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Come explore the future of physical therapy! The ninth TechnoPalooza event is scheduled during CSM on Friday, Feb. 14 from 3:00 p.m.-6:00 p.m. This technology playground is designed to provide an opportunity for hands-on exploration of various technologies available now or in the near future. With this interactive learning opportunity, attendees will gain insight into skills needed by individuals that choose to work with technology in physical therapy. In addition, this event will offer an opportunity for networking with specific tech-related subject matter experts. This year, the focus will be on clinical, assistive, and educational technologies. Come explore, learn, and network with experts in each of these areas!

Friday, Feb. 14 | 3:00 p.m.-6:00 p.m.
Mile High Ballroom Pre-Function Area
Denver Convention Center

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HPA the Catalyst

Dianne V. Jewell, PT, DPT, PhD, FAPTA

Health Policy - An Invitation to Engage

To work in health care is to live in a world replete with policy, statute and regulation. It starts with our training. U.S. doctor of physical therapy (DPT) education programs must seek accreditation from the Commission on Accreditation in Physical Therapy Education. DPT graduates must be licensed in the jurisdictions in which they practice. Physical therapists must comply with ethical principles and standards of practice promulgated by the American Physical Therapy Association and frequently incorporated into state practice acts.

Those professionally driven rules are augmented by expectations established by private and public entities. Some practice settings undergo their own accreditation process by entities such as the Joint Commission or the Commission on Accreditation of Rehabilitation Facilities. Federal health insurance programs such as Medicare and Medicaid have their own rules of engagement the purposeful violation of which can lead to civil and criminal penalties. And then there are the myriad hoops to jump through when dealing with the commercial payers that cover those seeking our services. Meanwhile, employers and practice owners also must ensure compliance with federal and state laws that are intended to protect individual civil rights, ensure fair employment practices, and assure safe workplaces.

It's enough to make one pause and reconsider that barista position at a favored coffee shop! Fortunately, those who self-select into the physical therapy profession are not faint of heart. Their motivation to improve the health and wellbeing of those they serve compels them to take this highly regulated environment head on. Their challenge is to determine at what level to engage, with whom to do it, and what strategies and tactics to implement. Advanced preparation is essential and includes, among other things, review and analysis of available data and scientific literature. The articles in this issue provide resources to those interested in the federal policy arena.

Ficucello and colleagues' manuscript provokes us to reflect on our perceptions and expectations of colleagues who want to return to practice after experiencing a disability. As these authors note, uncovering and understanding potential biases we may hold is essential to compliance with the federal Americans with Disabilities Act as well as adherence to our world-wide espousal of societal inclusiveness. Johnson and colleagues, on the other hand, investigate the relationship between physical function in the acute hospital setting and outcome following a subsequent skilled nursing facility (SNF) admission. Their work points out that federal incentives to use SNFs for post-acute needs would benefit from a refined understanding of who would truly benefit from services in that setting.

What these articles have in common is a focus on the relevance of these federal health policies to physical therapist practice. They both are potential launch points for those looking to engage at that level. It's up to us to seize the opportunity to influence the application of these policies to our colleagues and the individuals we serve. We must do what we ask of our patients and clients – take the first step.

Dianne V. Jewell, PT, DPT, PhD, FAPTA

***PTJ-PAL* Managing Editor**

The Association between Patients' Physical Function in the Hospital and Their Outcomes in Skilled Nursing Facilities

Joshua K. Johnson, PT, DPT, PhD // Julie M. Fritz, PhD // Benjamin S. Brooke, MD, PhD // Paul C. LaStayo, PT, PhD // Anne Thackeray, PT, PhD, MPH // Gregory Stoddard, MPH // Robin L. Marcus, PT, PhD

ABSTRACT

Study Design. Retrospective observational study.

Background. Shifting policies incentivize the appropriate use of skilled nursing facilities (SNFs) by linking reimbursement to patient outcomes. An appropriate recommendation for SNF care following hospitalization is limited by inadequate knowledge of the relationships between clinical presentation in the hospital and the expected outcomes in the SNF.

Objectives. The primary objective was to test for relationships between physical function (PF) in the hospital and outcomes in a SNF.

Methods and Measures. Data were collected from one academic medical center, five SNFs, and a state all-payer claims database. Primary predictor variables, tested in separate multivariate regression analyses, were PF at hospital admission or discharge. SNF outcomes were PF change, length of stay (LOS), discharge to community, and hospital events occurring within 30 days of hospital discharge.

Results. Higher PF at hospital discharge was associated with a 2.3% decrease in SNF LOS (95% confidence interval [CI]=-4.2, -0.3; p=0.025). Trends indicate that those with higher levels of PF at hospital discharge had attenuated PF gains in the SNF (b=-0.13; 95% CI=-0.29, 0.02; p=0.091). No associations were observed between hospital PF and SNF discharge to the community or 30-day hospital events.

Conclusions. Patients with higher PF in the hospital may expect shorter LOS and potentially attenuated PF gains in the SNF and therefore may not benefit from care in that setting. In larger samples, similar analyses and prospective studies should further explore the associations observed in this study and inform future clinical application.

Institutional Review. Institutional Review Board at the University of Utah.

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Joshua K. Johnson, PT, DPT, PhD
Cleveland Clinic Rehabilitation and Sports Therapy
Cleveland Clinic
Cleveland, OH

Julie M Fritz, PhD
Department of Physical Therapy and Althletic Training
University of Utah
Salt Lake City, UT

Benjamin S. Brooke, MD, PhD
Department of Surgery
University of Utah School of Medicine
Salt Lake City, UT

Paul C. LaStayo, PT, PhD
Department of Physical Therapy and Althletic Training
University of Utah
Salt Lake City, UT

Anne Thackeray, PT, PhD, MPH
Department of Physical Therapy and Althletic Training
University of Utah
Salt Lake City, UT

Gregory Stoddard, MPH
Department of Internal Medicine
University of Utah School of Medicine
Salt Lake City, UT

Robin L. Marcus, PT, PhD
Department of Physical Therapy and Althletic Training
University of Utah
Salt Lake City, UT

Corresponding Author:
Joshua K. Johnson, PT, DPT, PhD
9500 Euclid Ave
Cleveland, OH 44195
Fax: (216) 445-7283
johnsoj8@ccf.org

Introduction

Since the implementation of the Inpatient Prospective Payment System in 1983, the proportion of patients discharged from hospitals to skilled nursing facilities (SNFs) has continued to steadily rise—as have the costs associated with post-acute care (PAC).[1–6] While patients have been discharged to SNFs more often in recent years, the outcomes of care in SNFs are suboptimal.[7–12] To both reduce costs and improve patient outcomes, the Centers for Medicare and Medicaid Services (CMS) are enacting updated policies that more closely link reimbursement for care in SNFs to patient outcomes, including the SNF Quality Reporting Program (QRP).[1,6,13,14] Doing so is expected to improve both the selection of patients appropriate for discharge from the hospital to SNF and the quality of care provided in the facilities themselves. As a result, there is an increasing emphasis on improving care continuity and shared accountability between hospital and SNF providers[15–19] escalating the need for hospital providers to consider patient outcomes in SNFs.

More than 3.2 million patients discharged from U.S. hospitals in 2013 were discharged to a SNF (9.0% of all discharges).[20] In general, patients discharged to a PAC facility are older, insured by Medicare, emergently admitted to the hospital, and have a longer hospital length of stay (LOS).[21] PAC in a SNF is most often indicated to address functional deficits and maximize the likelihood of an effective transition from the hospital to the community.[22–24] However, there is high variability in both the characteristics of patients discharged to SNFs and the practices associated with transitioning patients from the hospital to a SNF, suggesting that identifying patients most appropriate for discharge to SNF is challenging.[23,25–27] These findings are consistent with the commentary of Ackerly and Grabowski1 suggesting that hospital providers have inadequate evidence to link expected outcomes in PAC to a clinically sound rationale for discharge to a SNF. Appropriate referrals to SNF and consistently better patient outcomes in that setting may be achieved with an improved understanding of the relationships between patients' clinical characteristics measured in the hospital and SNF outcomes.

Previous studies suggest that deficits in physical function (PF) observed in the hospital are a common factor considered for recommending discharge to a SNF.[25,28–30] Similarly, poor PF in the hospital has been shown to be associated with discharge to settings other than home and with morbidity and mortality following hospitalization.[31–34] A patient's PF status is therefore an appropriate candidate to gauge a patient's clinical presentation in the hospital as it pertains to the potential need for discharge to, and outcomes of care from, a SNF.

The purpose of this study was to determine the association between patients' PF in the hospital and their outcomes in a SNF. Outcomes included change in PF in the SNF, SNF length of stay (LOS), discharge to community, and a hospital event (emergency department [ED] visit or readmission) occurring within 30 days of the index hospital discharge. These were selected as outcomes not only for their clinical appropriateness, but also because they are among the quality indicators that are included by CMS in the SNF QRP4 and therefore have policy implications.

Methods

This was a retrospective observational study using data acquired from the academic medical center at University of Utah Health (UUH), five SNFs with whom we had previously partnered for completion of a prospective pilot project, and a state all-payer claims database (APCD). For the pilot project, processes for the assessment of PF were standardized across the hospital and SNF for patients discharged from our hospital to one of the five participating SNFs. The UUH Institutional Review Board approved this study and granted a waiver of informed consent. All rights of human subjects were protected.

<u>Assessment of Physical Function</u>

In both the hospital and SNF settings, PF was assessed for each patient using one of two short forms derived from the Activity Measure for Post-acute Care (AM-PAC) mobility domain.35 In the hospital setting, PF was assessed using the "6-clicks" basic mobility short form, which is validated for use in diverse hospitalized patients and assesses the patient's need for physical assistance from another person to complete six functional tasks ranging from rolling in bed to negotiating steps with a rail.[36] In the SNFs, either the "6-clicks" short form or a low-level outpatient short form created for the Developing Outpatient Therapy Payment Alternatives (DOTPA) initiative were used to assess PF for patients. The DOTPA short form assesses higher levels of PF than the "6-clicks" short form (i.e. negotiating a full flight of stairs while carrying objects or walking several blocks). Higher scores from either form indicate greater independence with PF. An AM-PAC score from any short form can be converted to a standardized t-scale score (AM-PAC t-score) for which the mean score in a post-acute care population is 50 and the standard deviation is 10.37 Thus, we converted all raw scale scores to their AM-PAC t-scale scores for comparison in the analyses.

<u>Hospital Data Collection</u>

Data from the hospital were collected from the UUH Enterprise Data Warehouse (EDW), a tool that combines administrative and clinical data. Initial extraction from the EDW included data for all adult patients discharged from UUH hospitals between September 1, 2014 and November 30, 2016. Patients admitted to a maternal, obstetrics/gynecology, or psychiatric unit were excluded since patients in these units rarely undergo formal assessment of PF.

SNF records for all patients with a correct identifier recorded were matched with hospital records extracted from the EDW. Patients with missing or incorrect identifiers in the SNF record could not be matched so were excluded. Remaining patients were included if they were discharged from UUH's tertiary care general hospital or orthopedic specialty inpatient center, but excluded if no AM-PAC t-score was recorded in the hospital. After merging hospital and SNF data, patients missing data for all primary outcomes from the SNF were excluded. At this point, any missing SNF outcome data was considered missing at random (MAR)[38] and imputed using chained equations.[39,40] Ten imputed datasets were generated and used in the analyses.

SNF Data Collection

Data collection for the pilot project occurred in five SNFs from January 2015 through May 2016. The physical therapy staff in each participating SNF measured and recorded AM-PAC scores at SNF admission and discharge, the dates of SNF admission and discharge, and SNF discharge disposition location. A unique identifier for the patient and corresponding hospital admission was also recorded in the SNF dataset and used to match patient records from the SNF to the hospital.

APCD Data Collection

The Utah APCD is maintained through the joint efforts of database administrators and researchers at the state Department of Health and UUH. It includes claims data for state residents insured through Medicaid, Medicare Advantage plans, and various private payers in the state. Importantly, patients insured through Medicare Part A are not included in the APCD.

Claims data included from the APCD were for all patients included in the initial EDW data extraction, but was limited to claims for medical services provided in 2015 as claims data for 2016 were not available at the time of this study due to administrative delays. We provided pre-specified patient identifiers along with hospital admission and discharge dates to an APCD data scientist who linked data from both sources. Variables of interest extracted from the APCD were the number of hospital events (admissions or ED visits) occurring in the six months prior to a patient's hospital admission or 30-days following hospital discharge. These variables supplemented data from the EDW, providing incidents of these events if they occurred outside of UUH.

Predictor Variables

The primary predictor variable was PF measured in the hospital. AM-PAC t-scores from the "6-clicks" collected near the time of a patient's admission have been shown to be associated with discharge to a PAC facility or to home.[41] However, patients discharged to SNF are known to have a longer LOS than those discharged home20 so they may reasonably experience a change in PF status during their hospitalization. Thus, we considered PF status at both admission and discharge as potentially important to their SNF outcomes.

Three separate sets of analyses were conducted in which the AM-PAC t-score recorded at admission, at discharge, or as a measure of PF change was the primary predictor (see Appendix, Figure A1). PF change during hospitalization was measured as the difference between the discharge and admission scores. For all analyses, we assumed that the hospital admission score was the first recorded score and the discharge score was the last recorded score. The timing of these scores relative to admission or discharge, respectively, were described to determine the accuracy of this assumption. Patients with only one score recorded were included in the analysis of admission scores if the score was recorded closer to the date of admission than to discharge or in the analysis of discharge scores if vice-versa.

Patient demographic and clinical variables were described and tested as confounders for each outcome. These included, as linear predictors, the patient's age, diagnosis severity according to the Medicare Severity Diagnosis Related Group (MS-DRG) weight, the number of hospital events in the six months preceding the index hospital admission, the number of surgical procedures during hospitalization, and hospital LOS. As categorical predictors, we included sex, race, marital status, primary payer, admitting diagnosis according to the Agency for Healthcare Research and Quality's Clinical Classification Software (CCS) level one coding scheme,[42,43] condition acuity as indicated by an admission through the ED, the Charlson comorbidity index,[44] whether or not the patient had an ICU event lasting >24 hours during hospitalization, and the participating SNF in which the patient was treated. These were selected because they have been shown in previous studies to be associated with hospital discharge disposition or readmission,[45–47] or based on clinical relevance to the outcomes of interest.

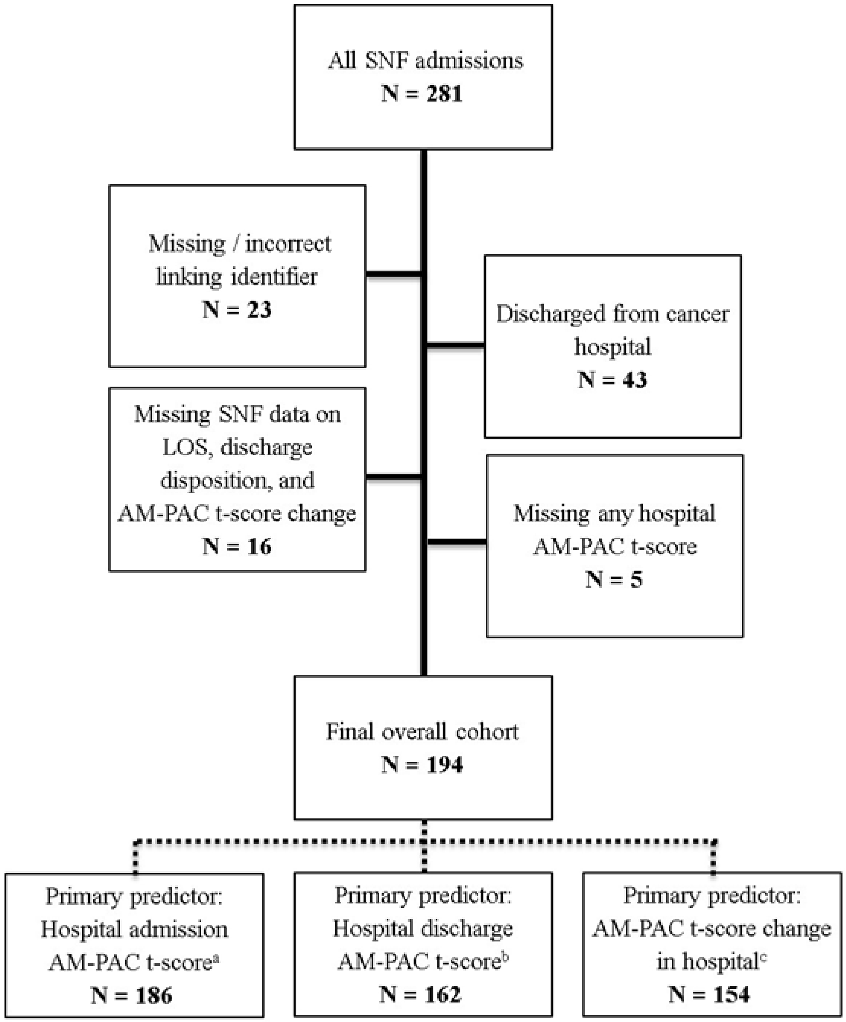
SNF Data Collection

SNF PF change was calculated as the difference in AM-PAC t-scores between SNF discharge and admission and analyzed as a continuous outcome. SNF LOS, calculated as the number of days between SNF admission and discharge, was also analyzed as a continuous outcome. Discharge to community was coded as a dichotomous outcome: discharged from SNF to home (with or without home health) or elsewhere. A 30-day hospital event was also coded to be dichotomous, indicating whether or not the patient had an ED visit or hospital readmission within 30 days of the index hospital discharge. All outcomes were derived from the SNF records with the exception of 30-day hospital events, which were counted from the SNF records, EDW, or APCD.

Data Analysis

Each predictor/outcome pair was analyzed individually in multivariate regression according to the level of measurement of each outcome variable. The imputed datasets were analyzed where applicable. Linear regression was used to analyze PF change in the SNF. Due to concern for a potential ceiling effect of the "6-clicks" short form at hospital discharge limiting additional measured improvement in PF in the SNF, a sensitivity analysis was completed that included only those patients

Figure 1. Cohort Flow Diagram.



a Inclusion criteria: Only hospital AM-PAC t-score recorded closer to admission than discharge or > 1 hospital AM-PAC t-score recorded
b Inclusion criteria: Only hospital AM-PAC t-score recorded closer to discharge than admission or > 1 hospital AM-PAC t-score recorded
c Inclusion criteria: > 1 hospital AM-PAC t-score recorded

with a discharge AM-PAC t-score <50. Gamma regression48 was used to test for an association with SNF LOS. Gamma regression coefficients were converted into percent change of LOS for clinical interpretability. For the dichotomous SNF outcomes (discharge to community and 30-day hospital event) modified Poisson regression with a robust variance estimate49 was used to estimate the relative risk for the outcome.

In each multivariate model we adjusted for a priori confounders including age, sex, Charlson comorbidity index, and hospital LOS. Initial statistical models for each analysis included as covariates all other patient characteristics previously described. Using backward variable selection, criteria for inclusion in the final model was a p-value less than 0.[20,50,51] The details of each model, including variables included in the final model of each analysis, are included in a supplemental table (available upon request).

For models in which the p-value of the primary relationship of interest was <0.05, indicating that hospital measures of PF were indeed associated with the outcome of interest, we calculated the bootstrap inclusion fraction (BIF) to confirm that predictors were reliable and not attributable to Type I errors introduced by performing multiple statistical tests. The BIF is the proportion of times the variable remains in the final model over 100 bootstrap resamples.[52,53] A threshold of 50% inclusion indicates that variables were appropriately included in the final model. All data analyses were completed in Stata version 15.1 (StataCorp, College Station, TX).

Results

Data were collected in participating SNFs for 281 patients. As summarized in Figure 1, 23 of these had a missing or incorrect matching identifier, 43 patients were discharged from the cancer hospital, 5 were missing an AM-PAC t-score in the hospital, and 16 were missing data on all outcomes of interest. After these exclusions, 194 matched patient records were available for analysis in at least one of the three sets of analyses. Data were imputed for 16 (8.2%) patients missing PF change in the SNF, 20 (10.3%) patients missing SNF LOS, and 19 (9.8%) patients missing SNF discharge disposition. These proportions of missing data are within a generally acceptable range (5-10%).[54]

For patients included in the analysis of admission scores, the median (IQR) duration between hospital admission and the first recorded AM-PAC t-score was 18.9 (12.7, 31.1) hours. For patients included in the analysis of discharge scores, the median (IQR) duration between the last score and discharge was 22.0 (2.3, 46.4) hours. For those with more than one score recorded in the hospital, there was a median (IQR) difference between the timing of first and last scores of 71.0 (45.8, 119.5) hours. The 6-clicks mobility short form was used in the SNF for 161 (83.0%) of the patients. There were 177 patients (91.2%) discharged from SNF in 2015 thus potentially making APCD data available, but 109 (61.6%) of these were insured through Medicare Part A and therefore did not have these data available.

<u>Patient characteristics and overall outcomes</u>

Table 1 presents a summary of patient demographic characteristics for those included in each analysis. Among the full sample, the mean age was 69.9 (SD=15.4) years. The majority were female (55.2%), Caucasian (89.2%), not married (60.3%), and using Medicare as the primary payer for the episode of care (79.4%). “Injury and Poisoning” was the most often reported diagnostic clinical classification (22.2%). The median hospital LOS was 4.5 days (IQR: 3.2, 7.1) and 46.9% of the SNF records included were from one participating facility.

For all patients, PF improved in SNF by 11.2 (SD=7.4) AM-PAC t-score points. The mean AM-PAC t-score at SNF admission was 38.4 (SD=8.9) and at discharge was 48.7 (SD=9.7) The median LOS in SNF was 19 (IQR: 12, 30) days. There were 71.4% of patients that were discharged to the community and 53 (27.3%) that had a 30-day hospital event. Table 2 provides a summary of these outcomes.

<u>Hospital admission AM-PAC t-score as the primary predictor</u>

The mean AM-PAC t-score at admission was 30.3 (SD=6.3). After adjusting for confounders, every one additional AM-PAC t-score point at hospital admission was associated with a 2.1% decrease in SNF LOS (95% confidence interval [CI]: -4.1%, -0.1%; p=0.04). This is illustrated in Figure 2, Panel B. Higher AM-PAC t-scores at hospital admission were not associated with AM-PAC t-score change in the SNF, discharge from SNF to the community, or 30-day hospital events. These and all other adjusted results are summarized in Table 3.

<u>Hospital discharge AM-PAC t-score as the primary predictor</u>

The mean AM-PAC t-score at hospital discharge was 34.1 (SD=8.0). Every one additional AM-PAC t-score point at hospital discharge was associated with a 2.3% decrease in SNF LOS in the adjusted analysis (95% CI: -4.2%, -0.3%; p=0.03; see Figure 2, Panel D). There was no significant association between higher AM-PAC t-scores at hospital discharge and the other SNF outcomes. However, as shown in Figure 2, Panel C, patients with higher PF at hospital discharge tended to have less PF improvement in the SNF (b=-0.13; 95% CI: -0.29, 0.02; p=0.09). In the sensitivity analysis, seven patients were excluded since their AM-PAC t-score at hospital discharge was >50. In this analysis, the trend toward attenuated PF improvement remained, but was less pronounced (b=-0.11; 95% CI: -0.31, 0.10; p=0.30).

<u>AM-PAC t-score change in the hospital as the primary predictor</u>

For those with both an admission and discharge AM-PAC t-score recorded in the hospital, the mean change was 3.9 (SD=7.2) points. In adjusted analyses, the marginal improvement of PF by one AM-PAC t-score point in the hospital was associated with a 1.8% decrease in SNF LOS, but this

Table 1. Patient Characteristics, by Primary Care Predictor Variable

	Analysis Primary Predictor		
Characteristic	Hospital Admission AM-PAC t-score	Hospital Discharge AM-PAC t-score	AM-PAC t-score Change in Hospital
Total sample size, n	186	162	154
Age, mean years (SD)	69.9 (15.4)	69.8 (15.4)	69.7 (15.4)
Female, %	54.3%	58.0%	57.1%
Caucasian Race, %	89.3%	90.1%	90.3%
Married / Partner, %	39.3%	37.3%	38.3%
Primary payer, %			
Medicare	80.1%	79.6%	80.5%
Medicaid	7.0%	8.6%	7.8%
Private	11.3%	10.5%	10.4%
Unfunded / Other	1.6%	1.2%	1.3%
Diagnosis (AHRQ CCS), %			
Injury and poisoning	27.4%	27.8%	28.6%
Diseases of the musculoskeletal system and connective tissue	22.6%	22.8%	23.4%
Diseases of the circulatory system	15.1%	16.7%	15.6%
Infections and parasitic disease	11.8%	11.1%	11.7%
Other diagnoses	23.0%	21.6%	20.9%
MS-DRG weight, median (IQR)	2.0 (1.5, 3.1)	2.0 (1.6, 3.3)	2.0 (1.6, 3.3)
Count of incidents of hospital use in 6 months preceding hospital admission, median (IQR)	0 (0, 1)	0 (0,1)	0 (0, 1)
Admission through ED, %	52.7%	54.3%	52.6%
ICU event >24 hours, %	26.9%	30.3%	31.8%
Count of surgeries during hospitalization, median (IQR)	1 (0, 1)	1 (0,1)	1 (0, 1)
Charlson comorbidity index category, %			
None (CCI=0)	11.3%	12.4%	12.3%
Low (CCI 1-3)	38.2%	36.4%	37.7%
Moderate (CCI 4-6)	28.5%	28.4%	28.6%
High (CCI >/=7)	22.0%	22.8%	21.4%
Hospital length of stay, median (IQR)	4.6 (3.2, 7.5)	4.8 (3.2, 7.7)	5.0 (3.5, 7.8)
Participating SNF in which the patient was treated, %			
A	21.0%	20.4%	20.8%
B	8.6%	9.3%	8.4%
C	47.9%	47.5%	48.7%
D	7.0%	6.8%	7.1%
E	15.6%	16.1%	14.9%

Abbreviations: AM-PAC, Activity Measure for Post-acute Care; AHRQ, Agency for Healthcare Research and Quality; CCI, Charlson comorbidity index; CCS, Clinical Classification Software; ED, emergency department; ICU, intensive care unit; IQR, interquartile range; MS-DRG, Medicare Severity Diagnosis-Related Group; SD, standard deviation

Table 2. Observed SNF Outcomes, by Primary Predictor Variable

Primary Predictor Variable	AM-PAC t-score change in SNF, mean (SD)	SNF LOS, median (IQR)	Proportion discharged from SNF to community	Proportion with 30-day hospital event
Hospital admission AM-PAC t-score	11.1 (7.2)	19 (12, 31)	71.4%	26.3%
Hospital discharge AM-PAC t-score	11.4 (7.3)	18 (11, 30)	71.2%	28.4%
AM-PAC t-score change in hospital	11.4 (7.1)	18.5 (12, 30)	71.2%	27.3%
All patients	11.2 (7.4)	19 (12, 30)	71.4%	27.3%

Abbreviations: AM-PAC, Activity Measure for Post-acute Care; IQR, interquartile range; LOS, length of stay; SD, standard deviation; SNF, skilled nursing facility

Table 3. Association Between Hospital PF measures and SNF Outcomes from Multivariate Regression Analyses

Primary Predictor Variable	AM-PAC t-score change in SNF, b-coefficient (95% CI) p	SNF LOS, % change (95% CI) p	Discharge from SNF to community, relative risk (95% CI) p	30-day hospital event, relative risk (95% CI) p
Hospital admission AM-PAC t-score	0.08 (-0.11, 0.27) 0.42	-2.10% (-4.07, -0.09) 0.04	0.99 (0.98, 1.01) 0.52	1.01 (0.98, 1.05) 0.49
Hospital discharge AM-PAC t-score	-0.13 (-0.29, 0.02) 0.09	-2.25% (-4.18, -0.29) 0.03	1.01 (0.99, 1.02) 0.44	1.02 (0.99, 1.04) 0.17
AM-PAC t-score change in hospital	-0.12 (-0.28, 0.05) 0.16	-1.79% (-3.89, 0.35) 0.10	1.01 (0.99, 1.03) 0.38	1.02 (0.99, 1.05) 0.17

relationship was not significant (95% CI: -3.9%, 0.4%; p=0.10, see Figure 2, Panel F). A non-significant trend was observed indicating that improved PF in the hospital was associated with less PF improvement in the SNF (b=-0.12; 95% CI: -0.28, 0.05; p=0.16 Figure 2, Panel E). There was no association between incremental PF change in the hospital and SNF discharge to community or 30-day hospital events.

Bootstrap Inclusion Factor Analysis

In general, the BIF analyses indicate that variables were appropriately included or excluded from each model in which statistically significant findings were observed. For the two models analyzed (admission score vs. LOS and discharge score vs. LOS), nine potential errors were noted. Five of these were inclusion errors of variables that were determined a priori to be potential confounders in the relationships of interest so were included in all models. The remaining four errors were omissions of variables that were shown in BIF analyses to be present in >50% of bootstrapped models in one or both models: an emergent admission (admission score vs. SNF LOS), the count of surgeries during hospitalization (both models), and the SNF to which the patient was discharged (admission score vs. SNF LOS). All BIF findings are presented in the supplemental table (available upon request).

Discussion

To understand the relationship between a patient's presentation in the hospital and their outcomes after discharge to a SNF, this retrospective study tested for associations between patients' PF in the hospital setting and outcomes included in the CMS SNF Quality Reporting Program. Higher PF in the hospital, particularly at discharge, was significantly associated with shorter SNF LOS. An observed relationship between higher PF at hospital discharge and attenuated PF improvement in the SNF demonstrated a potentially meaningful trend but was not statistically significant. In our sample, PF in the hospital did not differentiate a patient's risk for discharge to the community from the SNF or a 30-day hospital event. The findings do indicate that patients with higher PF at the time they transition from the hospital to a SNF make little additional functional gains over short SNF stays. Since a primary goal of a SNF stay is to address PF deficits in order to facilitate an effective transition from the hospital to the community, the overall findings call into question whether discharge from the hospital to a SNF is indicated for such patients.

For marginally higher discharge AM-PAC t-scores, the 2.3% decrease in SNF LOS implies 0.44 fewer days in the SNF using 19 days (the median in our sample) as the referent. In other words, for every 2.29-point increase in the AM-PAC t-score at hospital discharge, SNF LOS was observed to be one day shorter. Thus, even a small increase in PF could inform a reasonable prediction of shorter SNF LOS, suggesting the need for careful consideration of a patient's PF status in the hospital, particularly at discharge.

Though not significant, it is interesting that patients discharged to a SNF who demonstrated greater functional independence in the hospital tended to make smaller improvement in PF in the SNF. This trend persisted when excluding those patients who may have experienced a ceiling effect of the "6-clicks" assessment at hospital discharge. Given a smaller effect size in this sensitivity analysis and non-significance in both the primary and sensitivity analyses, the potential for a true ceiling effect cannot be ruled out. If, however, these trends are indicative of an actual effect, there is room to consider whether PAC in a SNF will contribute any additional benefit to the patient's improvement in PF if their PF at hospital discharge is already high. When considered with the likelihood that such patients will likely have a shorter SNF LOS, this information could be useful in determining whether SNF placement is an appropriate recommendation following hospitalization.

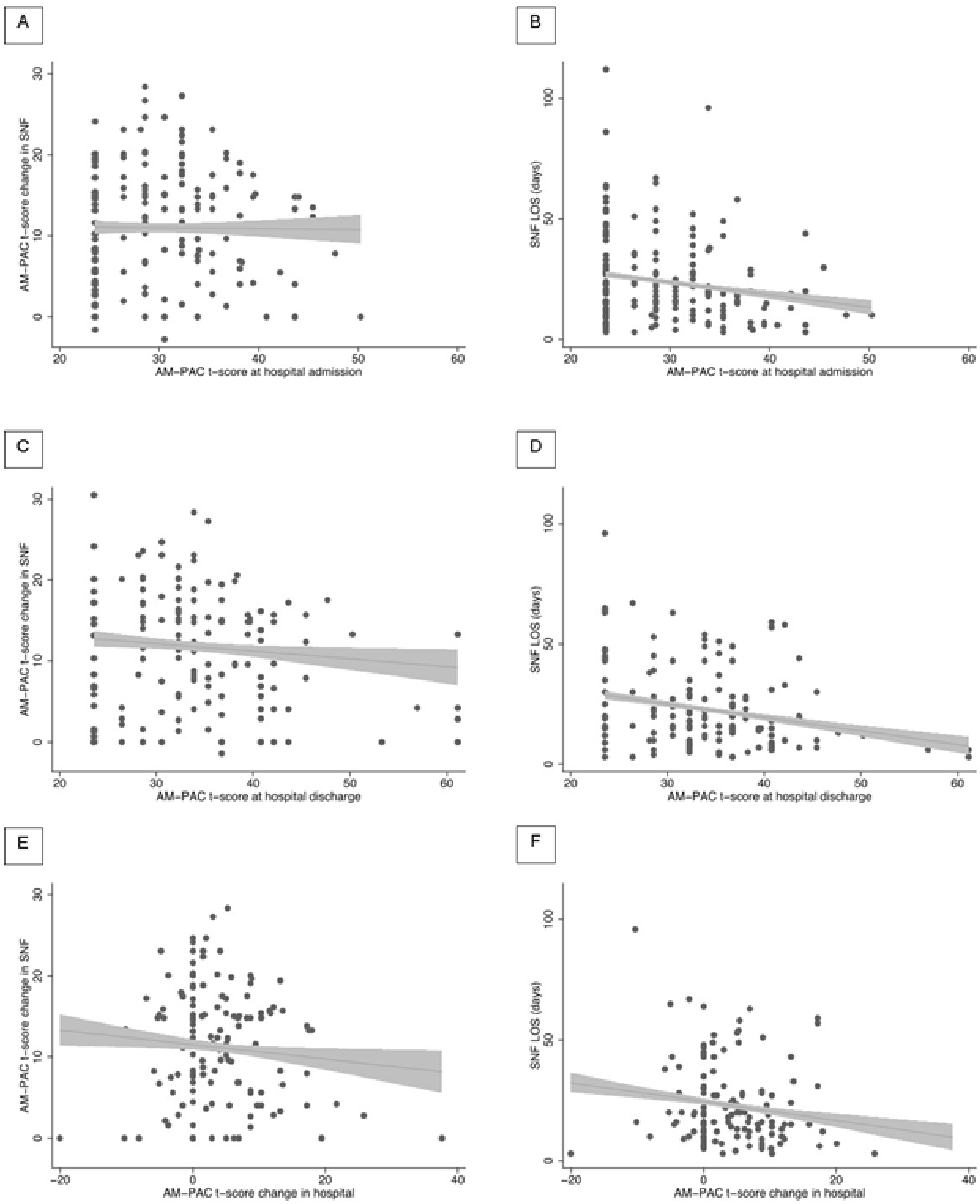
Given ongoing policy shifts in the reimbursement of PAC in general,[1,5,6] and SNFs specifically,[14] it is increasingly important that the right patients are identified for discharge to a PAC facility. However, payment reform alone will not equate to consistently more appropriate referrals to SNF and better outcomes in that setting. Rather, those responsible for discharge planning in the hospital (physical and occupational therapists, nurse care managers, and physicians) must have a better knowledge of which patients are likely to achieve positive outcomes if discharged to a SNF.[1,4,24,55] As current evidence indicates that doing so is challenging,[23,26] the results of this study are informative in adding that PF measured in the hospital is associated with PF change and LOS in the SNF. This knowledge, especially if supported in subsequent research, could enable hospital clinicians to more confidently consider a patient's PF when determining the appropriateness for discharge to a SNF.

Previous studies aiming to define an appropriate discharge setting have been limited to the use of the observed discharge setting as the primary outcome.[29,30,41,56,57] This, however, does not take into account whether a patient achieved meaningful outcomes once in that setting, as our study does. The prior absence of studies like this is due, at least in part, to the extensive challenge of linking individual patient data from the hospital to their PAC settings.[55,58] However, as we demonstrate in this work, the capabilities of health systems and researchers in this regard continue to expand. Jenq and Tinetti[55] indicate that continuing to use standardized measurement and documentation across settings and to link data sources from acute to PAC is increasingly important. Doing so will enable researchers, payers, policymakers, and clinicians to identify the patient characteristics that best predict successful outcomes for patients transitioning out of the acute care setting.

Limitations

As a retrospective study, the findings of this study are simply observational and should be interpreted accordingly. Consistent

Figure 2. Scatter Plots Showing Observed Relationships Between PF Presentation in the Hospital and SNF outcomes with Adjusted Regression lines and 95% Confidence Intervals.



Panel A. AM-PAC t-score at hospital admission and AM-PAC t-score change in SNF
Panel B. AM-PAC t-score at hospital admission and SNF LOS
Panel C. AM-PAC t-score at hospital discharge and AM-PAC t-score change in SNF
Panel D. AM-PAC t-score at hospital discharge and SNF LOS
Panel E. AM-PAC t-score change in hospital and AM-PAC t-score change in SNF
Panel F. AM-PAC t-score change in hospital and SNF LOS

with the findings of previous studies,[7–12,59] both PF in the hospital and SNF outcomes were highly variable in our sample. This variability and a lack of statistical power resulting from the small sample size may reasonably explain the lack of statistical significance for some of the relationships examined. Thus, the interpretation of these findings should be considered with caution.

Data were collected from patient records in only one health system, prompting the need for subsequent studies to confirm the findings for a broader cohort of patients. Additionally, multiple data sources were used to achieve the study aim and secondary data are prone to errors in data entry—including missing data—and in linking of data sources. Missing data from the APCD for 2016 limited our access to supplemental health utilization data for that time period, which could have affected the proportion of patients observed to have had a 30-day hospital event. For missing outcome data, we used robust multiple imputation methods, but imputed data are only estimates in the absence of real values. Missing AM-PAC t-scores in the hospital were not imputed in an effort to maintain the ability to interpret results from independent variables collected in a real clinical setting. However, the missing AM-PAC t-scores likely introduce a selectively biased sample. Similarly, including only patients with at least one AM-PAC t-score recorded in the hospital may have also contributed to selection bias.

Lastly, it is likely that sociodemographic characteristics like family support, health literacy, financial status, and others contribute to the outcomes of interest. Our datasets did not include variables to account for these or similar characteristics. Identifying and considering variables that measure these characteristics are important for subsequent studies aiming to address similar questions.

Conclusion

In order to enhance the ability of hospital clinicians to identify the patients that are most appropriate for discharge to a SNF it is important to consider how a patient's clinical presentation in the hospital might indicate the outcomes that he or she might achieve in that setting. The findings of this study demonstrate that higher PF at hospital discharge is associated with shorter SNF LOS and potential attenuation of PF in the SNF. Thus, for patients with high PF at hospital discharge, post-acute SNF placement may be inappropriate. While further work is necessary to understand the clinical implications of these findings, they indicate the potential utility of PF as a measure to guide more appropriate discharges to SNF. Future research using larger patient samples, ideally in multiple health systems, and prospective data should explore these associations further. If supported in future studies, these findings warrant consideration for changes in practice, specifically more focused efforts to recommend SNF only for those patients who will benefit the most from care in that setting.

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Evaluating the Perceived Competency of a Physical Therapist with a New Disability

John Ficucello, PT, MPT // Steven W. Litchman, EdD, MAACVPR // John Whalen, RN // Marc Campo, PT, PhD

ABSTRACT

Study Design. Cross-sectional survey.

Objective. To examine the perceptions of physical therapists about the competency of a hypothetical physical therapist with a new disability requiring a manual wheelchair and performing his/her duties either unassisted, or with the assistance of a physical therapy aide/technical assistant.

Background. The Americans with Disabilities Act prohibits discrimination against qualified individuals on the basis of disability. Little is known about the perceived competency of physical therapists with disabilities.

Methods and Measures. An on-line survey was e-mailed to directors of physical therapy departments, practices and academic programs. Statements addressing the perceived competency of a hypothetical physical therapist with a disability were presented in Likert-type format.

Results. Respondents (n=41) were primarily female (68.3%), from the Eastern US (70.7%), and had a clinical doctorate degree (DPT) (58.5%). Sixty-five percent agreed assistance from a physical therapist aide/technical assistant would be a reasonable accommodation. Balance, functional mobility, and motor control examination techniques were perceived to be competently performed only with this accommodation. Most respondents thought it appropriate for a physical therapy aide/technical assistant to assist with therapeutic exercise and modalities but not with manual therapy and wound care.

Discussion. Perceived competency of a physical therapist with a disability using a physical therapy aide/technical assistant varied with respect to practice setting and application of certain examination and treatment categories. This variability may be based on concerns for patient safety as well as perspectives about appropriate job responsibilities for physical therapy aides/technical assistants.

Conclusions. Additional research is needed to identify appropriate accommodations for physical therapists with disabilities in various practice settings.

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John Ficucello, PT, MPT
Program Director: Spinal Cord Injury/ Amputee & Stroke Services
Helen Hayes Hospital
West Haverstraw, NY

Steven W. Lichtman, EdD, MAACVPR
(Retired) Director, Rehabilitation Research
Helen Hayes Hospital
West Haverstraw, NY

John Whalen, RN
Reserach Nurse Coordinator
Helen Hayes Hospital
West Haverstraw, NY

Marc Campo, PT, PhD
Professor
Department of Physical Therapy Mercy College
Dobbs Ferry, NY

Corresponding Author:
John Ficucello, PT, MPT
Helen Hayes Hospital
West Haverstraw, NY 10993
ficucelloj@helenhayeshosp.org

Introduction

Since the introduction of the Americans with Disabilities Act (ADA) in 1990,[1] there have been extensive efforts to increase employment of individuals with disabilities. Consistent with this legislation, the American Physical Therapy Association (APTA) has referenced inclusion of people with disabilities in the profession in House of Delegates position P06-04-12-12.[2] The World Confederation for Physical Therapy's (WCPT) policy statement on disability more specifically calls on member organizations, of which the APTA is one, to:

"support the inclusion of persons with disabilities in the profession by:

• ensuring decisions on admission or readmission to the profession are based on competence to practice, not disability;

• adopting inclusive policies;

• making reasonable accommodations;

• promoting the profession as a career that is inclusive of persons with disabilities."[3]

In spite of these professional association acknowledgements, little is known about the employment status or perceived competency of physical therapists with disabilities.

A review of the literature revealed no studies examining employment issues for physical therapists with a disability, including their perceived competence. However, these issues have been examined in physicians, nurses, and occupational therapists, including disabled students and college faculty associated with these disciplines. [4-18] Elliott et al.[8] examined the attitudes of occupational therapists and certified occupational therapy assistants toward hypothetical occupational therapists with physical or mental disabilities. They found the lowest perceived effectiveness for hypothetical occupational therapists with drug dependency or psychiatric disorders, while the respondents perceived that those with paraplegia would be most effectively employed in an administrative or educational setting. Velde [11] surveyed ten occupational therapists with a disability regarding their professional experiences. Respondents reported a unique ability to relate to their patients, serve as a valuable resource to other occupational therapists, and recognize the value of identifying their own strengths and weaknesses, both positively and negatively. Steinberg et al.[9] described the lessons learned from a faculty member with a disability who demonstrated the ability to overcome significant barriers. Mutchnick and Blount[5] surveyed ten occupational therapy supervisors about their experience providing reasonable accommodation to occupational therapists with disabilities. Six respondents reported making accommodations (including changes in the job description) that they did not consider to be an unreasonable hardship for the employer.

In addition to reviewing the literature, we also sought to understand the regulations in three states regarding physical therapists with disabilities. E-mails to state licensing boards for healthcare professionals in New York (the home state of the study institution), as well as neighboring New Jersey and Connecticut, revealed no specific requirements for license renewal of a physical therapist with a new disability. Therefore, a covered employer in these states is held to the federal ADA standard when deciding whether an applicant with a new disability can fulfill the necessary job duties of a full-time, clinical physical therapist.

This study was undertaken as a first step to fill the gap in understanding of employment issues for physical therapists with disabilities. The current study utilized an internet-hosted survey to examine the perceived competency of a hypothetical physical therapist with a new disability who utilizes a manual wheelchair and performs his/her duties either unassisted, or with the assistance of a physical therapy aide/technical assistant.

Methods

This cross-sectional design was approved by the Helen Hayes Hospital Institutional Review Board. Return of the completed survey was considered consent to participate.

Participants

Participants were recruited using a snowball sampling method. A link to the anonymous survey, hosted on the website SurveyMonkey.com®, was e-mailed to a convenience sample of known contacts (program director, chief executive officer, lead physical therapist or lead researcher) at eight institutions housing clinical or academic physical therapy programs that had been pre-identified by the study investigators. The contacts were asked to forward the link to physical therapy staff who met the following inclusion criteria: 1. licensed physical therapist; 2. employed in the United States; 3. ability to comprehend English. After 30 days a reminder was sent to all contacts for distribution to notify them that they had an additional 30 days to complete the survey before it would be closed to responses.

Surveys were returned by physical therapists at six of the invited institutions: staff from two hospitals (located in Pennsylvania and Nebraska), staff from two academic institutions (both located in New York) and staff from two clinical practices (one located in New York and one located in Virginia).

Instrumentation

The initial survey was developed by the primary investigator and modified by the co-investigators. It was then sent to five content and design experts (three doctors of physical therapy, one occupational therapist and one doctorally qualified (PhD) researcher). They evaluated the survey for content and construct validity using a separate questionnaire that asked if the survey items targeted the domains of interest, were clear and were culturally sensitive.

The survey's face validity was then determined by administering it to a pilot group of ten physical therapists who were asked for feedback on the study's purpose,

Table 1. Respondent Demographics

Category		%
Age of Respondents	18-29	24.4
	30-44	36.6
	45-59	31.7
	>60	7.3
Gender of Respondents	Female	68.3
	Male	31.7
State Respondents Worked In	Florida	17.1
	New Jersey	2.4
	New York	17.1
	Pennsylvania	19.5
	Nebraska	29.3
	Virginia	14.6
Highest Earned Clinical Credential	BSPT	12.2
	MSPT	22.0
	DPT	58.5
	Other	7.3
Highest Earned Academic Degree	Bachelors	19.5
	Masters	29.3
	Doctorate	51.2
Board Certification	Cardiopulmonary	6.2
	Neurology	6.2
	Orthopedics	62.5
	Pediatrics	6.3
	Other	18.8
Primary Work Setting	Acute Care	7.5
	Inpatient Rehabilitation	17.5
	Sub-Acute Rehabilitation	5.0
	Extended Care/SNF	2.5
	Hospital Based Outpatient	30.0
	Private Practice	7.5
	School/Pre-School	2.5
	Wellness/Prevention	2.5
	Academia	20.0
	Other	5.0
Job Responsibilities	Clinician	75.0
	Manager	7.5
	Educator	12.5
	Researcher	5.0
Age of Primary Patients	0-3	2.5
	4-18	7.5
	19-64	60.0
	>65	30.0

understandability of the instructions, hypothetical scenario and statements, ease of response, level of wording, and the amount of time it took to take the survey. Pilot group members were also queried on whether questions should be eliminated, retained or added. Responses indicated no changes were necessary. Face, content and construct validity for the final survey instrument (Appendix 1) were determined to be adequate for use.

Respondent Demographics

Respondents were asked their age, gender, state of employment, highest earned clinical credential, highest earned academic degree, attained board certification(s), primary work setting, job responsibilities, ages of primary patients, if they themselves have a disability (and if so, a description), and if they have ever worked with a physical therapist with a disability. These data were used as descriptive and grouping variables for analysis.

Outcomes

Rather than exploring types of physical disability and their perceived impacts on the skills of a physical therapist, which would be highly variable, the authors selected a discrete, defined disability that was not linked to a specific diagnosis. Respondents were initially presented with the following instructions:

"Your responses to the following statements will be based on the following hypothetical scenario: A licensed physical therapist (PT) has become disabled, requiring the use of a manual wheelchair at all times, and desires to return to full-time employment as a clinical PT. The PT displays intact cognition, bilateral upper extremity function, and is independent with functional mobility and ADLs."

Four statements addressing the perceived competency of this physical therapist were presented in a 5-point Likert-type scale format (1 = strongly disagree, 5 = strongly agree). Respondents were required to select a single answer for each of the statements and were not allowed to omit an answer. Items queried respondents' perceptions about the competency of the hypothetical physical therapist with respect to practice setting and performance of selected examination and intervention categories. The selected examination and treatment activities were an abbreviated list derived from the author's experience to keep the survey succinct while adequately encompassing the variations of normal practice and employer-dependent job descriptions across work settings. Two other "administrative" items tested agreement with statements about an accommodation and a belief that a non-clinical role was a more appropriate employment option.

Data Analysis

Data were analyzed using SPSS for Windows (version 23.0). Alpha level was set at <0.05. Descriptive statistics were generated for all demographic and outcome variables, expressed as mean (SD), percentage or average Likert-type score, as appropriate. Comparisons of statements grouped by with or without the use of a physical therapy aide/technical assistant were analyzed for significant differences in the weighted mean average using paired t-tests for both work area and evaluations performed. The effect of having worked with a physical therapist with a disability on outcome variables was analyzed using unpaired t-tests to determine any differences in response.

Results

Forty-one physical therapists completed the survey. This represented an approximate 20% response rate, based on the total number of potential participants at the six institutions that participated.

Demographics

Demographic characteristics of the respondents can be found in Table 1. The age of the respondents was evenly distributed, with those aged 30-44 years the largest group (36.6%). Respondents were primarily female (68.3%), from the Eastern US (70.7%), had a doctor of physical therapy (DPT) degree (58.5%), had earned a doctoral degree (51.2%), were board certified in orthopedics (62.5%), worked in a hospital based outpatient setting (30.0%), had primary job responsibilities as a clinician (75.0%) and worked with adults aged 19-64 (60.0%). All respondents were currently employed as a physical therapist. Three respondents (7.5%) reported they personally had a disability (spondylolisthesis and rotator cuff tear; spinal injuries; spastic diplegia cerebral palsy) and seventeen respondents (42.5%) reported having worked with a physical therapist with a disability.

Outcomes

Results of the descriptive outcomes can be found in Table 2 (Administrative) and Tables 3 through 5 (Practice Setting; Examination; and Treatment).

Most respondents agreed or strongly agreed (65%) that it would be a reasonable accommodation to hire a physical therapy aide/technical assistant and slightly less agreed or strongly agreed (51.3%) that a managerial position may be more suitable (Table 2). A significant difference was found in the mean Likert scale (3.46 ± 0.81 vs. 2.93 ± 1.09 respectively; $p<0.001$) between respondents' perceptions about competency with and without use of a physical therapy aide/technical assistant. Practice settings that most respondents considered reasonable (>55% agreed or strongly agreed) without the use of a physical therapy aide/technical assistant included hospital-based outpatient, private practice, wellness, industrial health, academic, and research settings. The majority of respondents did not feel (5.3-16% agreed or strongly agreed) the hypothetical physical therapist with a disability could competently provide direct patient care in acute hospital, inpatient rehabilitation, subacute rehabilitation, nursing home and home health settings, although the use of a physical therapy aide/technical assistant improved the perceived competency (20.5 to 48.7% agreed or strongly agreed) (Table 3).

Comparison of perceived competency in the application of selected examination categories with and without use of a physical therapy aide/technical assistant yielded a significant difference in the

Table 2: Results of Administrative Outcomes

Statement	% Agree or Strongly Agree	Weighted Average Mean (SD)
It would be a reasonable accommodation for the employer to hire a physical therapist aide/technical assistant to provide assistance for the physical therapy during patient care sessions.	65	3.46 (1.30)
The physical therapist would be better suited for a managerial or administrative position, rather than a clinical position.	51.3	3.31 (1.11)

Table 3: Perceived Competency by Practice Setting

	Statement		Statement	
	The physical therapist would be a competent clinician providing direct patient care with the use of a physical therapy aide/technical assistant for physical assistance during patient care sessions in a:		The physical therapist would be a competent clinician providing direct patient care without the use of a physical therapy aide/technical assistant for physical assistance during patient care sessions in a:	
Practice Setting	Agree or Strongly Agree (%)	Weighted Average Mean (SD)	Agree or Strongly Agree (%)	Weighted Average Mean (SD)
Acute care hospital	30.8	2.54 (1.24)	10.5	1.87 (0.95)
Inpatient rehabilitation	30.8	2.51 (1.24)	5.3	1.63 (0.81)
Subacute rehabilitation	43.6	2.95 (1.22)	5.3	1.84 (0.84)
Extended care/Nursing home/SNF	48.7	3.13 (1.30)	16	2.08 (1.11)
Hospital based outpatient	77	3.69 (1.14)	55.3	3.11 (1.33)
Private practice (outpatient or clinic)	77	3.74 (1.03)	63.2	3.32 (1.32)
School/Preschool	46	3.21 (1.09)	39.3	2.87 (1.32)
Wellness/Prevention/Fitness	90	4.21 (0.76)	81.6	3.92 (1.01)
Industrial/Occupational health	77	3.95 (0.85)	60.5	3.55 (1.25)
Home heath	20.5	2.33 (1.16)	10.5	1.82 (1.12)
Academic	97.5	4.62 (0.54)	97.4	4.61 (0.63)
Research	97.5	4.64 (0.53)	94.7	4.55 (0.75)
Mean (SD)	61.4	3.46 (0.81)*	45.0	2.93 (1.09)*

mean Likert scale (4.12±0.31 vs. 3.60±0.66 respectively; p=0.01). In particular balance (15.8%), functional mobility (34.2%) and motor control (34.2%) evaluations had a low percentage agree or strongly agree that a hypothetical physical therapist in a wheelchair would be competent without a physical therapy aide/technical assistant. All other examination categories were thought to be competently performed by the hypothetical physical therapist with a disability, with or without a physical therapy aide/technical assistant (Table 4).

When the statement "In accordance with your state regulations, while under the direct, constant supervision of the physical therapist, it could or should be appropriate for a physical therapy aide/technical assistant to follow verbal instructions to execute the physical aspects of treatment in the following areas" was evaluated, most agreed or strongly agreed that the physical therapy aide/technical assistant could follow instructions regarding therapeutic exercise (78.9%), therapeutic modalities (68.4%), wheelchair mobility (63.2%), and transfers (63.2%) whereas a small percent agreed or strongly agreed for manual therapy (10.5%), wound care (18.4%), orthotic fitting (34.2%), or gait training (39.5%) (Table 5).

Finally, there were no significant differences for any of the responses between those who reported having worked with a physical therapist with a disability (n=17) and those who did not (n=24).

Discussion

To our knowledge, this is the first study to explore the perceived competency of a colleague with a disability within the physical therapy workforce. The extent to which physical therapists with disabilities are currently practicing is unknown. However, one study found the prevalence of physical therapist and physical therapist assistant students with a physical disability was 5%, although the majority (37.5%) had vision and hearing disabilities.[16] Understanding perceptions of perceived competency is an important step toward uncovering potential biases in employment of these graduates.

Discussions related to disability and employment within the field of physical therapy have been limited to subjective information published in non-peer reviewed journals outside the United States[19]. Therefore, we sought to obtain objective, numerical data to explore perceptions among physical therapists on this topic. A similar approach was used in a pilot study by VanMatre et al.[17] to gather perspectives of

Table 5: Perceived Competency by Examination Category

	Statement		Statement	
	The physical therapist would be competent performing the tests or measures of the following physical examination evaluations with the use of a physical therapy aide/technical assistant for physical assistance during patient care sessions:		The physical therapist would be competent performing the tests or measures of the following physical examination evaluations without the use of a physical therapy aide/technical assistant for physical assistance during patient care sessions:	
Examination Categories	Agree or Strongly Agree %	Weighted Average Mean (SD)	Agree or Strongly Agree (%)	Weighted Average Mean (SD)
Balance	52.3	3.71 (1.12)	15.8	2.00 (1.19)
Cardiopulmonary status	100	4.42 (0.49)	84.2	3.84 (1.04)
Functional mobility	71.0	3.68 (1.26)	34.2	2.87 (1.25)
Joint mobility	73.7	3.71 (1.05)	65.8	3.45 (1.44)
Motor control	65.8	3.71 (0.86)	34.2	2.82 (1.23)
Orthotic assessment	92.1	4.24 (0.58)	84.2	3.89 (0.72)
Posture	94.7	4.37 (0.58)	92.1	4.08 (0.66)
Reflexes	100	4.39 (0.49)	94.7	4.21 (0.52)
ROM	94.7	4.21 (0.69)	81.6	3.87 (0.95)
Sensation	100	4.45 (0.50)	97.4	4.21 (0.57)
Skin integrity	100	4.45 (0.50)	89.5	4.05 (0.83)
Strength	84.2	4.05 (0.89)	71.1	3.66 (1.06)
Muscle tone	89.5	4.18 (0.76)	76.3	3.87 (0.98)
Mean (SD)	86.0	4.12 (0.31)*	70.9	3.60 (0.66)*

medical students and physicians regarding the skills and standards that are necessary for completion of medical school and how they relate to physical disabilities. Their results indicated greater importance on observation and communication skills rather than physical or motor-related skills. DeLisa & Thomas[18] provided recommendations to the field of medicine and the physician workforce with disabilities such as modifications to the strict technical standards of medical school that may only be necessary for a particular specialty, integration of a disability curriculum into their programs, and visible promotion of the accessibility of their programs that will not only accommodate, but also welcome, applicants with disabilities.

Similar to medicine, the physical therapy field has historically been built on technical and physical standards. In our study the perceptions of physical therapists regarding disability among its colleagues illustrated this historical dependence on manual, physical skills. The lack of agreement in responses about the physical therapy aide/technical assistant performing the physical aspects of patient care under the direct, constant supervision of the hypothetical physical therapist illustrates the possible need for an integration of a disability curriculum in physical therapist professional and post-professional education.

Rangel et al.[15] surveyed the essential functions of physical therapist education programs and found communication skills to be the most common (69%), followed by motor skills (59%) and critical thinking skills (57%). The least reported essential function among the education programs was hearing ability (37%). The most frequently used reasonable accommodation was examination extension times (71%). Ingram[14] examined the opinions of physical therapist education program directors on essential job duties. Respondents viewed examination techniques as more essential to learn than treatment procedures. They based this response on the fact that some treatment procedures can be delegated to other personnel assisting the therapist. In addition, some respondents reported that the delegation of tasks can be viewed as a reasonable accommodation under the ADA. When compared to the current study, the hypothetical physical therapist with a disability was viewed to be more competent with a physical therapy aide/technical assistant for tests and measures more than with a physical therapy aide/technical assistant for certain treatment techniques. This difference in opinion among the respondents may reflect the assumption that the hypothetical physical therapist needs to have direct contact with a patient during certain treatment techniques rather than provide direct personal supervision to a physical therapy aide/technical assistant who is not sufficiently educated or skilled to apply, or assess response to, these interventions. This requires the clinical competency of the hypothetical physical therapist and that of the physical therapy aide/technical assistant be evaluated simultaneously, while alluding to a third variable: the scope of responsibility for a physical therapy aide/technical assistant. It cannot be determined to what extent each variable influenced the responses and this study did not directly explore the perceived job duties of a physical therapy aide/technical assistant.

Patient safety may have been the primary consideration when responding to statements about practice settings and selected examination and treatment categories. Most respondents did not view the hypothetical physical therapist as competent to work, with or without a physical therapy aide/technical assistant, in inpatient, school/preschool, and home health settings where lifting, physically assisting and guarding patients is a frequent requirement. However, the hypothetical physical therapist was viewed to be more competent in those settings with a physical therapy aide/technical assistant suggesting there may be some scenarios which are perceived to be safe in those settings. The hypothetical physical therapist was viewed as competent to perform certain examination categories only with a physical therapy aide/technical assistant. The strongest concerns were noted for tests of balance, functional mobility, and motor control. These findings may reflect concerns for patient safety, specifically falls. Perceived competence with treatment techniques with a physical therapy aide/technical assistant also appears to vary based on risk to the patient. Manual techniques and wound care require the ongoing judgement of the physical therapist and may be viewed to be outside the scope of responsibilities of a non-professional.

Perceptions of disability within other healthcare professions similarly display a concern for patient safety. Neal-Boylan[13] explored the self-perception of nurses and physicians with physical and/or sensory impairments. All twenty subjects expressed a concern for compromising patient safety due to his/her own disability and viewed the attitudes of coworkers as being a significant factor on the overall workplace environment. Matt[12] also examined the self-perception of nurses with a disability and found that acceptance among peers was something to be earned through above average effort by those nurses with a disability. We did not directly examine perceived acceptance among peers.

Elliot et al.[8] found that occupational therapists with mobility limitations were perceived as best suited to work in education or administration though the occupational therapists who participated in that study generally had favorable views of colleagues with disabilities. Perceptions in that study varied by the disability of the hypothetical occupational therapist, with drug dependency and psychiatric disorders being viewed least favorably. Our study similarly investigated the notion of an administrative or managerial position being better suited for the hypothetical physical therapist with a physical disability rather than a clinical/patient-care position. Just over half of the respondents either agreed or strongly agreed with that statement. Velde et al.[11] found that OTs with disabilities perceived that they were sensitive to patients' needs, had experiences that were useful in their

Table 5: Perception of Use of Verbal Instructions to Execute Treatment.

	Statement	
	In accordance with your state regulations, while under the direct, constant supervision of the physical therapist, it could or should be appropriate for a physical therapy aide/technical assistant to follow verbal instructions to execute the physical aspects of treatment in the following areas:	
Treatment Categories	**% Agree or Strongly Agree**	**Weighted Average Mean (SD)**
Adaptive seating	60.5	3.39 (1.16)
ADL retraining	50.0	3.13 (1.20)
Balance training	52.6	2.97 (1.39)
Bed mobility/ transfers	60.5	3.24 (1.29)
Gait training	39.5	2.71 (1.37)
Manual therapy	10.5	1.84 (1.06)
Orthotic fitting	34.2	2.71 (1.25)
Sport specific training	55.3	3.11 (1.27)
Transfers	63.2	3.26 (1.27)
Therapeutic exercise	78.9	3.68 (1.08)
Therapeutic modalities	68.4	3.47 (1.21)
Wheelchair mobility	63.2	3.37 (1.27)
Work specific retraining	55.3	3.13 (1.26)
Wound care	18.4	2.08 (1.20)
Mean (SD)	50.8	3.01 (0.73)

practice, and were able to motivate patients to think differently about limitations. The limitations and restrictions they experienced actually helped them to work with patients undergoing similar challenges. Although the settings (home health and inpatient settings) and tasks (balance) that involve patients with more substantial limitations were cited as problematic in our study, therapists with their own limitations might be most uniquely suited to motivate patients in these settings.

Limitations

This study was limited in several ways that may have affected the results. The results reflected subjective opinions of a limited sample of participants in six states that were selected in facilities based on convenience and cannot be generalized beyond this group. We decided to provide a specific scenario of a hypothetical physical therapist in a manual wheelchair, therefore we do not know perceptions beyond this disability. It is not known if participants' views were representative of typical physical therapists or whether they were motivated to participate by atypical views on this topic. Additionally, without test-retest reliability testing, we do not know how stable the responses would be. In order to maintain brevity of the survey it was important to limit the tasks of the physical therapist that we queried. However, we tried to encompass most examination and treatment techniques that might be encountered across various work settings. There could have been a geographic bias as the respondents were all from the Eastern US, with the exception of twelve respondents from Nebraska. Finally, we asked physical therapists whether they thought their peers were competent, which means this research is not applicable to how physical therapists with a disability perceive themselves in certain roles.

Conclusions

This study investigated physical therapists' perceived competency of a hypothetical physical therapist with a new disability requiring manual wheelchair use and returning to employment with or without the use of a physical therapy aide/technical assistant. We found that although most respondents agreed use of a physical therapy aide/technical assistant was a reasonable accommodation, perceived competency using this accommodation varied with respect to practice setting and application of certain examination and treatment categories. This variability may be based on concerns for patient safety as well as perspectives about appropriate job responsibilities for physical therapy aides/ technical assistants. Additional research to uncover potential biases in employment decisions, as well as interventions to reduce them, is needed to ensure compliance with the ADA as well as congruence with the physical therapy profession's commitment to inclusiveness.

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HPA The Catalyst Membership Meeting

Friday, Feb. 14 | 6:30 p.m.-8:00 p.m

HPA The Catalyst invites you to join the organization for its annual business meeting and awards presentation, immediately preceeding the Global Health Reception. HPA The Catalyst will take the time to review the Section's accomplishments in the past year, recognize our terrific volunteer committee members, swear-in new officers, and present the Section's five awards: the HPA Outstanding Service Award, the R. Charles Harker, Esq., Policy Maker Award, the LAMPLighter Award, the Global Health Special Interest Group (GHSIG) Award, and the HPA Technology and Innovation Award.

Global Health SIG Reception

Friday, Feb. 14 | 8:00 p.m.-10:00 p.m

HPA The Catalyst Global Health SIG

Immediately following the HPA The Catalyst Membership Meeting on Friday, Feb. 14, the reception allows therapists with a passion for helping those globally to connect with one another and with companies who also support these interntational iniatives.

HPA The Catalyst will host five Pre-Conference sessions at the Combined Sections Meeting (CSM) 2020 in Denver, CO.

LAMP Leadership 101: Personal Leadership Development: The Catalyst for Leading Within

Tues. and Wed., Feb. 11-12, 2020 | 8:00 a.m.-5:30 p.m.

This course is the first in the series of courses and applied labs aimed at developing leadership skills. As the first course in the series, the program focuses on developing your personal leadership skills. In order to successfully lead others, you must understand yourself. Content focuses on self-assessment, creating a personal mission statement, foundations of leadership, identifying personal styles, creating a leadership style to align and influence others, energy and time management, communication for effective leadership, conflict resolution styles and skills, and implementing personal leadership development plans. There are approximately 4 hours of prework for this course.

LAMP Leadership 201: The Catalyst for Leading Others

Tues. and Wed., Feb. 11-12, 2020 | 8:00 a.m.-5:30 p.m.

In this course, attendees will further explore and develop effective leadership skills in formal and informal leadership roles. Attendees will share the results of their personal leadership plans, showcasing insights into developing their personal leadership behaviors. This course will include lectures, dynamic leadership labs, and engaging discussions with peers and content experts. Topics will include: creating vision and strategy; fostering adaptive and transformational leadership; creating cultures of change and innovation; leading others through conflict; building relationships and networking; implementing frameworks for leadership decision making; building high-performance teams; leading and learning through failure; empowering others; fostering followership; and developing a personal leadership philosophy statement. There are approximately 5 hours of prework for this course. ***Successful completion of LAMP Leadership 101 is required before continuing onto LAMP Leadership 201.***

Health System Current Topics, Strategies, and Innovations

Wednesday, Feb. 12, 2020 | 8:00 a.m.-5:00 p.m.

Innovations in value-based care delivery in health systems are important in managing the resources, outcomes, and relevant cost for a target population. Important considerations made by health systems include the consistent measurement and aggregation of specific outcomes which are important to patients, balanced by the expenses required for delivery across the continuum of care. In order to have an impact on the health of the populations they serve, health systems are moving outside their traditional walls and reaching into their communities with innovative models. Many institutions are integrating more holistic approaches to address the social determinants that directly impact societal health. Physical therapists must be key in this process. Whether it is influencing care across the continuum, after discharge, or implementing community-based programs, physical therapists are instrumental in developing strategies focusing on the health of the population. A panel of experts will share best practice models that have been developed within health systems that may stimulate innovation, strengthen collaboration, improve communication, and promote effective, value-based practice

LGBTQ+ Brave Space Training: Encouraging Difficult Dialogues in Physical Therapy Practice

Wednesday, Feb. 12, 2020 | 8:00 a.m.-5:00 p.m.

The Safe Zone Project was implemented to affect the climate that LGBTQ+ individuals engage in and to provide an environment for students where they feel valued and safe. Education centered on increasing awareness of LGBTQ+ identities, gender, and sexuality as well as unlearning preconceived prejudices. The "safe zone" premise was used to develop "brave spaces" in order to acknowledge and prepare students to be uncomfortable at times, while simultaneously laying ground rules to cope with that discomfort and productively challenge one another. It was a call on students to be "brave" in the face of discomfort. A GLSEN survey showed that teachers were unlikely to receive professional development regarding LGBTQ+ student issues. Three-fourths said they had some type of diversity education but less than a third said any of that training was on LGBTQ content. This preconference course will utilize the theoretical framework and course curriculum adopted by the Safe Zone Project; however, the training will be recognized under the umbrella of Brave Space Training to foster qualities of self-efficacy, empowerment, and pride among LGBTQ+ students. Specific case examples focused on increasing practitioner, faculty, and student awareness will be used to demonstrate current LGBTQ+ disparities in health care/classroom.

LAMP "MANAGEMENT ESSENTIALS" (HP-1643)

HPA The Catalyst | LAMP MANAGEMENT

Pre-Conference: February 11-12th, 2020

APTA Combined Sections Meeting (CSM), Denver, CO

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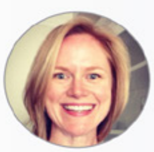
Healthcare Management Educator



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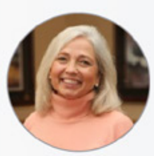

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