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Research Article

# Evaluating the Impact of the Bedside Mobility Assessment Tool (BMAT) on Nursing Staff Confidence in Patient Mobilization: A Pre and Post Implementation Study

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## Abstract

**Objective:** Hospitalized patients are at high risk for functional decline due to immobility. Despite the benefits of early mobility, consistent assessment and promotion of mobility remain challenging, partly due to low nursing confidence. The Bedside Mobility Assessment Tool (BMAT) has shown promise in addressing these issues. The purpose of this project was to evaluate the impact of BMAT education and unit-wide implementation on nursing staff confidence in assessing patient mobility among adult inpatients on an acute care unit at a level one trauma center in Seattle, Washington.

Methods: This quality improvement project included BMAT education (a one-hour Zoom session on BMAT use and early mobility benefits, in-service huddles, flyers summarizing key points, and bedside signage to support clinical use) and surveys measuring nursing staff's confidence in mobility assessment at pre-education, two weeks post-education, and one-month post-education. Descriptive statistics were conducted to assess changes in confidence.

Results: Thirty-seven nurses completed the pre-education survey, 16 completed the two-week post-survey, and 20 completed the one-month post-survey. The most common range of nursing experience at pre-education, two-week post education, and one-month post education was 2-3 years [n=12 (31.6%)], 2-3 years [n=8 (50%)], and 5+ years [n=9 (45%)], respectively. Mean confidence level increased by 12.8% at two weeks and 12.6% at one-month post-education.

Conclusion: BMAT education had a practical impact in increasing nurses' confidence level. Future studies should explore broader implementation to assess its effect on nursing confidence and mobility practices.

**Keywords:** BMAT, confidence, mobility, hospitalization, nursing staf

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## 1 INTRODUCTION

Mobility of patients is a key indicator of health status and condition during hospitalization[1,2]. However, immobility in hospitalized patients remains a widespread and serious

concern, as even short periods of bed rest can result in muscle atrophy, deconditioning, and prolonged hospital stays[3]. Evidence suggests that muscle strength and tone can significantly decline within the first 24 hours of immobility, with losses ranging from 3% to 11%, contributing to functional decline and delayed recovery[3]. This issue is particularly impactful for adults aged 65 and older, with 30–60% experiencing disability within the first year following hospital discharge, highlighting the critical need for early and effective mobilization efforts during hospitalization[4].

Although effective and appropriate mobilization is essential to patient care plans, many hospitals do not consistently prioritize mobility or conduct regular mobility assessments. Approximately 35% of hospitalized patients experience some degree of mobility decline during or after their hospital stay due to inadequate mobilization while inpatient[5]. Failure to routinely and accurately assess mobility can result in delays in discharge planning and inappropriate post-discharge placement for patients[2].

Immobility not only negatively impacts patient health but also contributes to substantial healthcare costs and potential financial penalties[3]. Nationally, the estimated costs of immobility-related complications are significant, including $6,694 per fall, $14,506 per pressure ulcer, and $17,367 per venous thromboembolism[6]. Additionally, prolonged hospital stays resulting from these complications can cost approximately $11,000 or more per day in some cases[6].

Patient mobilization is a collaborative effort involving members of the interdisciplinary hospital team, particularly registered nurses and nurse assistants, who are the primary population of interest for this project[7,8]. Nurses play a critical role in assessing, promoting, and implementing patient mobility plans, making their confidence and competence in using standardized tools such as the Bedside Mobility Assessment Tool (BMAT) essential[9,10]. However, despite their central role, these team members often face barriers such as limited time, inadequate training, and inconsistent use of mobility assessment tools, which hinder optimal mobilization practices and contribute to preventable complications[9,11]. Thus, we developed a BMAT education program. The purpose of this project was to evaluate the impact of BMAT education and unit- wide implementation on nursing staff confidence in assessing patient mobility among adult inpatients on an acute care unit at a level one trauma center in Seattle, Washington.

## 2 THEORETICAL FRAMEWORK

The theoretical framework guiding this project is Kurt Lewin's Model of Change, which consists of a three-step process: unfreeze, change, and refreeze[12]. The unfreezing stage involves recognizing and understanding the need for change. The change stage focuses on implementing the new process or intervention, while the refreezing stage establishes the new practice as the standard routine[13].

Lewin's model explains the transition from a known state to an unknown one and considers the people within an organization when planning and implementing change. By acknowledging the current status quo and potential uncertainties staff may feel about future changes, this model provides a structured, supportive approach to managing transitions[13]. Given the frequent changes in healthcare aimed at standardizing best practices, this framework is especially valuable for addressing concerns and reducing resistance among nursing staff, promoting engagement and confidence rather than feelings of overwhelm. Therefore, Lewin's Model of Change is well suited for guiding the implementation of this project on the acute care unit[12].

Stakeholders played an active role throughout each phase of the change process to ensure its success and sustainability[13]. Their involvement helped to alleviate uncertainty about how mobility assessments would be conducted once the new tool was fully implemented on the unit.

In this project, Lewin's three-step model was applied by first unfreezing current practices through the identification and acknowledgment of the existing gap in patient mobility assessment on acute care units. The change phase involved the implementation of educational interventions delivered through multiple modalities to all nursing staff on the selected unit. This education introduced the new mobility assessment tool and prepared nursing staff for its integration into clinical practice over the following six months. Finally, the refreezing phase established the use of the tool as part of the standard nursing workflow. This included incorporating the tool into daily nursing routines, signage, and the electronic health record prior to its full unit-wide implementation.

## 3 METHODS

### 3.1 Design

This quality improvement (QI) project evaluated changes in nursing staff confidence and understanding of the BMAT through surveys administered at three time points: prior to the intervention, two weeks after the intervention, and one month after the intervention. Data in QI are used for immediate healthcare process and outcome improvements within a specific clinical setting rather than for generalization to other contexts[14]. This QI project was intended to improve nursing practice related to mobility assessment without increasing patient falls or adding to nurse burden[11]. The University Institutional Review Board (IRB) reviewed and approved this study through the expedited review process in accordance with federal regulations 45 CFR 46.110 (IRB# FY2025-033).

### 3.2 Setting and Participants

This project was implemented on an acute care unit at a Level I trauma center located in downtown Seattle, Washington. The sample included nursing staff assigned

to this specific inpatient unit. Inclusion criteria consisted of all regularly scheduled floor nurses who were caring for patients with an "Ok to mobilize" order placed by the primary care team. Exclusion criteria included (a) student nurses, (b) nursing staff who were floated to the unit for the day, (c) per diem nurses, (d) travel nurses, and (e) staff who had never cared for patients with an "OK to mobilize" order.

Participants were recruited through word of mouth and informational flyers posted at the nurses' station. These flyers included the study's description, purpose, inclusion and exclusion criteria, and estimated time commitment. Those interested in this study were asked to contact the unit nurse manager via email and were then scheduled to attend the educational session.

### 3.3 Intervention

To ensure complete education on the BMAT, one hour Zoom sessions were offered three times over a span of one week. To promote standardization and intervention fidelity, all sessions followed a unified teaching plan and were delivered by the same two instructors using identical PowerPoint slides, handouts, and talking points. This ensured consistency in the quality and content of training across all groups. During these sessions, staff received detailed training on the proper use of the BMAT, including guidance on how to assess patient mobility and utilize BMAT results to guide care decisions. For those unable to participate in the Zoom meetings, or as a refresher for those who attended, 10-minute in-person-service sessions were held on the unit. These in- services summarized the key information from the Zoom training. Pre-education surveys were also made available during these in-services for staff who had not yet completed them. The unit manager required staff attendance at the education sessions; however, participation in the surveys remained voluntary.

BMAT resources, including instructional materials and visual aids, were made readily accessible throughout the unit. Clear signage in each patient's room displayed their BMAT mobility level, ensuring staff could easily incorporate the tool into daily practice.

The BMAT is designed to assess a patient's current mobility status daily and guide appropriate mobility interventions[9]. Its goals include standardizing safe patient handling practices, preventing caregiver injuries during transfers, and bridging gaps between various aspects of mobility-related care. The BMAT supports fall risk reduction, progressive mobility, and delirium prevention—key outcomes influenced by proper patient mobilization[9]. BMAT scores patients on a scale from level one to level four based on their functional mobility:

Level One: Total Dependence - Assesses sitting balance, upper extremity/core strength, and cognitive ability to follow directions. Equipment includes ceiling lifts, chair slings, and friction-reducing boards. If the patient passes, they move on to mobility assessment level two.

Level Two: Moderate Dependence - Assesses leg strength, ability to assist in bed mobility, foot drop, and cognitive function. Equipment is similar to level one, however patients are able to assist with movement in bed. If a patient passes level two, they move on to mobility assessment level three.

Level Three: Minimal Assistance Required - Evaluates standing tolerance, balance, and ability to bear weight. Equipment includes gait belts, walkers, sit-to-stand devices, or crutches. If a patient passes level three, they move on to mobility assessment level four.

Level Four: Independent - Evaluates dynamic standing balance, weight shifting, pre- ambulation readiness, motor planning, and cognitive ability to follow directions. With level four, patients are independent with mobilization.

The intervention included a multi-modal education program on BMAT for all nursing staff involved in patient mobilization. Initial education was delivered via a one-hour Zoom session that included peer-reviewed literature on early mobility benefits, detailed instruction on BMAT use, and an overview of implementation plans for the unit.

Additional educational strategies included in-person in-services during morning huddles, flyers posted in the nurses' station, and bedside signage. Morning huddle in-services were held twice weekly for two weeks, providing brief (10-minute) sessions on scoring patients, incorporating BMAT into daily workflow, and addressing staff questions. Flyers displayed BMAT scoring criteria and instructions, while bedside signage offered visual examples of BMAT application to support staff in real-time.

### 3.4 Data Collection Procedure

Nursing staff who met the inclusion criteria and showed interest to participate in this study were asked to complete an initial pre-education survey via the Qualtrics platforms (https://www.qualtrics.com) assessing their confidence in patient mobility assessment. To facilitate access, the unit nursing manager emailed a QR code linked to the survey to all nurses that met inclusion criteria, allowing them to complete it prior to receiving BMAT education.

Participants were asked to complete the same survey via the Qualtrics platform at two-week and one-month intervals following the training. These post-education surveys evaluated changes in nursing staff confidence and assessed the overall impact of BMAT education on practice. Reminders were sent before and after the Zoom sessions, and in-person sessions, to encourage completion.

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**Table 1. Demographic Characteristics of the Participants**

| Variables | Pre-education (N=37) | Two-week post-education (N=16) | One-month post-education (N=20) |
|---|---|---|---|
| Years working at the unit | | | |
| <1 year | 0 (0%) | 0 (0%) | 0 (0%) |
| 1-2 years | 7 (18.4%) | 2 (12.5%) | 2 (10%) |
| 2-3 years | 12 (31.6%) | 8 (50%) | 6 (30%) |
| 3-4 years | 3 (7.9%) | 0 (0%) | 0 (0%) |
| 4-5 years | 2 (5.3%) | 1 (6.3%) | 3 (15%) |
| 5+ years | 10 (26.3%) | 5 (31.3%) | 9 (45%) |
| Missing | 4 (10.5%) | 0 (0%) | 0 (0%) |
| Years experience mobilizing patients | | | |
| <1 years | 0 (0%) | 0 (0%) | 0 (0%) |
| 1-2 years | 4 (10.8%) | 0 (0%) | 2 (10%) |
| 2-3 years | 6 (16.2%) | 2 (12.5%) | 2 (10%) |
| 3-4 years | 2 (5.4%) | 3 (18.8%) | 1 (5.0%) |
| 4-5 years | 5 (13.5%) | 1 (2.6%) | 2 (10.0%) |
| 5+ years | 20 (54.1%) | 10 (62.5%) | 13 (65.0%) |

### 3.5 Measures

The Qualtrics survey included basic demographic information such as sex, age, education level, job title, and years of experience in their current position. The pre-survey inquired additional information, such as prior knowledge or use of BMAT to establish a baseline understanding. The core survey questions focused on evaluating BMAT's influence on nursing staff knowledge and confidence in mobilizing patients, as well as their understanding of how to incorporate the BMAT into nursing workflow. These questions, along with the demographic items, remained consistent across all three surveys. Responses were collected using a Likert scale ranging from "strongly disagree" to "strongly agree," ensuring a standardized approach to capturing the data. The survey took three to five minutes.

### 3.6 Data Analysis

Data collected from Qualtrics surveys were exported to IBM SPSS (Version 30.0) for analysis. Descriptive statistics were conducted to summarize demographic characteristics of participants and confidence levels at each time point. We did not attempt to use inferential statistics with p-values because several participants chose to skip the employee ID question, resulting in our inability to reliably link responses over time. In addition, QI is to achieve immediate improvements in process and outocmes in specific healthcare settings and does not pursue generalizability and statistical significance and adequate power to strengthen results like in research[14]. Subgroup analysis was also performed to see any difference in self-reported confidence in mobilizing a new patient per years of nursing experience using descriptive statistics.

## 4 RESULTS

### 4.1 Demographics

A total of 37 nurses participated in the pre-education survey, 16 participated in the two- week post-education survey, and 20 participated in the one-month follow-up survey. All participants were employed as nurses on the acute care unit where the educational intervention was implemented.

The most common range of nursing experience at pre-education, two-week post education, and one-month post education was 2-3 years [n=12 (31.6%)], 2-3 years [n=8 (50%)], and 5+ years [n=9 (45%)], respectively (Table 1). The most common years of experience mobilizing patients were 5+ years at all three time points [n=20 (54.1%) at pre-education; n=10 (62%) at two-week post, and n=13 (65%) at one-month post] (Table 1).

### 4.2 Confidence Level

Descriptive statistics showed mean confidence level at pre-education, two-week post, and one-month post: 3.54 (SD: 0.96), 4.06 (SD: 0.85), and 4.05 (SD: 1.05), respectively. In pre-survey, 58% reported feeling somewhat confident in mobilizing a patient that is new to them, and 8% reported feeling extremely confident. In the two-week post education survey, 38% reported feeling somewhat confident in mobilizing a patient that is new to them, and 24% reported that they felt extremely confident. In the one- month post-education survey, 35% reported feeling somewhat confident in mobilizing a patient who was new to them, while 40% reported feeling extremely confident.

A subgroup analysis was conducted to compare years of nursing experience with confidence levels in mobilizing a patient who was new to them (Figure 1). Across all three survey time points, there was no apparent difference in reported confidence levels in patient mobilization per years of service as a nurse at the facility.

## 5 DISCUSSION

Participants had increased confidence after BMAT education. Others[9,15] also reported BMAT increasing nursing confidence in mobilizing patients. Prior studies have demonstrated a direct correlation between nursing confidence in mobility assessment and the frequency with which patients are mobilized[16,17]. This aligns with our results showing a

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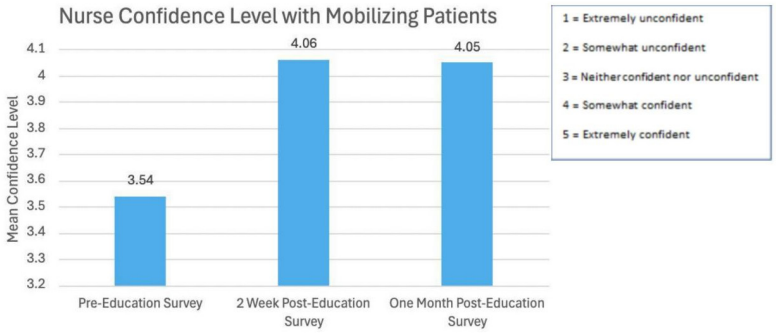


**Figure 1. Mean Nurse Confidence Level Across Surveys.**

positive trend in confidence scores post-education.

The overall increase in confidence scores across both the two-week and one-month post-education surveys suggests that the BMAT education had a positive practical impact. The shift in nurses' self-reported confidence levels with more nurses feeling "very confident" after the intervention, demonstrates that the education contributed to enhanced comfort and competence in mobilizing patients.

This project has several limitations that must be acknowledged. First, while intervention fidelity was supported through use of a standardized teaching plan and the same instructors, fidelity was not independently audited or measured. Second, the study relied solely on nurses' self-reported confidence without directly evaluating BMAT utilization at the bedside (e.g., EHR documentation audits or direct observation), limiting conclusions about changes in actual clinical practice. Third, no patient-level outcomes such as mobility level, falls, or hospital length of stay were measured, restricting our ability to determine whether increased nursing confidence translated into improved patient care. Fourth, the study did not include qualitative assessment of nurses' experiences or long-term sustainability strategies, which could have provided valuable insights into barriers and facilitators of implementation. Finally, the study experienced significant attrition, with participation declining from 37 nurses at baseline to 16 at the two-week follow-up (56.8% decrease) to 20 at the one-month follow-up (45.9% decrease). We did not conduct an attrition bias analaysis to determine whether those who completed follow-up differed from those who dropped out because of several non-matching IDs, which limits confidence in the representativeness of results.

Future research could expand this study by increasing the sample size to include nurses from other units, such as critical care or the emergency room, where mobility assessments may have different implications. Incorporating both nursing confidence measures and patient-level outcomes would allow for a more complete evaluation of BMAT's clinical impact. In addition, extending the follow-up period would provide insights into the long-term sustainability of increased nursing confidence. Qualitative methods such as open-ended questions or focus groups should also be integrated to capture nurses' real-world experiences. Finally, strategies to sustain BMAT use over time may include embedding BMAT education into staff orientation, ongoing quality monitoring, and continued leadership support. As we followed Kurt Lewin's Model of Change, we allowed nurses time to process the information and provided frequent reminders about BMAT education during the implementation phase, which helped mitigate resistance to change[13]. As a result, nurses were more receptive to the change and became more confident in mobilizing patients. This increased confidence supports nursing practice by providing a structured, standardized approach to assessing patient mobility, reducing uncertainty, and enhancing clinical decision-making. By empowering nurses with tools like BMAT, the intervention promoted safer mobilization practices, reduced the risk of injury for both patients and staff, and helped integrate mobility into routine nursing care. Ultimately, these changes contribute not only to improved patient outcomes, such as reduced length of hospitalization and fewer complications[2], but also to more confident, autonomous nursing practice.

## 6 CONCLUSION

The study findings suggest that the education provided led to a positive trend in nursing confidence regarding patient mobility across all levels of nursing experience. The mean confidence score was increased from the pre-education survey (3.54±0.96) to the two-week (4.06±0.85) and one- month (4.05±1.05) follow-up surveys. BMAT was implemented during the two-week follow-up survey, and educational materials remained available to nurses for review during both follow-up periods. Tailoring the education to the specific needs of the nurses on the unit and the patient population they served seemed to enhance nursing confidence without becoming an obstacle.

While the study was conducted on a single acute care unit, these findings could be valuable for other unit types, demonstrating the potential for improving nursing confidence with mobility assessments. Ultimately, by enhancing nursing staff confidence in the mobility tools and resources available, it will lead to improved patient outcomes.

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## Conflicts of Interest

The authors have no conflicts of interest to declare.

## Data Availability

All data generated and analyzed during this study are included in this published article.

## Copyright Permissions



## Author Contribution

Kern K and Prasad S were in charge of study conception, design, implementation, analysis, and manuscript development. McCarthy C facilitated the project's execution and provided valuable feedback to the manuscript. Sin MK provided critical feedback throughout the project, from conception to manuscript revision. All authors approved the final version of the manuscript.

## Abbreviation List

BMAT, Bedside Mobility Assessment Tool
QI, Quality improvement

## References

[1] Cortes OL, Delgado S, Esparza M. Systematic review and meta-analysis of experimental studies: In-hospital mobilization for patients admitted for medical treatment. *J Adv Nurs*, 2019; 75: 1823-1837.[DOI]

[2] Hoyer EH, Young DL, Friedman LA et al. Routine inpatient mobility assessment and hospital discharge planning. *JAMA Intern Med*, 2019; 179: 118-120.[DOI]

[3] Kissane H, Knowles J, Tanzer JR et al. Relationship between mobility and falls in the hospital setting. *J Brown Hosp Med*, 2023; 2: 82146.[DOI]

[4] Liebzeit D, Bratzke L, King B. Strategies older adults use in their work to get back to normal following hospitalization. *Geriatr Nurs*, 2020; 41: 132-138.[DOI]

[5] Schafthuizen L, van Dijk M, van Rosmalen J et al. Mobility level and factors affecting mobility status in hospitalized patients admitted in single-occupancy patient rooms. *BMC Nurs*, 2024; 23: 11.[DOI]

[6] Estimating the Additional Hospital Inpatient Cost and Mortality Associated With Selected Hospital-Acquired Conditions. Accessed 4 September 2025. Available at:[Web]

[7] Crooks E, Rampley T, Weeks DL et al. Perceived barriers to patient mobilization among therapy and nursing acute care staff: a multi-site survey study. *Arch Phys Med Rehab*, 2024; 105: 243-250.[DOI]

[8] Young DL, Colantuoni E, Friedman LA et al. Prediction of disposition within 48 hours of hospital admission using patient mobility scores. *J Hosp Med*, 2020; 15: 540-543.[DOI]

[9] Boynton T, Kelly L, Perez A et al. Banner mobility assessment tool for nurses: Instrument validation. *Am J SPHM*, 2014; 4: 86-92.

[10] Gabele D, Mendez S, Giuliano KK. Early and progressive mobility in a community hospital: A new interdisciplinary safe patient handling and mobility model. *Nurs Manage*, 2023; 54: 22-27.[DOI]

[11] Montgomery CD, Pereira DE, Hatcher JB, et al. Improving the assessment and documentation of patient mobility using a quality improvement framework. *Geriatr Nurs*, 2021; 42: 325-330.[DOI]

[12] Hussain ST, Lei S, Akram T et al. Kurt Lewin's change model: A critical review of the role of leadership and employee involvement in organizational change. *J Innov Knowl*, 2018; 3: 123-127.[DOI]

[13] Barrow JM, Annamaraju P. Change management in health care. StatPearls Publishing: Florida, USA, 2022.

[14] Foster J. Differentiating quality improvement and research activities. *Clin Nurse Spec*, 2013; 27: 10-13.[DOI]

[15] Morjaria S, Carmody C, Navlakha S et al. Mobility Is Medicine, Too: Creating a Culture of Mobility Amongst Hospitalized Patients With Cancer to Improve Patient Outcomes. *Cancer Care Res Online*, 2024; 4: e057.[DOI]

[16] Javed MJ, Davis DD. Assisting Patients With Mobility. StatPearls Publishing: Florida, USA, 2025.

[17] Wald HL, Ramaswamy R, Perskin MH et al. Quality and Performance Measurement Committee of the American Geriatrics Society. The case for mobility assessment in hospitalized older adults: American Geriatrics Society white paper executive summary. *J Am Geriatr Soc*, 2019; 67: 11-16.[DOI]