PTs who completed the survey out of 20 eligible participants (80% completion rate). PTs had low overall, knowledge, attitude and behaviour barriers to mobilization.

Physicians compared with both nurses and PTs had a higher overall barrier score and higher barrier scores for knowledge, attitude and behaviour (all $p < .001$). Nurses compared with PTs had a higher overall barrier score and higher barrier scores for knowledge, attitude and behaviour (all $p < .001$).

Physicians had higher barriers than nurses and PTs in aspects of mobilization such as beliefs, education/training and understanding the PT/occupational therapist (OT) role (all $p < .05$; Figure 1). Physicians, as compared with nurses, had similar barriers for safety ($p = .99$) and lower barriers for family member involvement ($p = .008$).

There were 30 nurses with EM experience and 37 nurses without EM experience. There was no difference in clinical experience between the nurses with EM experience (7.8 years \pm 6.4) and without EM experience (6.4 years \pm 5.9; $p = .34$). There were no differences

TABLE 1 Knowledge, attitudes and behaviours of nurses, physicians and physiotherapists to mobilization

	Nurses ($N = 67$)	Physicians ($N = 59$)	PTs ($N = 16$)
Overall	34.2 (8.0)	44.2 (7.9)	21.6 (9.2)
Subscale			
Knowledge	26.8 (11.4)	42.9 (13.8)	7.8 (10.8)
Attitude	29.2 (10.0)	41.3 (9.6)	18.4 (12.3)
Behaviour	40.0 (10.1)	46.6 (9.3)	28.0 (8.5)

Note: Data are presented as mean (standard deviation).

Scale results have been transformed to a 0–100 scoring system with higher scores indicating increased barrier to mobilization.

p -values for comparison between nurses and physicians, nurses and physiotherapists and physicians and physiotherapists are $<.001$ for all results.

in the knowledge, attitudes or behaviours towards EM between nurses with and without EM experience (Table 2; all $p > .05$).

Specific barriers to mobilization were identified for nurses, physicians and PTs (Table S2). Figure 2 shows the top 5 barriers to mobilization for each group of healthcare professionals. The highest barriers to mobilization for nurses and PTs were adequate staffing, patient-level (patient resistance), equipment and nurses' time restraint. For physicians, the highest barrier to mobilization was the need for physician orders. Communication was a top barrier for all three disciplines; whereas, support and opportunity for mobilization had the lowest scores across the disciplines.

4 | DISCUSSION

Our objective was to assess CV healthcare providers' knowledge, attitudes and beliefs towards mobilization of people in the acute CV care setting. We found that physicians had the highest overall, knowledge, attitude and behaviour barrier scores to mobilization. Physicians also had higher barriers to mobilization beliefs, education/training and understanding the PT and OT role than nurses and PTs. PTs had the lowest barriers scores to mobilization. Amongst nurses, experience with an EM programme was not associated with differences in barrier scores. The top barriers to mobilization were similar for the three disciplines and included adequate staffing, time requirement for nurses, patient-level resistance and communication.

To our knowledge, this is the first study to assess the perspectives of CV healthcare providers about mobilization. Understanding CV providers' perspectives on mobilization is important because of the historical reluctance to mobilize patients with acute CV disease due to concern for ischaemia, arrhythmias and haemodynamic instability and the evidence for prolonged bed rest in contemporary cardiac units (Cortes et al., 2015; Howie-Esquivel & Zaharias, 2013; Wenger, 1980). Cardiac ICUs have become increasingly like medical ICUs with increased patient medical complexity and growing critical care needs (Goldfarb et al., 2019). Yet, EM remains an underused therapeutic technique in the acute CV setting (Pron, 2013).

Previous studies have looked at the perspectives of healthcare providers on patient mobilization in critical care settings. Goodson and colleagues distributed the PMABS to 163 nurses, physicians and other healthcare members in a medical ICU with a longstanding culture of mobilization (Goodson et al., 2018). They reported nursing barrier scores similar to those of our study and found that increased work experience was associated with lower mobilization barrier scores. In a survey of 120 physicians, nurses and PTs working in a medical ICU, Jolley and colleagues found that most providers had knowledge of EM's benefits, but attending physicians were more likely than trainees to consider the risk of EM greater than the benefit for many patients (Jolley et al., 2014). Anekwe and colleagues surveyed healthcare professionals from several different ICU settings and found that a greater percentage of critical care physicians than nurses considered EM important (Anekwe et al., 2017). However, both physicians and nurses did not feel well-trained enough to

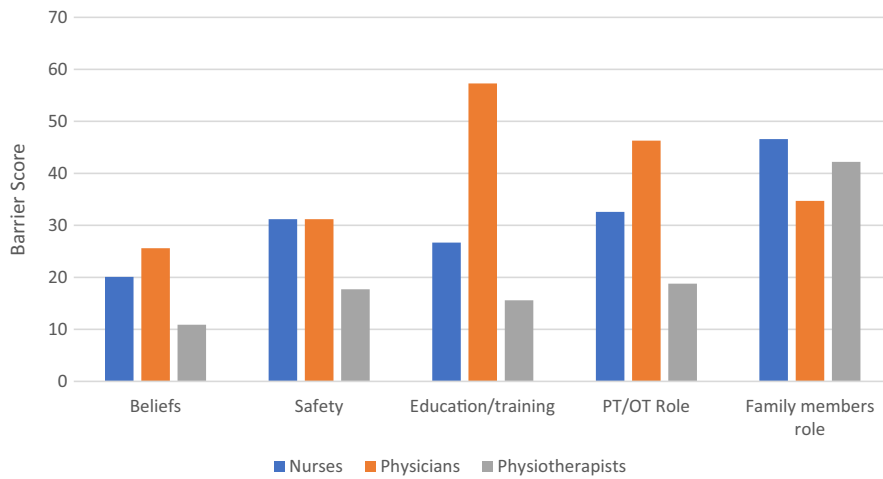


FIGURE 1 Characteristics of nurse, physician and physiotherapist perspectives on mobilization. OT, occupational therapist; PT, physical therapist. Data are presented as mean (standard deviation). Scale results have been transformed to a 0–100 scoring system with higher scores indicating increased barrier to mobilization. All *p*-values < .05 except for safety between physicians and nurses (*p* = .99) and family members role between physicians and PTs (*p* = .25) and nurses and PTs (*p* = .53)

TABLE 2 Knowledge, attitudes and behaviours of nurses to mobilization

	Nurses with EM experience (N = 30)	Nurses without EM experience (N = 37)
Overall	34.7 (6.2)	33.8 (9.2)
Subscale		
Knowledge	27.7 (13.8)	26.0 (9.1)
Attitude	29.1 (8.1)	29.3 (11.4)
Behaviour	40.8 (8.2)	39.3 (11.5)

Note: Data are presented as mean with standard deviation. Scale results have been transformed to a 0–100 scoring system with higher scores indicating increased barrier to mobilization. *p*-value for comparison between nurses with and without EM experience is >.05 for all results. Abbreviation: EM, early mobility.

support patient mobilization efforts. Similarly, a pan-Canadian survey of physicians and PTs working in ICUs reported that most respondents felt that they did not have sufficient skills or knowledge to mobilize patients (Koo et al., 2016).

Our study identified specific barriers across CV healthcare disciplines, including staff availability, time, necessary equipment and safety, which was similar to findings in previous studies of critical care providers (Fontela et al., 2018; Jolley et al., 2014; Koo et al., 2016; Wang et al., 2020). Physicians have also reported concerns about sedation, physiological instability and the presence of tubes, lines and drains. However, the safety of EM in general critical care populations has been demonstrated, with <1% likelihood of a clinically significant adverse event (Nydahl et al., 2017). There are also emerging data in the acute CV setting that EM results in similarly low rates of adverse events (Goldfarb et al., 2018). Stronger evidence for safety in mobilizing patients with acute CV disease would probably assist in efforts to educate CV physicians and motivate for change.

Cardiovascular physicians in our study had high barrier scores for education and training on mobilization. Knowledge and expertise and mobility culture and leadership were found to be major barriers to mobilization in a systematic review of barriers to mobilization amongst physicians (Parry et al., 2017). Yet, mobility education and training studies have mainly involved nurses. A mobility education programme delivered to cardiac ICU nurses resulted in improved

	Nurses	Physicians	Physiotherapists
1	Adequate staffing	Physician orders	Adequate staffing
2	Patient-level	Adequate staffing	Patient-level
3	Time restraint for nurses	Time restraint for nurses	Equipment
4	Equipment	Patient-level	Time restraint for nurses
5	Communication	Communication	Communication

Legend
 Adequate staffing
 Physician orders
 Patient-level
 Time restraint for nurses
 Equipment
 Communication

FIGURE 2 Top 5 mobilization barriers for nurses, physicians and physiotherapists. Adequate staffing; Physician orders; Patient-level; Time restraint for nurses; Equipment; Communication

nursing knowledge about mobility, and the results were sustained 2 months later (Hunter et al., 2017). Another study involving nurse education and coaching on mobilization resulted in increased frequency of out-of-bed activities in patients at higher risk for inactivity (Winkelman & Peereboom, 2010). Targeted educational programmes to CV physicians and nurses on the benefits of EM may overcome these barriers and help to transform CV mobility culture.

Nursing availability and time is a common institutional barrier to EM programme implementation. Yet, there is evidence that potential opportunities for nurses to mobilize their patients are underused. A study observing nurse workflow found that nurses had the time available and missed potential mobilization activities during almost one-fifth of the nursing shift (Young et al., 2018). Increased nursing involvement in patient mobilization requires reorganization to prevent overburdening of nurses and not to compromise other necessary nursing activities. Nurse-driven mobility protocols should focus on minimizing workflow disruption while allowing nurses to participate in patient mobilization. Mobilizing patients has been shown to be a positive experience for nurses, and nurses feel that it is a valuable part of the patient care experience (Laerkner et al., 2019).

4.1 | Implications for practice

Understanding CV providers' perspectives on mobilization is important because of the historical reluctance to mobilize patients with acute CV disease. Our findings demonstrate that CV nurses have considerable barriers to mobilizing patients. Identified barriers, such as adequate staffing and time restraint, can be directly addressed. However, changing mobility culture in acute CV care is likely to require a multi-pronged effort. Educational programmes about EM's safety and efficacy should be delivered to both nurses and physicians. These programmes may be at the institutional level, but to provide real change, educational initiatives and promotion of mobilization should be guided by professional societies. At the institutional level, there needs to be 'buy-in' from physician and nursing leadership about the importance of providing the resources and support for mobilization. Nursing administration should coordinate efforts to reorganize the workflow so that nurses can participate in patient mobilization, while minimizing the additional burden to nurses.

4.2 | Limitations

There are a few limitations to our study. First, the survey was conducted at two academic tertiary care cardiovascular units and the results may not reflect perspectives of providers in other healthcare settings (i.e. community-based practice, other geographical regions). Second, many of the survey respondents had experience with EM, either via educational initiatives or through EM practice. The overall barrier scores may thus have been somewhat lower than a comparable group without EM experience. However, we did not find a significant difference between nurses who did and did not have prior

EM experience. Third, the PTs practised in many areas of the hospital and were not limited to practise in the cardiac units, unlike the physicians and nurses. Thus, the PTs should not be considered as solely dedicated 'CV practitioners'.

5 | CONCLUSION

Nurses have lower barrier levels to mobilization than CV physicians but higher than physiotherapists. Identified barriers to mobilization can be addressed to improve EM implementation in acute CV settings.

CONFLICT OF INTEREST

None.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author, MG, on research ethics approval. The data are not publicly available due to institutional ethics policies.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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