Patient Handling Methods Taught in Occupational Therapy Curricula

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Sixteen of 100 full-time occupational therapists are injured while performing manual patient handling techniques. We developed a Theory of Planned Behavior self-report questionnaire to determine what educators teach and the behavioral constructs that best predict intention to change curriculum content. Traditional manual patient handling and safe patient handling methods were investigated. The results showed that both methods are taught in most programs; however, only 22% stated that they teach safe patient handling as the standard of practice. Stepwise regression analysis demonstrated that attitude and perceived behavioral control are the best predictors of intention to continue teaching manual transfers as the standard; however, normative belief and attitude best predict intention to teach safe patient handling as the standard. Knowing these predictors will assist in developing strategies to promote a paradigm shift in the way patient transfers are taught.

Accreditation Council for Occupational Therapy Education (ACOTE) Standard B.5.12 states that entry-level occupational therapy programs “provide recommendations and training in techniques to enhance mobility, including physical transfers” (ACOTE, 2011). Research suggests that safe patient handling (SPH) is a safe and effective way to position and move patients and that SPH should be taught by all health care educators in an effort to decrease the incidence of injuries (Menzel & Durham, 2008; Menzel, Hughes, Waters, Shores, & Nelson, 2007; Waters, Collins, Galinsky, & Caruso, 2006). Additionally, evidence has suggested that when used without technology or assistive aids, proper body mechanics are not enough to prevent injury during patient transfers (Kothiyal & Yuen, 2004; Marras, 2008; Nelson, Lloyd, Menzel, & Gross, 2003; Nelson et al., 2004; Waters, 2007; Waters et al., 2006; Waters, Nelson, & Proctor, 2007). Given this evidence, it is important to evaluate current occupational therapy curricula and examine the patient handling techniques taught by educators. Educators may be unaware that traditional manual patient handling (TMPH) is unsafe even when using proper body mechanics and, therefore, continue to teach it as the standard of practice (Menzel & Durham, 2008; Menzel et al., 2007).

Background

Patient handling and the incidence of injury associated with it are a multidisciplinary concern that the occupational therapy, nursing, and physical therapy professions have investigated (Campo, Weiser, Koenig, & Nordin, 2008; Cromie, Robertson, & Best, 2002; Darragh, Huddleston, & King, 2009; Nelson et al., 2007; Rice, Dusseau, & Kopp Miller, 2011). Work-related musculoskeletal disorders are prevalent among occupational therapists: The reported incidence rate is 16.5 injuries per 100 full-time workers (Darragh...
et al., 2009). Similar rates have been reported among physical therapists and nurses (Campo et al., 2008; Cromie et al., 2002; Darragh et al., 2009; Waters, 2007). Researchers have found that injury rates may decrease when therapists and nurses practice SPH principles and stop TMPH practices (Nelson, 2004; Nelson et al., 2004; Waters, 2007; Waters et al., 2006). They also have suggested that each profession be proactive in decreasing the incidence of work-related musculoskeletal disorders by teaching and practicing SPH principles (Menzel et al., 2007; Nelson, 2004; Nelson et al., 2003; Waters, 2007; Waters et al., 2006).

Clinicians in the three professions of occupational therapy, nursing, and physical therapy are responsible for moving and handling patients on a daily basis. Each profession has investigated injury rates and prevalence among its own workers and suggested that all health care professionals responsible for transferring patients are at risk of injury if they practice TMPH skills (Alnaser, 2007; Campo et al., 2008; Cromie et al., 2002; Darragh et al., 2009; Nelson et al., 2007; Rice et al., 2011; Waters, 2007; Waters et al., 2006, 2007). The high incidence of injury among health care professionals has prompted researchers to examine alternative methods and strategies to better move patients.

SPH promotes the use of technologically advanced lift equipment and a system of tasks, behaviors, tools, and strategies to move, position, and transfer patients. Researchers have analyzed patient handling from an ergonomic and safety perspective and developed three categories of controls: engineering, administrative, and behavioral (Nelson & Baptiste, 2006). Engineering controls are ergonomic principles and tasks that involve the use of equipment, devices, and tools to position and move patients. Types of equipment may include powered height-adjustable beds, ceiling-mounted lifts, portable floor lifts, electric lateral transfer aids, air-assisted or mechanical aids, lateral rotation assistive devices, friction-reducing slide sheets, sliding boards, and gait belts with handles (Cowell & Shuttleworth, 1998; Nelson et al., 2003).

Administrative controls are the policies and procedures workers are expected to follow to reduce injury (Nelson, 2004). These controls are developed and instituted from the top down and are represented by policies that encourage flexible work schedules, job rotation, education, and full administration support (Nelson, 2004). Specific policies and procedures may be referred to as no lift, zero lift, minimal lift, lift free, or SPH (Charney, Simmons, Lary, & Metz, 2006; Nelson, 2004; Nelson & Baptiste, 2006). These policies require the use of engineering controls to position and move patients and support the notion that TMPH techniques should not be practiced except in emergency situations in which manual lifting cannot be avoided (Nelson, 2004).

Behavioral controls are strategies that positively influence cultural change and support the implementation of the engineering and administrative controls. They may include SPH training programs that educate workers about the risk of injury associated with TMPH and the evidence that supports the use of equipment in injury prevention. Some facilities have instituted peer leader programs that designate specific employees to promote and monitor cultural change in the way in which patients are handled (Nelson & Baptiste, 2006).

Although the rationale for moving, positioning, and transferring patients differs among professions, all health care workers are taught methods of patient handling, and all are susceptible to injury during this process (Menzel & Durham, 2008; Menzel et al., 2007; Nelson, 2004; Waters, 2007). Researchers have recommended that educators take a proactive approach by initiating a paradigm shift in support of SPH evidence in teaching patient handling in professional program curricula (Menzel et al., 2007; Powell-Cope, 2008; Waters, 2007).

Little is known about the specific patterns of occupational therapy curricula; in nursing, however, research has suggested that faculty education can result in changes to curricula that incorporate evidence-based practices in the teaching of students. For example, the American Nurses Association collaborated with the National Institute of Occupational Safety and Health (NIOSH) and the Department of Veterans Affairs (VA) Patient Safety Research Center to develop a Nursing SPH Curriculum Module Pilot Project in 2004 (Menzel et al., 2007). Using the Theory of Planned Behavior (TPB; Ajzen, 2006) as the theoretical framework, Menzel et al. (2007) performed an intervention study to determine the best predictors of educators’ intention to teach SPH and stop teaching TMPH. Twenty-nine U.S. nursing programs participated in the study. All participants engaged in didactic and experiential learning about the principles of SPH and how to effectively use technology to safely move patients (Menzel et al., 2007). They found that educators increased their intention to teach SPH after they received training on the evidence and were given the tools and skills to teach it. These results, the current rate of injury among occupational therapists, and the lack of any studies on methods of movement taught by occupational therapy educators prompted us to conduct the study reported here.

In this study, we provide data on patient handling methods taught by occupational therapy educators and
identify predictors of their intention to teach evidence-based SPH methods. We used the TpB to provide a theoretical linkage between occupational therapy educators’ attitudes toward, normative beliefs about, and perceived behavioral controls in patient handling to predict their intentions to change curricula to reflect evidence-based SPH principles research.

The construct of the TpB predicts a person’s intention to perform a specific behavior and is dependent on three independent variables (Ajzen, 2006). The first independent variable is a person’s attitude toward the behavior; it is measured by a person’s positive or negative feelings about the behavior (Ajzen, 2006). Attitude is reflective of a person’s beliefs, experiences, knowledge, and assessment of consequences that may be associated with the behavior (Ajzen, 2006; Chatzisarantis, Hagger, Smith, & Sage, 2006; Francis et al., 2004).

The second independent variable is a person’s normative belief about the behavior. It refers to the social pressures a person believes are associated with the behavior (Ajzen, 2006; Francis et al., 2004). The greater the social pressure is, the more likely a person is to perform the behavior.

Finally, the third independent variable is perceived behavioral control. It refers to a person’s belief about the factors that influence, control, or impede the intended behavior (Ajzen, 2006; Francis et al., 2004).

Each independent variable is a direct measure and may be considered together or in isolation as a predictor (Ajzen, 2006). The amount of effort and desire a person places on performing a behavior is related to the person’s intention (Ajzen, 2006). Intention to perform a behavior is dependent on a person’s volitional control, meaning that a person makes a conscious decision to perform a behavior taking into account personal feelings about the behavior (attitude), others’ perceptions if the behavior is performed (normative belief), and attainment of the necessary resources to be successful (perceived behavioral control; Ajzen, 2006). If a person does not feel free will regarding the behavior, the likelihood of acting out the behavior is poor (Chatzisarantis et al., 2006). The coupling of the independent variables (attitude, normative belief, perceived behavioral control) with the dependent variable (intention) can predict a behavior outcome (Ajzen, 2006; Armitage, 2005; Armitage & Christian, 2003; Chatzisarantis et al., 2006). The TpB suggests that intention, this study’s dependent variable, facilitates behavior, and the independent variables—attitude, normative belief, and perceived behavioral control—guide intention (Ajzen, 2006; Francis et al., 2004). We hypothesized that the TpB constructs (attitudes, normative beliefs, perceived behavioral control) with respect to each type of patient handling (SPH, TMPH) would predict occupational therapy educators’ intentions to teach each method as the standard of practice.

Research Questions
We developed a questionnaire to answer the following three questions:
1. Do more occupational therapy educators teach TMPH or SPH techniques as the standard of practice?
2. To what extent do the independent variables (attitudes toward TMPH, normative beliefs with respect to TMPH, and perceived behavioral control with respect to TMPH) predict the dependent variable (occupational therapy educators’ intention to teach traditional techniques as the standard of practice)?
3. To what extent do the independent variables (attitudes toward SPH, normative beliefs with respect to SPH, and perceived behavioral control with respect to SPH) predict the independent variable (occupational therapy educators’ intention to continue teaching SPH techniques as the standard of practice)?

For the purpose of this study, the independent variables of attitude, normative belief, and perceived behavioral control and the dependent variable of intention are preceded by the words traditional or safe to differentiate them for each research question.

Method
Study Design
We used a nonexperimental correlational design. A 12-page self-report TpB questionnaire was used to gather the data. The survey was posted on SurveyMonkey, a secure and professional online software program to collect and store the data gathered from surveys. The data were downloaded into SPSS Version 16.0 (SPSS, Inc., Chicago) for analysis. Walden University’s institutional review board approved the survey and procedures for performing this study.

Participants
We obtained a list of occupational therapy programs from the American Occupational Therapy Association (AOTA) Web site and gave each school an identification code ranging from 001 to 300. All schools were entered into a Microsoft Excel 2007 spreadsheet, and 238 schools were randomly selected using the Excel’s RANDBETWEEN function. To control the probability of Type II error, we calculated statistical power with G*Power 3.0 (Faul,
Erdfelder, Lang, & Buchner, 2007) with $\alpha$ set at .05 and an assumption that a medium effect size ($f^2 = 0.15$ for regression) exists in the population. On the basis of these parameters, we needed approximately 119 respondents to obtain power of .95 for multiple regression with three predictor variables. Given our experience with the method of data collection, we expected a 50% response rate, so we randomly selected 238 programs to survey. Because we obtained 118 respondents (49.6%), statistical power rounded to .95.

Each program’s Web page was searched for the appropriate educator to participate in this study. We targeted educators who stated on their Web page that they taught biomechanics and kinesiology, patient handling, and interventions for the population with neurological impairment because we assumed that programs might teach patient handling in courses that cover these content areas. We obtained e-mail addresses for all educators who fit the criteria from the program’s faculty Web pages. If more than one faculty member fit the criteria, all were sent the invitation. If educator information was not available, we sent invitations to the program director to be forwarded to the appropriate faculty member.

We e-mailed an invitation letter to each faculty member; the letter stated that people who completed the survey would receive a $5 gift card and the study’s bibliography, an informed consent form, and a link to access the SurveyMonkey Web site for this study. After 1 wk, a second e-mail was sent to all nonresponders. This procedure continued for a total of 3 wk, at which time we received the targeted number of responses. A thank-you note, the gift card, and the study’s bibliography were sent to the educators who completed the survey.

Instrument

The instrument was a self-report questionnaire, the Patient Transfer Curriculum Survey, which consisted of closed-ended questions and statements. Participants were asked four demographic questions regarding the degrees the program offered; the location of the college or university; state SPH regulations or legislation; and whether TMPH and SPH were taught in a lab experience, didactic presentation, or not at all. The survey also inquired about the transfer principles and techniques educators commonly taught and what method, TMPH or SPH, was taught as the standard of practice. We used data collected from the questions to answer Research Question 1.

Twenty-four statements were worded according to the TpB constructs to answer Research Questions 2 and 3. The three independent variables (attitude, normative belief, perceived behavioral control) and the dependent variable (intention) were addressed in questions specific to TMPH or SPH. Each statement was worded according to the variable and method being tested. The statements were grouped and labeled as traditional or safe for accurate analysis of each variable. A statement that addressed the independent variable of traditional attitude, for example, was “For me, to teach manual patient transfer techniques such as full-person lifts and moderate to maximum stand-up lifts as the standard of practice is: extremely unsafe/extremely safe,” whereas a statement that measured the independent variable of safe normative belief was “I teach students how to transfer patients with powered lift equipment because legislation in my state requires me to do so: strongly disagree/strongly agree.” An equal number of statements addressed each variable and method. The response format for all items was either a 7-point Likert scale or a 7-point semantic differential scale. All items were scaled in a unipolar fashion in which a score of 4 was a neutral response.

Reliability and Validity

The Patient Transfer Curriculum Survey was piloted twice to determine instrument content validity and internal consistency reliability. A focus group was conducted with a panel of experts to determine content validity. Instrument reliability was determined by calculating coefficients of internal consistency (Cronbach’s $\alpha$s) and test–retest (Pearson $r$ correlation coefficients) for each scale on the survey. The first pilot study did not yield adequate internal consistency and correlation, so we revised the tool and performed a second pilot study to establish a stronger instrument with higher internal consistency and correlation. The items were revised in accordance with the statistical outcome measures from the first pilot study. Cronbach’s $\alpha$ for all variables measured >.8 for internal consistency except for traditional normative belief ($\alpha = .563$). Pearson test–retest correlation coefficients for all variables were >.8 except for traditional normative belief ($r = .662$). The results of the focus group, internal consistency, and correlation analyses suggested that the Patient Transfer Curriculum Survey was reliable and had content validity. The revised instrument demonstrated high internal consistency among all the variables and had high test–retest correlation coefficients.

Statistical Analysis

We answered Research Question 1 by using $\chi^2$ tests to compare the frequencies of respondents who said they teach TMPH and those who said they teach SPH as the standard of practice with a hypothetical 50–50 distribution. Stepwise multiple regression was used to answer
Research Questions 2 and 3. We performed stepwise regression analysis using a forward selection method to determine which independent variable (attitude, normative belief, perceived behavioral control) was most influential in predicting the dependent variable (intention) for each research question at the .05 level of significance. The rationale for using stepwise regression was to isolate the variables that were the strongest predictors of intention for each research question. The analysis occurred in a sequential but nonhierarchical fashion, in which all independent variables were entered into the equation with the dependent variable. This method was chosen because we lacked both theory and data to support testing a particular order of the predictor variables.

Results

One hundred eighteen educators from 38 states completed the Patient Transfer Curriculum Survey for a response rate of 49.6%. Twenty-three percent of the educators taught in associate’s degree programs, 77% taught in entry-level master’s degree programs, and 5.8% taught in entry-level doctoral degree programs (some of the schools offer more than one degree, so percentages total >100%). Of the respondents, 13.7% reported that their program was located in a state that had SPH regulations or legislation, 27.1% reported that their state did not have regulations or legislation, and 58.5% did not know whether their state had regulations or legislation. The results of the analysis revealed that 94% of the educators taught TMPH techniques experientially, 67% taught them didactically, and 2.5% did not teach them. Fifty-three percent taught SPH techniques experientially, 62.8% taught them didactically, and 22.3% did not teach them.

Research Question 1

The most frequent method taught as the standard of practice was TMPH (n = 92; 78%), and only 24 respondents (20.3%) said they taught SPH as the standard. We obtained a significant χ²(1) = 39.9 (p < .000) when comparing frequencies with a hypothetical 50–50 distribution.

Research Question 2

Educators’ intention to teach TMPH was significantly predicted by their traditional attitude, traditional perceived behavioral control, and traditional normative belief. Table 1 presents the model summaries for the stepwise regression analysis. Traditional attitude was the best single predictor of traditional intention (R = .90 with a total R² of .81; p ≤ .001), which indicated that about 81% of educators’ intention to teach TMPH as the standard of practice is explained by their attitudes toward the technique. When traditional perceived behavioral control was added to the equation, the amount of variance predicted increased significantly by 3.9% (p < .001), for a total R² of .85. Adding traditional normative belief only increased R² to .85, but this small increase was still statistically significant (p = .031). Variables were tested for collinearity, and results indicated that it was not a problem given the tolerance levels.

Research Question 3

Educators’ intention to teach SPH principles as the standard of practice was significantly predicted by safe normative belief, safe attitude, and safe perceived behavioral control. Table 2 presents the model summaries for the stepwise regression analysis. Safe normative belief was the best single predictor of safe intention (R = .74 with a total R² of .55; p < .001). About 55% of educators’ intention to teach SPH principles as the standard of practice was explained by their normative belief toward SPH. When safe attitude was added to the equation, the amount of variance explained increased significantly by 9% (p < .001) for a total R² of .64. Adding safe perceived behavioral control only increased the prediction to 67%, but this increase was statistically significant (p = .001). Variables were tested for collinearity, and results indicated that it was not a problem given the tolerance levels.

Discussion

We investigated the patient transfer techniques that occupational therapy educators teach in their curricula as the standard of practice and explored predictors of intention as...
a means to understand the behavioral constructs that are important to consider when promoting a paradigm shift in the way students are taught to handle patients. The results for Research Question 1 suggested that most occupational therapy educators teach TMPH techniques as the standard of practice. The data imply that educators may not be aware that TMPH has the potential to cause injury, that educators do not have access to the technology, or both. Moreover, the data indicate that educators teach a potentially harmful method for moving, transferring, and positioning patients that may place students at risk. These data reinforce the importance of educators becoming aware of the evidence to begin a process of facilitating a paradigm shift in the way students are taught to handle patients. These findings are consistent with those of previous nursing studies (Menzel et al., 2007). Although NIOSH, the American Nurses Association, and the VA have called on occupational therapy educators to modify curricula to reflect SPH as best practice, investigators need to consider the difference between how and why occupational therapists and nurses move and handle patients (Menzel & Durham, 2008; Menzel et al., 2007).

The findings for Research Question 2 reveal that educators’ traditional attitude toward and traditional perceived behavioral control of TMPH techniques had the greatest influence over their decision to continue teaching the techniques. Traditional attitude and traditional perceived behavioral control are driven by intrinsic factors such as knowledge, skills, and ability to control. The results suggest that educators have the skills to teach TMPH but do not have the knowledge that TMPH is unsafe practice. The results also suggest that educators’ perception of TMPH is based on previous years’ knowledge and does not reflect the current evidence in the literature. Moreover, the results may suggest that educators do not have the skills or tools to teach SPH. This conclusion is consistent with the findings for Research Question 1.

The findings for Research Question 3 reveal that educators’ safe normative belief, driven by external factors, is the strongest predictor of their safe intention to teach SPH principles as the standard of practice. Examples of influences on normative beliefs may be AOTA or other professional organizations that guide practice. If AOTA supports a paradigm shift, educators will feel support to change. Academic institutions that are willing to purchase the most advanced technology for student learning will facilitate change because educators will have the necessary tools to teach SPH. Fieldwork placements also may affect normative belief. Fieldwork sites that require students to have a working knowledge of the technology will require students to be prepared in the use of the equipment. Finally, local, state, and federal governments are beginning to write regulations and legislation in support of SPH. As more states adopt regulations or legislation, academic programs and facilities will have to comply. These influences will increase educators’ normative beliefs in SPH because they will have the support that is needed to make the change.

Safe attitude was also considered to be significant and is an important influence in a paradigm shift. The results of this study suggest that educators continue to think that TMPH is safe as long as they teach students to use proper body mechanics. As researchers investigate SPH and publish findings, educators’ attitude about TMPH being safe practice will dissipate. This view is also supported by the findings from Research Question 2. The conclusion drawn from Research Question 3 is that educators will teach SPH principles if they have the support and the knowledge and tools to do so.

A gap exists between research, what is taught to occupational therapy students, and best practice. We surmise that educators are unaware that they teach unsafe practice; several reasons contribute to our assumption: (1) A gap exists in the occupational therapy literature, (2) few occupational therapy researchers engage in this line of inquiry, (3) facilities in which students complete their fieldwork experiences do not have SPH policies, (4) educators do not have access to the equipment, and (5) the professional association is not educating the occupational therapy community about the hazard of TMPH techniques.

**Study Limitations**

A limitation of the study may have been educators’ bias toward the subject matter. TMPH techniques have been thought to be the safest method for moving patients for...
decades. Educators may not have understood the significance of this study and, therefore, may not have felt the need to participate. The survey was long; therefore, educators may not have had the time to complete it. The survey could have included open-ended questions to gather qualitative data about why educators do not teach SPH as the standard of practice. Instrument validity was limited to content only, which may be a limitation because of the questionnaire’s subjective nature.

Future Research

Research on this topic is at the grassroots level in occupational therapy. This study begins the quest to develop a strategic plan to facilitate curriculum change and, eventually, a paradigm shift in the way in which occupational therapy students and practitioners handle patients. Understanding the predictors of intention will assist others in developing programs that encourage behavior change in the way in which students are taught. Future research is needed to develop an occupational therapy education module that teaches SPH evidence. Nursing, in collaboration with NIOSH and the VA, developed an education module for nursing schools and found successful implementation once the faculty knew the evidence and had access to the equipment (Menzel et al., 2007). Research is also needed to assess fieldwork educators’ expectations of students’ preparedness to perform manual patient handling and safe patient handling techniques.

Moreover, the use of equipment as a therapeutic modality to improve patient outcomes needs to be investigated. Current research has suggested that equipment use does not have an adverse impact on patient functional recovery (Arnold, Radawiec, Campo, & Wright, 2011). With that, research is needed to investigate the use of equipment as an intervention tool for therapeutic application. Once therapeutic application is established, therapeutic guidelines can be developed to determine best practice for outcomes measures and therapist and patient safety. Equipment has traditionally been used for dependent patients and not as a facilitator to increase independence. What is the best use of equipment, and should it be used solely for the purpose of moving and positioning, or can it be used to improve patient independence and outcome?

Implications for Occupational Therapy Practice

The intention of this research is to better understand the behavioral constructs that best support a curriculum change in the way students are taught patient handling. The implications for occupational therapy practice are as follows:

- Increased educators’ awareness of SPH will empower them to further explore the evidence and develop curricula that promote student safety.
- Successful implementation of SPH curricula will foster student requests for the use of equipment to move and position patients during fieldwork and, therefore, protect them from injury.
- SPH curricula will empower students to share SPH evidence with their fieldwork educators to promote a practice paradigm shift in the way patients are handled in an effort to decrease injury rates among therapists.
- SPH curricula will improve students’ preparedness for fieldwork experiences that involve SPH.

Conclusion

To change work practice, educators must become familiar with the evidence that supports SPH. The results of this study indicate that

- Educators teach TMPH, and their attitude and perceived behavioral control regarding the technique have a strong influence on their intention to continue teaching it;
- Educators’ normative beliefs and attitudes strongly influence their possible intention to teach SPH as the standard of practice; and
- Educators are unaware of the risks associated with TMPH and therefore continue to teach it as the standard of practice.

As educators become more aware of the evidence, a paradigm shift in the way patient handling is taught and practiced will occur.

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References


