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Barriers to Early Mobility of Hospitalized General Medicine Patients:

Survey Development and Results

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Abstract

Objective—Functional status decline commonly accompanies hospitalization making patients vulnerable to complications. Such decline can be mitigated through hospital-based early mobility programs. Success in implementing patient mobility quality improvement processes requires evaluating providers' knowledge, attitudes, and behaviors.

Design—A cross-sectional, self-administered survey in two different hospital settings was completed by 120 nurses and physical and occupational therapists (rehabilitation therapists, 38; nurses, 82) from six general medicine units. The survey was developed using published guidelines, literature review, and provider meetings and refined through pilot testing. Psychometric properties were assessed, and regression analyses were conducted to examine barriers to early mobility by hospital site, provider discipline, and years of experience.

Results—Internal consistency reliability, item consistency, and discriminant validity psychometric characteristics were acceptable. In multivariable regression analysis, overall perceived barriers were similar between the two hospitals ($P = 0.25$) and significantly higher for staff with less experience ($P = 0.02$) and for nurses vs. rehabilitation therapists ($P < 0.001$). The survey identified specific barriers common to both nurses and rehabilitation therapists and other barriers that were discipline specific.

Conclusions—This novel survey identified important barriers to mobilizing medical inpatients that were similar across two hospital settings. These results can assist with the implementation of quality improvement projects for increasing early hospital-based patient mobility.

Keywords

Quality Improvement; Rehabilitation; Surveys; Early Mobility; Provider Practice; Evidence-Based Care; Multidisciplinary

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Patients admitted to the hospital for acute illness often face worsening difficulties with mobility and functioning in activities of daily living despite treating the acute illness.[1–5] Among the sickest patients who are admitted to the intensive care unit (ICU), for example, many patients experience continued physical disabilities 1 yr after hospital discharge with approximately half of the patients unable to return to work because of persistent fatigue, weakness, and impaired functional status.[1] These functional changes arise from a complex and dynamic process that may include functional decline before admission, partly attributable to illness precipitating the admission, as well as additional decline during hospitalization despite recovery from their acute illness as outlined in previous research.[6–10] For example, in large studies of older adults admitted to general medicine units, approximately one third were discharged with worse-than-baseline function, with this functional decline attributable to the hospitalization itself in half of these patients.[6,11] The reasons for hospital-acquired functional decline are multifactorial, including disturbance of sleep, poor nutritional intake, pain, and polypharmacy.[12,13] In particular, reduced mobility and deconditioning from bed rest are common causes for functional decline during hospitalization, with studies demonstrating that hospitalized patients commonly spend most of their time in bed.[14–18] For patients at high risk, such as the elderly and patients with chronic diseases, functional decline during hospitalization may result in increased medical complications and patients failing to recover independence in activities of daily living and nursing home placement.[6–8,19,20] Hence, this functional decline is an important hospital-acquired harm that is, at least, partially preventable via early mobilization and physical rehabilitation interventions during acute care hospitalization, which can improve functional outcomes in a safe and cost-efficient manner.[13,20–26]

Despite the evidence supporting mobilization and rehabilitation for inpatients, these interventions are often difficult to incorporate into routine clinical practice.[27]

Implementing a multidisciplinary, early mobility quality improvement (QI) program is challenging because it requires the collaborative efforts of busy providers with differing training, experience, and patient care responsibilities. A key prerequisite for implementing effective QI projects is understanding the barriers providers perceive to changing practice, which may be unique in different practice settings. Previous studies have examined perceived barriers to mobilizing patients in ICU settings,[28–37] but not within adult general care, inpatient medical services. ICU-based studies have frequently focused on barriers reported by rehabilitation therapists, such as concerns regarding patient safety and physiologic stability, sedation and ventilation practices, multiplicity of vascular access and attachment to medical devices, lack of equipment, lack of physician orders, and inadequate staff to permit patient mobilization.[32,35,36] Several studies also have described barriers to mobilize ICU patients reported by nurses, which include a lack of a coordinated multidisciplinary team to mobilize patients, the degree of patient acuity, the potential for increased work, and the perception that patients should be deeply sedated to facilitate comfort and life support therapies.[28,33,37] However, understanding the perceived barriers specific to general inpatient medical units is important because there may be barriers unique to that setting. The ICU-based studies also did not directly compare perceived barriers between rehabilitation therapists and nurses, which is important in designing a multidisciplinary mobility project. Hence, the authors developed and conducted a novel

multicenter, multidisciplinary survey to assess barriers to early patient mobilization, as perceived by nurses and physical and occupational therapists, who are the main providers involved in mobilizing inpatients in the general inpatient medical setting. The authors' overall hypotheses were that barriers would be similar across different hospital settings, that nurses would perceive more barriers than physical and occupational therapists, and that less experienced providers would perceive more barriers.

METHODS

Survey Development

Evidence-based therapies that improve patient outcomes are often not translated into clinical practice, and clinical adherence can be undermined by a variety of reasons.[27]

This survey was developed using a conceptual framework described by Cabana et al.[38] to understand barriers to provider adherence to practice guidelines.

This framework asserts that, before principals of clinical practice can affect patient outcomes, it first affects provider knowledge, then attitudes, and finally, behavior. Hence, three main categories of barriers to following recommended clinical practice are distinguished: barriers related to knowledge, barriers related to attitude, and barriers that influence behavior. On the basis of this framework, the authors' survey was designed to assess providers' perceived barriers in three domains, including knowledge (four items), attitudes (nine items), and behaviors (13 items), each of which formed a survey subscale within the Overall Provider Barriers scale. In the survey instructions, mobilizing patients was defined as getting a patient out of bed (e.g., sitting out of bed, toileting at bedside or to a bathroom, standing, and ambulation). The knowledge subscale assessed provider training and education with respect to mobilizing patients as well as appropriate indications for patient referral to rehabilitation services. The attitudes subscale assessed providers' lack of agreement, lack of self-efficacy, lack of outcome expectancy, and perceptions of other providers' attitudes. The behaviors subscale assessed external factors and practice pattern constraints that may prevent a provider from mobilizing a patient. In addition, the survey collected data on provider characteristics, including discipline (nurse *vs*. physical or occupational therapist) and years of clinical experience in hospital settings.

Individual survey items were based on the previously described framework by Cabana et al.[38] and included specific barriers identified in previous research.[32,35,39] Additional potential barriers were identified, and survey items were constructed by a multidisciplinary team of two physicians, three physical therapists, one occupational therapist, two administrators, and four nurses. The survey was further pilot tested by four physicians (three internal medicine, one physiatrist), three physical therapists, four registered nurses, one psychologist, and one epidemiologist, who provided feedback on item wording to ensure ease of use, face validity, and content validity.[40] Results of pilot testing resulted in few changes to the wording of the survey to avoid multiple interpretations from different providers, omitting items that assessed redundant concepts, and addition of items related to potential barriers such as leadership support, multidisciplinary discussion of patient function, and provider education to patients. For all survey items, a 5-point Likert response

scale was used, with the following options: 1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree. Items alternated between positive and negative wordings to avoid response set bias.[40] To create consistency among participants and minimize recall error, subjects were instructed to answer questions that most accurately reflected their opinions based on experience during the past 1–2 wks. In pilot testing, the survey required approximately 5 mins to complete.

Study Population

The cross-sectional, self-administered survey-based study was conducted between January and March 2013 on four general medicine units at Johns Hopkins Hospital, a 1059-bed quaternary academic hospital in Baltimore, MD, and between June and July 2013 on two general medicine units at Suburban Hospital, a 236-bed community-based hospital in Bethesda, MD. The general medical units were adult inpatient, general care, and nonsurgical medical units. A convenience sample of full-time nurses and physical and occupational therapists (referred to as rehabilitation therapists) who predominantly worked on the targeted hospital units during the daytime were eligible for inclusion. At the Johns Hopkins Hospital, recruitment for participation occurred via staff meetings in which the three-page paper-based survey was distributed, anonymously completed, and immediately returned. At the Suburban Hospital, recruitment for participation occurred via staff meetings and internal e-mail in which participants were directed to complete the survey anonymously through a secure online Web-based service.

Psychometric Testing and Scoring of the Survey

For each survey item, the mean, standard deviation, and distribution of scores were examined. Cronbach alpha was used to examine the internal consistency reliability of the overall scale and each subscale, with a value of 0.70 or greater considered to be acceptable.[40]

Item internal consistency was considered to be adequate if the correlation coefficients between each item and the postulated subscale and the Overall Provider Barriers scale were greater than 0.40 for most items.[40] The scaling assumption of item discriminant validity was considered supported when most items of a subscale had a higher correlation with its subscale than with the other subscales.[40]

On an a priori basis, the authors had assigned each item to each of the three domains and had multidisciplinary input into that item placement. To confirm, and revise as needed, the attribution of items to the correct domain, the authors conducted a maximum-likelihood factor analysis with three factors that represented the knowledge, attitudes, and behavioral domains.[38,41] To allow for correlated factors in the analysis, the authors used a promax rotation. An item was considered to belong to a factor with a loading value of 0.4 or greater.[41]

Responses to negatively worded items were recoded for consistency with positively worded items maintaining the anchor of 3 for “neutral.” Individual item raw scores were summed to create domain subscale scores, and these scores were added to create the Overall Provider Barriers scale score. The subscale scores and the overall score were transformed into

uniform scales ranging from 0 to 100, with a higher score indicating a greater level of barriers.

Statistical Analysis

To evaluate differences in the Overall Provider Barriers scale and the knowledge, attitudes, and behavior subscale scores, between discipline and hospital site, a *t* test that accounted for differences in sample size was used. The strength of the linear relationship between individual items and their subscales was calculated using the Pearson product-moment correlation coefficient. Four separate linear regression models were constructed to evaluate the association between three provider characteristics (i.e., hospital site, discipline, and years of experience) and the Overall Provider Barriers score and three subscale scores. Before its inclusion in the regression model, the authors verified a linear relationship between years practiced and overall barrier score via scatterplot with a locally weighted scatterplot smoothing line. Therefore, the authors modeled years of experience as a continuous variable, and the authors expressed the regression coefficient in this analysis per 5-yr change, because this represents a relevant change in years of practice experience.[42] In separate analyses, the authors evaluated for pairwise statistical interaction across three of the provider characteristics (hospital site, discipline, and years of experience). Statistical significance was defined as a two-sided $P < 0.05$. Data were analyzed with R (version 2.15.0; http://www.r-project.org). This study was approved by the Johns Hopkins Institutional Review Board for both hospitals with participants providing informed consent.

RESULTS

One hundred fifty-two nurses and 40 rehabilitation therapists were eligible to complete the survey. The response rates were 54% (82/152) and 95% (38/40) for nurses and rehabilitation therapists, respectively. The response rates were 63% (80/127) for providers at the Johns Hopkins Hospital completing the paper-based survey and 62% (40/65) for providers at the Suburban Hospital completing the Web-based survey. The median (interquartile range) numbers of years of experience in working with hospitalized patients for nurses and rehabilitation therapists were 5 (2–18) and 5 (1–10), respectively, which was not significantly different ($P = 0.24$).

Psychometric Analysis

The proportion of missing values for individual items ranged from 0% to 1.7%, with 96% of items missing less than 1%. The response option frequency distributions and mean and standard deviation, by provider group, for each survey item are shown in Table 1. For each subscale, 88% of the items had a higher correlation with its subscale than with the other subscales (results not shown). The Cronbach alpha coefficients of internal consistency reliability were acceptable, at 0.72 or greater for the overall scale and all subscales (Table 2). Intersubscale correlations were acceptable at 0.49–0.94 (Table 2). The correlation between each item and its postulated subscale and the Overall Provider Barriers scale were acceptable by generally exceeding 0.40. Results from the factor analysis confirmed the original categorization of 23 (88%) of the 26 items. None of the included items loaded on

more than one factor at 0.4 or greater. Three items were found to be better categorized under a new domain, and the results from the tables represent the final attribution of each item.

Hypothesis Testing

In the unadjusted analysis, the Overall Provider Barriers scale and knowledge, attitudes, and behaviors subscales did not significantly differ between the two hospital study sites, but nurses had significantly higher barrier scores compared with rehabilitation therapists (Table 3).

Regression Analysis

Table 4 shows results of the multivariable regression analysis including providers' hospital site, provider discipline, and years of experience. Hospital site was not significantly associated with the overall barriers scale or any of the subscales. For the Overall Provider Barriers scale and all three sub-scales, nurses compared with rehabilitation therapists had significantly higher barrier scores ($P < 0.001$). An increase in 5 yrs of experience had a small but significant association with lower Overall Provider Barriers ($P = 0.02$) and knowledge ($P = 0.009$) and attitudes ($P = 0.04$) subscale scores. There were no significant statistical interactions between hospital site, discipline, and years of experience.

Items with High Barriers

The item with mean scores reflecting the highest perceived barrier by both rehabilitation therapists and nurses was agreeing that "increasing mobilization of my inpatients will be more work for nurses" (item 12). Items with the largest differences in mean scores between rehabilitation therapists *vs.* nurses were related to therapists disagreeing with not having time to mobilize their inpatients during their shift/work day (item 23, 1.3 for rehabilitation therapists *vs.* 3.2 for nurses) and the increased perception by nurses that inpatients are mobilized at least once daily by nurses (item 11, 2.8 *vs.* 3.5). Rehabilitation therapists reported receiving more training than nurses on how to safely mobilize their inpatients (item 2, 4.9 *vs.* 3.7) and disagreed more with not feeling confident in their ability to mobilize their inpatients (item 21, 1.1 *vs.* 2.3). For both disciplines, there was a strong correlation between responses related to receiving training in mobilizing patients and confidence for mobilization ($r = 0.65$, $P < 0.0001$).

Additional items with high barriers (i.e., score > 93) that may be important for designing and conducting inpatient mobilization QI projects included the perception that the physical functioning of inpatients is not regularly discussed by the patient's healthcare providers (item 8), that inpatients are resistant to being mobilized (item 17), and that rehabilitation therapists should be the primary care provider to mobilize inpatients (item 4).

DISCUSSION

The authors developed and conducted a novel multidisciplinary survey at both an academic and community hospital to identify barriers to mobilizing hospitalized patients on general medical services. Acceptable psychometric characteristics were demonstrated. Perceived barriers to mobilizing hospitalized patients were common between academic and community

hospital settings and were higher for staff with less experience and for nurses compared with rehabilitation therapists. Important individual barriers to mobilizing inpatients were also identified to assist with designing and conducting an early inpatient mobility QI project.

Nurses, compared with rehabilitation therapists, reported significantly higher perceived barriers (i.e., lack of training and comfort) to mobilizing hospitalized patients. This is not surprising because rehabilitation therapists are specifically trained to mobilize patients and do so as an essential component of their daily clinical work. Providing nurses with adequate training to mobilize patients may therefore be an important educational component for a successful QI project that depends upon nurse-directed patient mobilization.

Nurses also felt that increasing patient mobilization will be more work for them and felt that they did not have enough time to do so. Compared with rehabilitation therapists, nurses have more patient responsibilities other than mobilizing patients, which may be a significant barrier. Although this concern has face validity, some feedback from nurses involved in patient mobility initiatives at this study's hospitals have reported reduced workload through improved patient independence (e.g., reduced patient call bells) accompanied by preserved patient dignity (e.g., using a bedside commode rather than a bed pan). Although the authors do not know the extent to which preserving patient physical independence can mitigate the nursing workload associated with mobilizing patients, the authors believe that providing tangible examples of benefits from mobilizing patients may help reduce perceived nursing barriers. Furthermore, feedback from nurse managers on the survey development team and the observation that more experienced nurses perceive fewer barriers to mobilization support the notion that clinical training and experience lead to an intuitive appreciation of the value of preserving patient mobility. Engaging nursing leadership or providing mentorship for nurses with less experience may help with the successful implementation of mobilization QI projects.

Recently, there has been growing recognition that early and intensive intervention to prevent or reduce hospital-acquired functional impairments is safe, feasible, and beneficial for the sickest inpatients: those in the ICU setting.[20,22,29,43–45]

Moreover, in this setting, early rehabilitation has been demonstrated to reduce hospital resource use and costs.[23,46–48] Two recent meta-analyses demonstrated that hospital-based exercise and mobility programs, in the acute care hospital and acute rehabilitation settings, can improve hospital costs, length of stay, and rates of discharge to home.[21,26] Despite the evidence supporting early mobilization and rehabilitation for hospitalized patients, most patients spend most of their time in bed.[16]

The use of structured QI models can assist with translating research evidence into clinical practice related to the implementation of early mobility programs.[30]

As part of such QI processes, one of the important early steps is identifying local barriers before QI implementation. This survey may be beneficial if used in that capacity. The results suggest that understanding the perceived provider barriers unique to each clinical setting is vital. For example, compared with previous ICU-based studies, providers working on general medical units did not report high perceived barriers on items addressing medical

acuity, patient safety, or lack of equipment, but both settings perceive high barriers with respect to having adequate staffing and time to mobilize inpatients. Although further research is needed to evaluate the survey's responsiveness to change, the survey may also be used as a means of measuring change in perceived barriers to implementation of mobilization interventions that include aspects of adopting a "culture of mobility" on the inpatient unit.

This research has potential limitations. First, further psychometric evaluation of the survey is required to support and expand the results presented herein, including further evaluation of its validity, test-retest reliability, and responsiveness to change. Second, because not all eligible providers completed the survey, a selection bias may have been introduced. However, the results seemed generalizable across multiple inpatient medicine services in two different hospitals settings in a single geographic region in the United States. Evaluation in other inpatient units, hospitals, regions, and countries is needed to evaluate the generalizability of the study findings. Third, the relatively small sample size of rehabilitation therapists did not allow the authors to distinguish between these rehabilitation provider groups. Fourth, although the final set of items for this survey was developed through a collaborative, multidisciplinary effort with additional feedback from bedside providers, there may be additional barriers to mobilizing patients on general medical services that were not addressed. Finally, the authors only considered nurses and rehabilitation therapists, but it would be beneficial in future studies to assess other bedside providers who may also be involved in mobilizing patients, such as aides, clinical technicians, support staff, and physicians.

CONCLUSIONS

Hospital-acquired functional decline and subsequent physiologic vulnerability to medical complications represent an important hospital-acquired harm that can be remediated through the initiation of early mobility programs. Understanding the barriers to increasing inpatient mobility using a multidisciplinary perspective is important to translate evidence into practice and improve patient outcomes. This novel survey identified important barriers to mobilizing inpatients and may be helpful in assessing readiness for change and monitoring ongoing acceptance of QI projects that seek to improve hospital-based mobility and subsequently maintain a culture of mobility.

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TABLE 1

Survey response option frequency distribution and item score by provider group

Subscale	Item No.	Item	Response Option Distribution, %[a]					Item Score, Mean (SD)	
			1	2	3	4	5	RN (n = 82)	RT (n = 38)
Knowledge	2	I have received training on how to safely mobilize my inpatients.	2	7	7	47	38	3.7 (0.9)	4.9 (0.2)
	5	I understand which inpatients are appropriate to refer to physical therapy.	0	1	9	47	43	4.0 (0.6)	4.9 (0.4)
	6	I understand which inpatients are appropriate to refer to occupational therapy.	1	3	14	41	41	3.8 (0.8)	4.9 (0.4)
	25	Unless there is a contraindication, I educate my inpatients to exercise or increase their physical activity while on my hospital unit.	0	3	8	53	37	4.0 (0.7)	4.8 (0.5)
Attitudes	1	My inpatients are too sick to be mobilized.[b]	24	49	18	8	2	2.4 (0.9)	1.5 (0.5)
	3	Increasing mobilization of my inpatients will be harmful to them.[b]	49	42	7	1	1	1.7 (0.7)	1.5 (0.8)
	4	A physical therapist or occupational therapist should be the primary care provider to mobilize my inpatients.[b]	18	42	12	21	7	2.9 (1.2)	1.9 (0.9)
	12	Increasing mobilization of my inpatients will be more work for nurses.[b]	2	8	11	51	28	4.0 (1.0)	3.9 (0.8)
	13	Increasing mobilization of my inpatients will be more work for physical and/or occupational therapists.[b]	11	27	20	30	12	3.1 (1.2)	2.8 (1.3)
	18	I believe that my inpatients who are mobilized at least three times daily will have better outcomes.	2	1	6	48	44	4.2 (0.8)	4.6 (0.6)
	19	I am not sure when it is safe to mobilize my inpatients.[b]	33	46	11	8	3	2.3 (0.9)	1.3 (0.7)
	21	I do not feel confident in my ability to mobilize my inpatients.[b]	41	39	8	10	2	2.3 (1.0)	1.1 (0.3)
	26	My patients have time during their day to be mobilized at least three times daily.	4	13	20	37	26	3.4 (1.1)	4.4 (0.9)
Behaviors	7	We don’t have the proper equipment and/or furnishings to mobilize my inpatients.[b]	12	43	21	14	10	2.9 (1.2)	2.3 (1.1)
	8	The physical functioning of my inpatients is regularly discussed between the patient’s healthcare providers (nurses, physicians, physical therapists, occupational therapists).	1	19	14	57	9	3.6 (0.9)	3.5 (0.9)
	9	Nurse-to-patient staffing is adequate to mobilize inpatients on my unit(s).	12	28	27	31	2	2.7 (1.1)	3.0 (0.9)
	10	My inpatients often have contraindications to be mobilized.[b]	5	53	19	18	5	2.8 (1.1)	2.2 (0.6)
	11	Unless there is a contraindication, my inpatients are mobilized at least once daily by nurses.	4	21	26	40	8	3.5 (1.0)	2.8 (0.9)
	14	My departmental leadership is very supportive of patient mobilization.	2	6	18	42	32	3.7 (0.9)	4.5 (0.7)
	15	Increasing the frequency of mobilizing my inpatients increases my risk for injury.[b]	14	28	28	21	8	3.0 (1.1)	2.4 (1.2)
	16	Inpatients who can be mobilized usually have appropriate physician orders to do so.	4	16	18	51	11	3.5 (1.0)	3.5 (1.0)
	17	My inpatients are resistant to being mobilized.[b]	2	38	29	29	2	3.1 (0.9)	2.4 (0.7)
	20	Family members of my inpatients are frequently interested to help mobilize them.	3	19	33	41	4	3.1 (0.9)	3.5 (0.8)

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Subscale	Item No.	Item	Response Option Distribution, %[a]					Item Score, Mean (SD)	
			1	2	3	4	5	RN (n = 82)	RT (n = 38)
	22	I document the physical functioning status of my inpatient during my shift/work day.	2	4	8	49	38	3.9 (0.8)	4.8 (0.7)
	23	I do not have time to mobilize my inpatients during my shift/work day.[b]	27	20	25	20	8	3.2 (1.1)	1.3 (0.5)
	24	Unless there is a contraindication, I mobilize my inpatients at least once during my shift/work day.	3	8	21	42	26	3.4 (0.9)	4.6 (0.7)

[a] Response options were as follows: 1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree.

[b] Response options were reverse coded for subsequent analyses.

TABLE 2

Cronbach alpha and interscale correlations

	Overall	Knowledge	Attitudes	Behavior
Overall Barriers Scale	**0.87 (0.83–0.90)**			
Knowledge subscale	0.67[a]	**0.82 (0.76–0.86)**		
Attitudes subscale	0.87[a]	0.45[a]	**0.77 (0.68–0.83)**	
Behavior subscale	0.91[a]	0.48[a]	0.63[a]	**0.75 (0.64–0.82)**

Cronbach alpha values and 95% confidence interval in parentheses are in bold typeface along the main diagonal of the tables; correlations between scales/subscales are in regular typeface.

[a] $P < 0.001$.

TABLE 3

Provider barriers scores by hospital site and discipline

Scale or Subscale	Hospital Site			Discipline		
	Academic Hospital (*n* = 74)	Community Hospital (*n* = 46)	*P*[a]	RN (*n* = 82)	RT (*n* = 38)	*P*[a]
Overall Provider Barriers Scale	36 (11)	32 (14)	0.17	40 (11)	23 (5)	<0.001
Knowledge subscale	38 (27)	30 (31)	0.16	49 (23)	5 (11)	<0.001
Attitudes subscale	42 (16)	38 (21)	0.20	47 (17)	27 (11)	<0.001
Behaviors subscale	38 (18)	34 (21)	0.35	43 (20)	22 (10)	<0.001

Data are presented as mean (standard deviation). Scale and subscales have been transformed to a 0–100 scoring system, with a higher score indicating greater level of barriers.

[a] *P* values calculated using *t* test.

RN, registered nurse; RT, rehabilitation therapist.

TABLE 4

Results of regression analyses of provider barrier scores

	Academic *vs.* Community Hospital Site		RN *vs.* RT		Experience (by 5 Yrs)	
Scale or Subscale	**β (95% CI)[a]**	***P***	**β (95% CI)[a]**	***P***	**β (95% CI)[a]**	***P***
Overall Provider Barriers Scale	−2 (−6 to 2)	0.25	18 (14–22)	<0.001	−1 (−2 to 0)	0.02
Knowledge subscale	−6 (−14 to 2)	0.13	49 (41–57)	<0.001	−2 (−4 to −1)	0.009
Attitudes subscale	−2 (−9 to 4)	0.45	22 (16–29)	<0.001	−2 (−3 to 0)	0.04
Behaviors subscale	−3 (−10 to 2)	0.34	23 (16–30)	<0.001	−1 (−3 to 0)	0.08

[a]Multivariable linear regression models were used to examine the association of the Overall Provider Barriers Scale and its three subscales with the covariates described in the table. The results represent the difference in mean scale/subscale score (range of 0–100, with a higher score representing a greater barrier).

RN, registered nurse; RT, rehabilitation therapist.