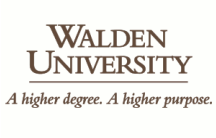

2019

Physician Collaboration and Improving Health Care Team Patient Safety Culture: A Quantitative Approach

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2019

Abstract

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by

Jay J. Spitulnik

EdM, Boston University, 1975

BA, Boston University, 1972

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

February 2019

Abstract

Studies have found links between physician relationships with nurses, patient safety culture, and patient outcomes, but less is known about a similar link between physician relationships with allied health professionals (AHPs), patient safety culture, and patient outcomes. The purpose of this exploratory quantitative, survey study was to investigate whether physician interactions with AHPs contribute to improved patient-safety culture, AHP empowerment, and self-efficacy. Based on a theoretical framework consisting of structural empowerment, psychological empowerment, and self-efficacy, it was hypothesized that self-efficacy is predicted by structural and psychological empowerment and self-efficacy predicts a positive patient safety culture. The AHP Survey of Physician Collaboration was constructed using psychometrically sound items from instruments that have studied similar phenomena. A purposive sample with 95 respondents consisted of occupational and physical therapists currently working in hospitals. Pearson Product-Moment correlation, standard multiple regression analysis, independent groups *t*-tests, and one-way between groups analyses of variance were employed. Although the survey results did not indicate a statistically significant relationship between psychological empowerment and patient-safety culture, findings in this study indicated that patient-safety culture has a significant positive correlation with structural empowerment and self-efficacy. Structural empowerment and self-efficacy were found to significantly predict patient-safety culture. The results did not show differences based on gender, profession, age, or years of service. By illustrating the nature of the relationship between physicians and AHPs, the results of this study can affect social change through enhancing the ability to reduce the number of preventable negative health outcomes in hospitals.

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Dedication

First, there are six people whose influence has been inspirational throughout my entire Walden experience. My late parents, Harry and Rissel Spitulnik, always encouraged me to take advantage of every opportunity to learn and grow. My three children, Harry, Alyssa, and Matthew, set their own examples for me in their academic endeavors. In fact, my daughter's undergraduate GPA was an inspiration for me to at least exceed what she had accomplished. Finally, my wife Nancy's perseverance as she completed her doctorate was inspirational. She managed to balance her life as a wife, mother, school leader, and student to complete an important and excellent study. My wife and children supported and encouraged me throughout the entire process.

Second, this is dedicated to the hundreds of thousands, if not millions, of allied health professionals who work in hospitals throughout the world. Their endless, and too frequently thankless, efforts to provide exceptional care are an essential element of our health care system. I hope that the results of this study contribute to their ability to make a difference.

Acknowledgements

I would like to thank my dissertation committee chair, Dr. William Disch, whose support and encouragement throughout this long process has been an essential element in my success. I would also like to thank Dr. Bernadette Dorr, my committee member. Drs. Disch and Dorr were patient as so many events slowed my progress and were always thorough and insightful in the reviews and commentary on my work. Finally, I would like to thank Dr. Kristin Curry Greenwood and Dr. Christopher Cesario of the Northeastern University Department of Physical Therapy, Movement and Rehabilitation Sciences. When my efforts to obtain a suitable sample size stalled, they stepped in and used their connections to help me reach my goal. Without their help, I might never have gotten enough participants to reach my goal.

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Chapter 1: Introduction to the Study

Background

Health care scholars and practitioners have studied patient safety and the patient-safety culture since the late 1990s as they relate to quality health care (Hoff, Jameson, Hannan, & Flink, 2004; Mustard, 2002; Weng, Kim, & Wu, 2017). A systemic improvement that has been widely implemented as a result of these studies is establishment of a culture of patient safety in hospitals (Comeau & Adkinson, 2007; Leonard & Frankel, 2006). A hospital with a patient-safety culture is defined as one in which all workers accept responsibility for the safety of themselves, their coworkers, patients, and visitors (National Patient Safety Foundation (NPSF), 2001).

More specifically, Sammer, Lykens, Singh, Mains, and Lackan (2010) described seven subcultures that make up a patient safety culture. Three of those subcultures are related to the variables in this study: (a) leadership that aligns vison and mission with competency and resources; (b) teamwork that includes open, safe, respectful, and flexible relationships among everyone in the organization; and (c) communication that allows and expects everyone to speak on behalf of the patient. The remaining four subcultures are (a) evidence-based practices that are designed to achieve high reliability, (b) learning is valued among all staff, (c) a just culture that recognizes mistakes and system failures but holds people accountable for their actions, and (d) patient-centered care that considers patients and their families. I did not consider these four in this study because they do not relate to the theories of empowerment and self-efficacy that are the conceptual bases of the study.

For the purposes of this study, I applied the approach of defining patient-safety culture as a composite of nine factors (Singer et al., 2007) The nine factors are (a) senior managers' engagement, (b) organizational resources for safety, (c) overall emphasis on safety, (d) unit safety norms, (e) unit recognition and support for safety efforts, (f) fear of shame, (g) provision of safe care, (h) learning, and (i) fear of blame. Table 1 provides descriptions of each of the nine factors.

Table 1

Descriptions of Nine Patient-Safety Culture Factors

Factor	Description
Senior managers' engagement	Senior managers understand current safety issues and take action when necessary; allow best-qualified frontline personnel to solve safety issues.
Organizational resources for safety	Perceptions about adequacy of resources necessary to provide safe patient care.
Overall emphasis on safety	Is safety improving in the facility?
Unit safety norms	Safety issues are proactively assessed and addressed, is a genuine and pervasive value; concern for safety defines behavior norms.
Unit recognition and support for safety efforts	Actions that promote patient safety are acknowledged; patient safety standards are used in training and performance evaluation.
Fear of shame	Staff are comfortable admitting mistakes or knowledge gaps and seeking help.
Provision of safe care	Awareness of having witnessed or been involved in provision of unsafe care.
Learning	Willingness to learn from others to reduce failure errors; recognition of impact of personal factors such as fatigue on patient safety.
Fear of blame	Perception that revealing mistakes would result in disciplinary action.

Note. Descriptions derived from Singer et al. (2007).

Additional research has found that patient safety culture is influenced by levels of structural empowerment, psychological empowerment, and self-efficacy (Bonias, Bartram, Leggat, & Stanton, 2010; Gist, 1987; Gist & Mitchell, 1992; Kanter, 1977, 1993, 1981; Leggat, Karimi, & Bartram, 2017). Structural empowerment is evident when hospital staff have access to information, support, resources, and opportunities to learn and grow in their work setting (Armstrong & Laschinger, 2006; Boamah, Laschinger, Wong, & Clarke, 2018; Kanter, 1977, 1993). Staff members who feel that they are included in decision making and problem solving are considered to be psychologically empowered (Chiang & Hsieh, 2012; Zimmerman, 1995). Self-efficacy is individuals' belief that they are competent to perform effectively and that they have sufficient control over their environment to perform effectively (Bandura & Locke, 2003; Gist, 1987; Vancouver & Purl, 2017). The following section includes operational definitions of structural empowerment, psychological empowerment, and self-efficacy.

Operational Definitions

Structural Empowerment

An individual's power as related to their position in the organization can be considered formal or informal (Knol & van Linge, 2009) and both forms provide access to the following four empowerment structures: (a) *opportunity* to learn and grow, (b) *information* needed to function effectively, (c) *support* in the form of leadership and feedback, and (d) *resources* needed to perform and meet the organization's goals. Perceived organizational support (POS) as found in the dimensions of empowerment has been found to enhance feelings of structural empowerment (Labrague, McEnroe Petitte, Leocadio, Van Bogaert, & Tsaras, 2018; Patrick & Laschinger, 2006).

One element of POS is employees' belief that the organization values their contribution. Leadership that supports collaboration has established structural empowerment by demonstrating that employee contributions are valued. For example, staff members who are encouraged to participate in decision making and problem solving are structurally empowered (Kutney-Lee et al., 2016; Heather Laschinger, Finegan, Shamian, & Wilk, 2004).

Psychological Empowerment

An environment in which there is structural empowerment supports psychological empowerment. A work environment that supports structural empowerment will provide motivational cognitions regarding an employee's orientation to work (Wang & Lee, 2009). Wang and Lee found that apparently balanced elements of structural empowerment will generate high levels of psychological empowerment. Psychological empowerment is the result of employee's attitudes about their organizational role (Knol & van Linge, 2009). As was the case with structural empowerment, Knol and van Linge have described four elements of psychological empowerment: (a) *meaning*, or the perceived level of work importance; (b) *competence,* or the level of confidence in personal abilities; (c) *self-determination,* which is decision making freedom; and (d) *impact*, which is the ability to have ideas seriously considered.

Self-Efficacy

Self-efficacy is a social cognitive theory which assumes that individuals are able to control their own functioning and that their actions can influence events (Bandura, 2012). For the purpose of this study, self-efficacy derives from two sources (Gist, 1987). The first is the allied health professionals' (AHPs') belief that they have the necessary

technical skills, and the second is the belief that they can actually perform as required in the work environment. Both structural and psychological empowerment can affect an employee's self-efficacy. Both forms of empowerment support employees' feelings that they are in control. The belief that they are in control has been shown to enhance people's self-efficacy (Bandura & Locke, 2003).

Kirkman and Benson (1999) noted that the ability to collaborate will promote feelings of being in control; which will in turn promote self-efficacy. In the health care environment, research has found that collaboration between physicians and nurses can have a positive effect on patient safety (Sanders & Krugman, 2013). Stoller (2004) explained that physicians are often self-appointed or *de facto* leaders in health care institutions and that their noncollaborative behavior is not supportive of participation. One element that affects a team's success is that the team members are able to combine their resources effectively to their tasks (Dow, DiazGranados, Mazmanian, & Retchin, 2013). When physicians do not take advantage of the expertise of other team members, it can have a negative effect on the team's success.

In this study, success was evidenced by a relationship between empowerment, self-efficacy, and an established and evident patient-safety culture composed of the nine factors described by Singer et al. (2007). The literature has addressed links between patient-safety culture and empowerment, participative management, collaboration, and self-efficacy. More specifically, the literature has studied how empowerment, participation, collaboration, and self-efficacy as reflected in relationships between nurses and physicians are linked to patient-safety culture. A gap in the literature exists in that AHP attitudes as they relate to patient safety and positive patient outcomes are an

infrequently studied phenomenon. It is important to study this relationship to determine whether relationships between physicians and the other members of the care team can also affect patient-safety culture.

Statement of the Problem

Recent studies have found that the number of annual deaths in the United States caused by medical error is close to 251,000 (Makary & Daniel, 2016; Weeks, 2016). Medical errors are the third leading cause of death in the United States (Makary & Daniel, 2016; Weeks, 2016). Preventable patient deaths are one of the extreme examples and one focus of this study. Studies have shown that a strong patient-safety culture in a hospital reduces medical errors (Kohn, Corrigan, & Donaldson, 2000; Wachter, 2004, 2010a); however, weak and inconsistent patient safety culture in hospitals is a problem because it has been linked to medical errors that result in preventable patient deaths (Comeau & Adkinson, 2007; Gallego, Magrabi, Concha, Wang, & Coiera, 2015; Leonard & Frankel, 2006). Medical errors can occur with a range of outcomes.

The literature addresses how physician behaviors are linked to nurse empowerment and self-efficacy and how this, in turn, is related to a hospital's patient-safety culture (Ammouri, Tailakh, Muliira, Geethakrishnan, & Al Kindi, 2015; Kirwan, Matthews, & Scott, 2013). A gap in literature exists with regard to AHP attitudes as they relate to patient safety and positive patient outcomes are an infrequently studied phenomenon. Empowered nurses with high self-efficacy have been found to be linked to a stronger patient-safety culture and reduced medical errors, and physicians' collaborative and participative behaviors with nurses have been linked to the nurses' empowerment and self-efficacy (Dechairo-Marino, Jordan-Marsh, Traiger, & Saulo,

2001; Hearld, Alexander, Fraser, & Jiang, 2008; Larson, 1999; Orchard, Curran, & Kabene, 2009; Teng et al., 2009; Wagner & Bear, 2009). In this study, I addressed that gap by surveying AHPs' empowerment and self-efficacy and how those variables are related to patient-safety culture.

Purpose of the Study

Weak and inconsistent patient safety culture in hospitals is a problem because it has been linked to medical errors that can result in preventable patient deaths (Comeau & Adkinson, 2007; Leonard & Frankel, 2006). In this study, I addressed the associations between patient-safety culture and the relationships among those who deliver patient care services, particularly physicians and AHPs, as well as how those variables relate to the patient safety culture (Dobrzykowski & Tarafdar, 2015; Nembhard & Edmondson, 2006; Tucker, Nembhard, & Edmondson, 2007). Because there has been little research investigating the physician-AHP relationship, I investigated whether physician behaviors affect AHPs in a manner that would inhibit improving patient safety. Results were used to determine whether interventions to change the collaborative relationship between physicians and AHPs could lead to improved patient safety culture.

I used this nonexperimental quantitative study to investigate whether structural empowerment, psychological empowerment, and self-efficacy influence patient-safety culture; whether structural empowerment mediates psychological empowerment; and whether either or both forms of empowerment mediate self-efficacy. Figure 1 illustrates the relationships between AHPs and physicians which link these elements with patient safety culture. The AHP-physician model is based on similar relationships between

physicians and nurses (House & Havens, 2017; Larson, 1999; Thomas, Sexton, & Helmreich, 2003).

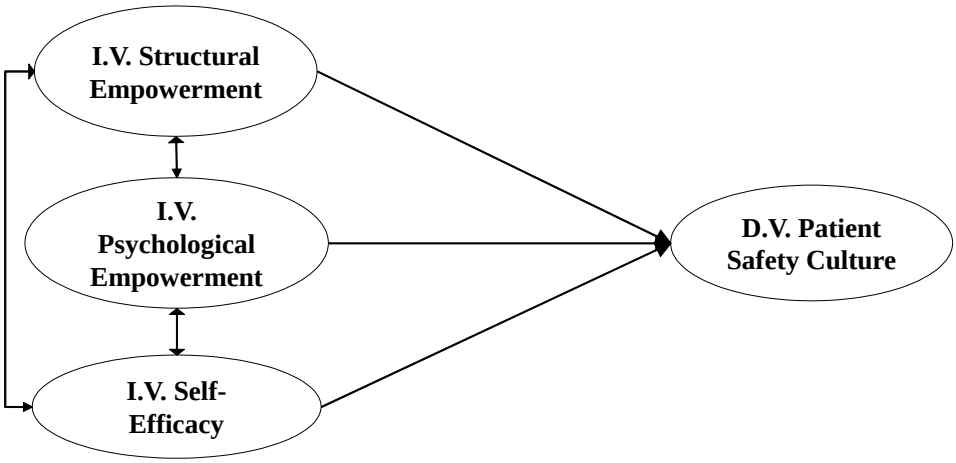

Figure 1. Design model.

Research Questions and Hypotheses

Based on a theoretical framework consisting of structural empowerment, psychological empowerment, and self-efficacy, I posited the following research questions and hypotheses:

Question 1. Are structural empowerment, psychological empowerment, self-efficacy and patient-safety culture related to each other?

H_{01}: There is no relationship between structural empowerment, psychological empowerment, self-efficacy and patient safety culture as evidenced by Pearson Product-Moment Correlation analysis of the results of the survey.

H_{a1}: There is a relationship between structural empowerment, psychological empowerment, self-efficacy, and patient safety culture as evidenced by Pearson Product-Moment Correlation analysis of the results of the survey.

Question 2. Do structural empowerment, psychological empowerment, and self-efficacy predict patient-safety culture?

H_{02}: AHPS' structural empowerment, psychological empowerment, and self-efficacy do not predict patient-safety culture as evidenced by simple multiple regression analysis of the results of the survey.

H_{a2}: AHPS' structural empowerment, psychological empowerment, and self-efficacy predict patient-safety culture as evidenced by simple multiple regression analysis of the results of the survey.

Question 3. Are there significant mean differences on measures of structural empowerment, psychological empowerment, and self-efficacy based on responders' age, gender, length of service, and specific allied health profession?

H_{03}: There are significant mean differences based on responders' age, gender, length of service, and specific allied health profession as evidenced by independent groups *t*-tests and one-way between groups analysis of variance of the results of the survey.

H_{a3}: There are no significant mean differences based on responders' age, gender, length of service, and specific allied health profession as evidenced by independent groups *t*-tests and one-way between groups analysis of variance of the results the results of the survey.

Theoretical Framework

A theoretical framework consisting of structural empowerment (Kanter, 1977, 1993, 1981), psychological empowerment (Bonias et al., 2010), and self-efficacy (Gist, 1987; Gist & Mitchell, 1992; Stiehl, Ernst Kossek, Leana, & Keller, 2018) as being related to patient-safety culture (PSC) was used to drive the hypotheses for this study. I

included collaboration and participative management as elements of the theoretical framework because they can be viewed as a manifestation of structural and psychological empowerment and of self-efficacy.

Collaboration

Collaboration has been linked to empowerment and self-efficacy (Langan-Fox, Code, Gray, & Langfield-Smith, 2002), and the Accreditation Council for Graduate Medical Education has recognized this by requiring training on collaborative skills to be part of medical school and residency curricula since 2007 (ACGME, 2007). For example, ACGME requires that residents must be able to "work effectively as a member or leader of a health care team" (p. 6). Studies show that although medical students learn to be collaborative, those learnings often are not reflected in their practice as physicians (Bandini et al., 2017; Haidet et al., 2001; Haidet et al., 2002; Haidet et al., 2005; Weissmann, Branch, Gracey, Haidet, & Frankel, 2006).

Collectivist behaviors are based on the expectation that people in groups will look after and protect each other; individualistic behaviors demonstrate a preference to act as individuals rather than as members of a group (Hwang, 2012; Naranjo-Gil, Cuevas-Rodrıguez, López-Cabrales, & Sánchez, 2012; Robbins & Judge, 2007, p. 125). As Stoller (2004) indicated, physicians are more likely to act as individuals. Although their classroom training may include skills that promote collectivist behaviors, the exemplars in their residencies often negate the classroom training by practicing a noninclusive, individualistic decision-making process (Braddock, Eckstrom, & Haidet, 2004; Haidet et al., 2005). As defined by Westrum (2004), a *generative culture* would exhibit the *collectivistic tendencies* as defined by Robbins and Judge (2007) and would be likely to

produce positive results. To that end, physicians acting collectively would be likely to contribute to improved patient safety (Paige, 2010).

Lindeke and Sieckert (2005) have demonstrated that collaborative relationships between doctors and nurses are linked to positive patient safety. Additional studies have demonstrated that physician-nurse relationships have a positive effect on patient safety (Judith Gedney Baggs et al., 1999; Higgins, 1999). As Baggs et al. demonstrated, collaboration leads to increased patient safety in that increased collaboration correlated to reduced probability of negative patient outcomes.

In a hospital, physician collaboration with other members of the health care team is a form of participative management. *Participative management* is partially defined as the degree to which members of a team are involved with decision making and problem solving (Budd, Gollan, & Wilkinson, 2010; Huang, Iun, Liu, & Gong, 2010; Sashkin, 1976). For example, Baggs et al. (1999) found that a participative team would exhibit at least three roles: (a) nurses collecting and reporting on significant observations, (b) residents using information obtained from nurses' observations and reports in generating organ-specific conclusions, and (c) attending physicians using nurse and resident input to generate a care plan.

Participative Management

Stoller (2004) stated that physicians play a leadership role on the care team and their attitudes toward collaboration or cooperation can influence the overall collaborative environment. Collaboration is considered a form of participative management and has been linked to empowerment and self-efficacy (Langan-Fox et al., 2002). Sharing of decision making (responsibility) and problem solving are attributes of collaboration

(Bowles et al., 2016; Gardner, 2005) which support the link to Sashkin's (1984, 1986) model of participation. The concept of participation has been extended to cooperation, a behavior that has been identified as essential to improvement of health care outcomes (Clemmer, Spuhler, Berwick, & Nolan, 1998; Stoller, 2017).

The Nature of the Study

In this study, I used a cross-sectional survey-based quantitative design and a purposive, nonprobability sampling scheme to collect data from AHPs (Tongco, 2007; Umbach, 2005), through use of an electronically administered survey (Olsen, Wygant, & Brown, 2004; Simsek & Veiga, 2000). The AHPs' structural and psychological empowerment, self-efficacy, and patient-safety awareness were assessed using a survey adapted from several similar surveys. Because no specific surveys have been found that collectively assess these elements, the assessment tool drew from existing psychometrically sound scales and items used to assess nurse/physician relationships from five different surveys. The five surveys are (a) Nurses Opinion Questionnaire (NOQ: Adams, Bond, & Arber, 1995); (b) Practice Environment Scale of Nursing Work Index (PES; Lake, 2002); (c) Collaboration and Satisfaction about Care Decisions Scale (CDS; Judith G. Baggs, 1994); (d) Collaborative Practice Scale (CPS; Weiss & Davis, 1985); and (e) Jefferson Scale of Attitudes toward Nurse-Physician Collaboration (Jefferson; Hojat et al., 1999). I measured self-efficacy using the New General Self-efficacy Scale (NGSE; Chen et al., 2001). I used the Patient Safety Climate in Health Care Organizations (PSCHO) survey (Singer, Meterko, Baker, Gaba, Falwell, & Rosen, 2007) to measure Patient Safety Culture. I compared the scales used to measure empowerment and self-efficacy with the PSCHO results to test the study hypotheses.

I invited a purposive sample of AHPs from two professional groups -- occupational therapists and physical therapists working in hospitals -- to participate (Tongco, 2007). Purposive sampling helps increase the response rate as it has been found that people are more likely to respond to surveys if they see some relevance in the study (Blumenberg & Barros, 2018; Sax, Gilmartin, & Bryant, 2003) and a purposive sample supports approaching potential participants who recognize the study's relevance. The survey contained items related to reaction to the work environment and perceptions regarding patient safety culture. I tested the hypotheses using univariate and multivariate tests and the Statistical Package for the Social Sciences – v25.0 (SPSS, 2018) statistical software program.

I employed Pearson product-moment correlations, standard multiple regression analysis to assess relationships and to identify predictors of AHPs' empowerment (Green & Salkind, 2005; Tabachnick & Fidell, 2007). To assess mean differences, I used independent-groups *t*-tests and one-way between-groups analysis of variance. I will discuss a more detailed description of the procedural and analytical aspects of this study in Chapter 3.

Definitions

The following terms are important to the understanding of this study. Their use in this study will be clarified in this section to facilitate discussion and future replication.

Collaboration: For this study, Gardner's (2005) definition of collaboration was applied: "Collaboration is both a process and an outcome in which shared interest or conflict that cannot be addressed by any single individual is addressed by key stakeholders" (para. 6). This definition supports the link between participation and

collaboration in that it combines process (problem solving) and outcome (decision-making). On a health care team, collaboration would be evident when all team members are allowed to contribute to process and outcomes to the fullest extent of their professional skills.

Collectivism: A cultural attribute that describes a tight social framework in which people expect others in groups of which they are a part to look after them and protect them (Robbins & Judge, 2007, p. 125). A team member with a collectivist orientation would be likely to support full participation by all team members in all appropriate aspects of team activities.

Culture of safety: The major predictors of a positive patient safety culture in health care organizations, specifically hospitals, include communication founded on mutual trust, good information flow, shared perception of the importance of safety, organizational learning, commitment from management and leadership, and the presence of a non-punitive approach to incident and error reporting (Stavrianopoulos, 2012). Johnson and Maultsby (2007) defined culture of safety as including the following six attributes (p. 164):

- System-based approaches to analyzing, identifying, and eliminating causes of error.
- Awareness of the dangers of at-risk behaviors and rewards for safe versus risky behavior.
- Health care team education and awareness programs, activities, and projects including clinical research.

- Ongoing monitors employed to evaluate the progress made toward improving the patient safety environment.
- Workforce initiatives to reduce fatigue as a cause of medical error.
- Administrative visibility and leadership in patient safety planning and training.

Individualism: A cultural attribute describing the degree to which people prefer to act as individuals rather than as members of groups (Robbins & Judge, 2007, p. 125). Stoller's (2004) description of physicians' general aversion to teamwork is an example of individualistic behavior in the health care setting.

Participation: As used in this study, participation refers to the degree to which members of the health care team are involved with decision making and problem solving (Sashkin, 1976). The involvement can be on an individual, dyadic, or group basis. According to Sashkin, participation in decision making leads to content outcomes and participation in problem solving leads primarily to process outcomes but sometimes also to content outcomes. In other words, participation in decision-making affects the products of work and participation in problem solving affects how the products are produced.

Psychological empowerment: A cognitive state characterized by a sense of perceived control, competence, and goal internalization (Menon, 1999, pp. 161-162). AHPs will experience psychological empowerment when they perceive that their behavior makes a difference in producing error-free patient outcomes (Liden, Wayne, & Sparrowe, 2000).

Self-efficacy: The conviction that one can successfully execute the behavior required to produce certain outcomes (Bandura, 1977, p. 193). A high level of self-

efficacy leads to behaviors that are more likely to produce the desired outcomes. AHPs with high levels of self-efficacy will be more likely to produce outcomes that decrease errors and increase patient safety. Within the construct of self-efficacy, general self-efficacy is defined as a "relatively stable, trait-like, generalized competence belief" (Chen, Gully, & Eden, 2004, p. 376)

Structural empowerment: Formal and informal power systems within an organization that provide access to information, resources, and support (Patrick & Laschinger, 2006). AHPs will experience structural empowerment if the organization in which they work supports full participation in decision-making and problem-solving to the fullest extent of their professional competencies.

Assumptions and Limitations

Assumptions

In this study, I address issues related to establishment of a patient safety culture in hospitals. Stoller's (2004) explanation of why it is difficult for physicians to collaborate and of their role as leaders in caregiver teams provides part of the basis for undertaking this study. An increase in collaboration can have a positive effect on job satisfaction, which in turn will lead to a decrease in medical errors (Clemmer et al., 1998). A major assumption underlying this study was that Stoller, a physician himself, was accurate in characterizing physician attitudes and the underlying reasons those attitudes developed.

As noted previously, some research shows the link between physician-nurse collaboration, nurse empowerment, and self-efficacy (Braun, O'Sullivan, Dusch, Antrum, & Ascher, 2015; Coeling & Cukr, 2000) and between physician-nurse interaction and patient safety (Larson, 1999). Through extension, a second major assumption is that if

nurse empowerment and self-efficacy predict patient-safety culture, AHP empowerment and self-efficacy will have a similar relationship. If this study shows a link between AHP empowerment, self-efficacy, and patient-safety culture similar to that between physicians and nurses, it will suggest a need for further study how to improve the factors affecting patient-safety culture.

I used a web-based survey method using SurveyMonkey to conduct this study. This method was chosen for three reasons: (a) it is useful for measuring attitudes, (b) it is inexpensive, and (c) it has a quick turnaround (Punch, 2003). In addition, web-based surveys are an attractive way to collect data in a relatively short period of time (Umbach, 2005). Given the lack of research assessing AHP empowerment and self-efficacy, the survey for the study was adapted from those used in studies of nurse empowerment and self-efficacy. All of the items were taken from surveys that have validation support in the literature. In addition, all items from the New General Self-efficacy Scale (NGSE; Chen et al., 2001) and Patient Safety Climate in Health care Organizations Survey (Singer et al., 2007) were added to the survey. Permission to use the surveys was granted either directly by the authors or the Copyright Clearance Center.

Limitations

The sample that I used in this study was drawn from representatives of two allied health professions. I collected the data using an electronic survey distributed by postcard and electronically to the AHPs. The use of only two allied health professions limited the ability to generalize findings to other professions. The nonrandom, purposive method of selecting the sample to be surveyed also limited the diversity of respondents. According to Kemper, Stringfield, and Teddlie (2003), “generalizability concerns whether or not the

sample adequately represents the population (or elements of the population) to which the results may be applied" (p.276). If the sample does not adequately represent the population, results might not be transferrable to other locations.

Significance of the Study

Hospital administrators, clinical leaders, government regulators, and others continuously remind staff members in hospitals of the need to promote and support a culture of patient safety, and of the consequences of not doing so. Approximately 251,000 Americans die each year from preventable medical errors, and this is the third leading cause of death in the United States (Makary & Daniel, 2016; Weeks, 2016). Other results of medical errors include misdiagnosis, wrong site surgery, and medication errors (Southwick, Cranley, & Hallisy, 2015). Health care organizations are implementing numerous approaches to establishing a patient safety culture that will prevent the occurrence of fatal errors. For example, some organizations have launched initiatives to enhance accountability for outcomes without assigning blame (Wachter, 2010a). Current research addresses how physician behaviors that empower nurses and promote self-efficacy influence the patient-safety culture, demonstrating that empowered nurses with high self-efficacy are related to improved patient outcomes. There is a need for similar research to address whether empowerment and self-efficacy of AHPs has a similar relationship to patient-safety culture.

Studies have shown that a strong patient-safety culture leads to reductions in preventable medical errors. In this cross-sectional survey-based study, I investigated the empowerment and self-efficacy of AHPs, specifically, occupational therapists and physical therapists, to determine whether physician behaviors affect their empowerment

and self-efficacy in a manner similar to the way they have been found to affect nurses. One element that affects a team's success is that the team members are able to combine their resources effectively to their tasks (Dow et al., 2013). When physician behaviors do not promote empowerment and self-efficacy, it can have a negative effect on the team's success. A more detailed discussion of the literature pertinent to this study is in Chapter 2.

Summary

In this study, I addressed the problem of whether physicians' behavior that supports or decreases AHPs' empowerment in turn compromises or enhances overall patient-safety culture. I hypothesized that AHP structural and psychological empowerment, as well as their self-efficacy, will predict patient-safety culture in a hospital. In Chapter 1, I introduced a gap in the current literature, that is, the lack of research into the relationship between AHP empowerment, self-efficacy, and patient-safety culture. Physicians do not easily collaborate with other members of the health care team (Stoller, 2004) resulting in less empowerment and self-efficacy. When those other team members are nurses, it has also been shown that the lower empowerment and self-efficacy are related to a poor patient-safety culture (Schmalenberg et al., 2005a, 2005b). I used survey results to assess whether similar conditions exist for AHPs.

In Chapter 2, I will review the literature associated with the underlying theories to explain the empowerment, self-efficacy, and patient safety culture associated with AHP members of care teams. More specifically, topics to be addressed are (a) the nature of participative management as a motivator, (b) the relationship between participation and collaboration, (c) the effects of collaborative practice in health care, (d) the ways in

which participation and collaboration affect structural and psychological empowerment, and (e) the relationship between those types of empowerment and self-efficacy. The specific role of the physician as a leader who can influence the environment will also be considered. In Chapter 3, I will describe the design in detail. This will include a description of the data collection tools and methods, a description of the proposed populations, the sampling methods, the quantitative analysis methods to be used, and the methods to demonstrate validity of the findings.

Chapter 2: Literature Review

Introduction

Studies of collaborative relationships between physicians and nurses have demonstrated that when the nurses perceive that physicians support their empowerment and self-efficacy by inviting them to participate in problem solving and decision making, they have a higher level of job satisfaction. The higher level of satisfaction correlates with a stronger patient safety culture, which in turn correlates with better patient outcomes (Schmalenberg et al., 2005a, 2005b). In this study, I investigated whether similar effects exist based on relationships between AHPs and physicians. If the similar effects exist, changes in the relationships between AHPs and physicians could lead to improved patient safety culture.

In this study, collaboration is considered to be a form of participative management. The concept of participation has been extended to cooperation, a behavior that is essential to improvement of health care outcomes (Clemmer et al., 1998). Physicians play a leadership role on the care team (Stoller, 2004) and their attitudes toward cooperation can influence the overall collaborative environment.

Employees' belief that leaders value their contribution has been found to enhance feelings of structural empowerment (Bawafaa, Wong, & Laschinger, 2015; Patrick & Laschinger, 2006). A work environment that supports structural empowerment will provide psychological empowerment through motivational cognitions regarding an employee's orientation to work (G. Wang & Lee, 2009). Both forms of empowerment can affect an employee's self-efficacy by supporting employees' feelings that they are in

control (Bandura & Locke, 2003; Pousa & Mathieu, 2015). The ability to collaborate will promote feelings of being in control, which will in turn promote self-efficacy.

Studies have shown that a strong patient-safety culture in a hospital reduces medical errors (Kohn et al., 2000; Wachter, 2004). More than 10 years after the Institute of Medicine Report on patient deaths resulting from preventable medical errors in hospitals (Kohn et al.,2000), tens of thousands of such deaths still occur every year (Wachter, 2009; 2010a). In fact, medical errors cause close to 251,000 deaths every year and are the third leading cause of death in the United States (Makary & Daniel, 2016; Weeks, 2016).

Organization of the Review

This review is composed of three sections. First, I discuss the literature describing patient safety, safety culture in general, and the medical errors problem. Also, in this section, I will review literature regarding studies of physician-nurse relationships that will help guide the study. In the second section, I will review the conceptual bases for this study, including (a) structural empowerment (Kanter, 1977, 1993); (b) psychological empowerment (Knol & van Linge, 2009; Kraimer, Seibert, & Liden, 1999); (c) participation (Antoni, 2004; Sashkin, 1976); and (d) self-efficacy (Bandura, 1997). Finally, I will discuss the literature supporting the decision to apply a survey-based quantitative design.

Literature Review Method

I used three principal strategies to search for literature related to this topic. First, I conducted general searches with the Thoreau Multi-database Search tool in the Walden library databases using the following terms: *patient safety*, *nurse-physician relations*,

collaboration, *participative management*, *structural empowerment*, *psychological empowerment*, *self-efficacy*, and *Institute of Medicine*. Second, I reviewed the reference lists from sources identified in the first search to identify additional related material. I used a third method when important source material was more than 15 years old. For example, much of Marshal Sashkin's work on participative management was written in the 1970s and 1980s (Sashkin, 1976, 1984, 1986). I used Google Scholar to locate work that is more recent by searching for the older documents and clicking on "Cited by" in the Google listings. This provided a listing of more recent literature that cites Sashkin's work.

Patient Safety Culture

In the Institute of Medicine report, Kohn et al. (2000) stated the need for organizations to develop a culture of safety with safety as an explicit organizational goal. As part of this recommendation, they reviewed other high-risk industries and identified five principles that apply to the health care environment: (a) provide leadership, (b) respect for human limits in the design process, (c) promoting effective team functioning, (d) anticipating the unexpected, and (e) creating a learning environment (Kohn et al., 2000, p. 166). In addition to the relationships to other industries, hospitals with higher patient safety cultures have fewer adverse events (Mardon, Khanna, Sorra, Dyer, & Famolaro, 2010). A quasi-experimental study has demonstrated that enhancing patient safety culture leads to reduction in adverse events and other negative indicators (Brilli et al., 2013).

Another element related to this study is that patient centeredness has been identified as a key element of a patient safety culture (Sammer et al., 2010). A piece of

patient-centeredness is inclusion of everyone who contributes to the patient's care in problem solving and decision making. Although AHPs are not the primary decision makers, they do contribute to the patient's care and could provide input to the problem solving and decision making,

To discuss patient safety culture, it is necessary to understand the underlying theories of organizational climate and organizational culture (Kirk, Parker, Claridge, Esmail, & Marshall, 2007; Lawati, Dennis, Short, & Abdulhadi, 2018). In this study, I illustrate the importance of the relationship between climate and culture as I investigate how a collection of individual perceptions of work environment (organizational climate) are influenced by shared beliefs and values (organizational culture) (James et al., 2008). As noted by Hopkins (2006), an organization's culture must be studied before its influence on safety can be evaluated. In this study, I investigated the two elements together in that in the first part of the survey I probed elements of the organization's culture and in the second part I investigated how those elements are linked to the patient safety culture.

Organizational Climate

Many inconsistent definitions of *organizational climate* exist, which leads to misunderstanding about its nature (Fainshmidt & Frazier, 2016; Glick, 1985). However, it is important to consider what was once thought to be two elements of climate. Glick pointed out that climate was frequently defined as psychological or organizational. As the science of organizational studies evolved, psychological climate stayed as the basis for climate studies, and organizational climate became the subject of culture studies (Guion, 1973; Guldenmund, 2000; James et al., 2008; James & Jones, 1974). With this distinction

in mind, organizational climate can be defined as “shared perceptions among members of an organization with regard to its fundamental policies” (Dov, 2008, p. 376).

The key to this definition is that organizational climate is based on sharing of individual perceptions. Denison (1996) pointed out that climate is a quantitative, observable perspective of how groups and individuals are affected by the organization. The basis of measuring climate is assessment of how individuals perceive the organization (Bahrami, Barati, Ghoroghchian, Montazer-alfaraj, & Ranjbar Ezzatabadi, 2016; Mossholder & Bedeian, 1983). The survey I used in this study focused on how participants perceive empowerment and patient safety in their workspace.

Singer, Falwell, Gaba, and Baker (2008) found that there are differences between management levels regarding patient safety climate, and between management and frontline workers. They suggested that variables such as degree of delegation in decision making could affect how frontline workers perceive the patient safety climate in their hospital. This supports the suggestion by Mossholder and Bedeian (1983) regarding the need to assess individual perception of the organization to measure climate.

One of the difficulties in studying climate is the level at which the phenomenon should be studied. For example, climate can be studied within and between organizations, and within and between units within an organization (Bowen & Schneider, 2014; Cooil, Aksoy, Keiningham, & Maryott, 2009; Drexler, 1977). Regardless of the level at which it is studied, climate has been found to influence performance in large and small organizations (Jing, Avery, & Bergsteiner, 2011).

For purposes of this study, the definition of *organizational climate* will be one proposed by McMurray (2003) and by Moran and Volkwein (1992). The utility of the

definition for this study is that McMurray used it in a study of the relationship between climate and culture. McMurray concluded that climate as manifested in individual behavior is influenced by what the culture establishes as important. As stated by Moran and Volkwein (1992, p. 20):

> Organizational climate is a relatively enduring characteristic of an organization which distinguishes it from other organizations: and (a) embodies members' collective perceptions about their organization with respect to such dimensions as autonomy, trust, cohesiveness, support, recognition, innovation and fairness; (b) is produced by member interaction; (c) serves as a basis for interpreting the situation; (d) reflects the prevalent norms, values and attitudes of the organization's culture; and (e) acts as a source of influence for shaping behavior. (p. 20)

Organizational Culture

In its earliest manifestations in the literature, *organizational culture* was characterized as a qualitative perspective on social systems (Denison, 1996). Denison pointed out that culture studies look at the values and assumptions underlying organizational behavior, while climate looks at the way the values are demonstrated through behaviors. Westrum (2004) has defined organizational culture as the way an organization responds to patterns and opportunities, which supports Denison's description of culture as the organization's values. The importance of Denison's observation and Westrum's definition is underscored by the additional observation that culture is a powerful and stable force in an organization (Schein, 1996).

Wallach (1983) explained that a supportive organizational culture exhibits an encouraging and trusting work environment. Others have pointed out that there is interplay between organizational culture, leadership, and various elements of performance (Lok & Crawford, 2004; Yiing & Ahmad, 2009). In support of Wallach's contention mentioned above, studies have demonstrated that a supportive organizational culture is associated with higher levels of job performance (Brewer & Clippard, 2002; Cenkci & Ozcelik, 2015). In this study, the specific variables I studied were the organization's patient safety culture and its relationship to leadership behaviors that would promote psychological empowerment, structural empowerment, and self-efficacy. The empowerment and self-efficacy variables should relate to a supportive organizational culture as defined by Wallach (1983).

One issue with study of organizational cultures is the question of whether culture is heterogeneous, homogeneous, or both (Sackmann, 1991, 1992). Sackmann explained that organizational cultures might consist of subcultures that emerge under varied conditions. An organization's safety culture would be one of those subcultures and, more specifically, in health care organizations a patient safety culture would be considered a type of subculture.

Understanding organizational culture is important because culture has been found to have an influence on *organizational effectiveness* (Gregory, Harris, Armenakis, & Shook, 2009). A key indicator of organizational effectiveness in a health system is the quality of patient outcomes. Gregory et al. found that an organization's culture can influence employee attitudes and that those attitudes in turn influence effectiveness. In health care settings, the relationship between culture, attitudes, and effectiveness has been

demonstrated for nurses (Clark, 2009). In this study I investigated whether a similar relationship exists for AHPs.

Patient safety culture is itself derived from the more general study of safety culture in organizations. According to Guldenmund (2000), attitudes or behaviors in an organization that lead to increased or decreased risks are elements that characterize safety culture. Safety culture can be seen in three levels: (a) outer layers that are visible, (b) middle layers that are explicit and conscious, and (c) core layers that are implicit and obvious for group members. The study will assess the implicit layers by using a survey. Guldenmund contended that this framework was useful in that it combines the behavioral elements of a safety climate and the values of a safety culture.

Organizations labeled as *High Reliability Organizations* (HROs) exhibit cultures that apply organization of people, technology, and processes in a manner that prevents accidents from occurring (Kaissi, 2006). Health care organizations exhibit many of the characteristics of HROs in other industries, but often lack the level of delegation found in those industries. This suggests that the prevailing culture in health care differs from the supportive organizational culture described by Wallach (1983).

One reason for the difference between health care culture and supportive organizational culture is that health care organizations often exhibit a culture of blame that is focused on individuals as the source of problems rather than on the systems in which the individuals function (Kaissi, 2006). Another reason might be that the perceived status of physicians as leaders could inhibit support for participation by non-physicians (Goldman et al., 2016). In contrast, HROs demonstrate a culture of safety that focuses on the underlying systems as opposed to individual behaviors.

Stoller (2004) explained that the individual as the focus of blame is a result of the way physicians are trained. Stoller, himself a physician, argued that doctors are trained to act as individuals. As leaders of health care teams, their individualistic problem-solving and decision-making tendencies can have an effect on the way that a care team functions. Stoller (2009) has argued that if physician leaders are trained to function more collaboratively, it could influence a transition from individual focus to system focus. Following Kaissi's (2006) arguments, this would support the development of a safety culture.

The importance of the physician's ability to collaborate and think systemically rather than individually has been underscored by a study of the *five Cs* of culture change in a hospital setting (Rose, Thomas, Tersigni, Sexton, & Pryor, 2006). The *five Cs* are (a) comprehension, (b) compassion, (c) collaboration, (d) coordination, and (e) convergence. Rose et al. reported two findings that relate to patient safety culture. First, there were varied impressions of the level of collaboration among different caregiver groups in the same hospital. For example, there was wide variation between the way nurses and physicians rated the presence of collaborative behaviors. Second, they have found relationships between improved patient safety culture and improved patient outcomes.

The fact that nursing and medicine are considered to be two distinctly different cultures (Mannahan, 2010) is an interesting element of the discussion of culture in health care organizations. One result is a weakness in effective interprofessional communication between doctors and nurses that can be improved by training on communication skills (Nørgaard, Ammentorp, Kofoed, & Kyvik, 2012). The research has found improvement

in interprofessional communication among all members of a department, not just doctors and nurses, so AHPs were included in the study population.

How the AHPs are included in team decision making and problem solving is one of the elements of this study. Leadership plays a key role in determining how teams function (Künzle, Kolbe, & Grote, 2010) and in other elements of patient safety. Stoller (2004) pointed out that physicians on care teams are perceived as leaders even when they aren't specifically designated as such. This is reinforced by research demonstrating that failures in communication, teamwork, and leadership are responsible for a large percentage of adverse conditions (Dedy, Bonrath, Zevin, & Grantcharov, 2013).

Safety Culture and Empowerment

I will discuss empowerment in more detail later in this chapter, but it is important to note here the importance of empowerment as it relates to patient safety culture. It has been demonstrated that in hospitals in which nurses are empowered to act to the full extent of their professional training, there is a strong patient safety culture (Armstrong & Laschinger, 2006; Kutney-Lee et al., 2016). In this study I investigated whether the same holds true for empowerment and AHPs.

Participative Management

The discussions of climate, culture, and empowerment suggest that the concept of participative management will inform this study. Participative management implies a degree of interprofessional respect, and this respect has been identified as an essential element of team success (King, Laros, & Parer, 2012). As noted above in the explanation of patient safety culture (Kohn et al., 2000), effective team functioning is a key principle of a patient safety culture. Sashkin (1976) established a model of participative

management with four elements, two of which apply to this discussion. The first is participation in decision-making, and the second is participation in problem solving. Sashkin suggested that the presence of these elements would improve information flow and, as a result, would result in improved quality. The presence of these elements would also contribute to movement away from a culture that is individualistic rather than systemic, thereby supporting a key element of a safety culture. An organization that is participative will exhibit characteristics such as increased interaction and non-traditional hierarchies (Huzzard, Hellström, & Lifvergren, 2018; Stohl & Cheney, 2001).

Sashkin contended that the practice of participative management is not only practical, it is also ethical (Sashkin, 1984, 1986). Managers should be held accountable for predictable consequences of their actions. If managers are responsible for ensuring that the organization's desired results are produced and if evidence demonstrates that participative management increase the probability of attaining those results, the practice of participative management can be considered an ethical imperative for managers. When the organization is a hospital whose ethical goal is to do no harm to patients, the ethical imperative (Sashkin, 1984) becomes even stronger if participative management will contribute to a culture of safety.

In addition to the ethical imperative, there are considerations that are more practical. For example, organizations are considered by many to be complex adaptive systems that continuously change and evolve. As such, they require complexity in the way they are managed (Anderson et al., 2013; Ashmos, Duchon, McDaniel, & Huonker, 2002). Participation in decision making, one of Sashkin's (1976) key elements of participative management, promotes the organizational learning that is important to

support a complex adaptive system's change and evolution. The constant organizational learning facilitates the organization's ability to change and evolve.

Not all of the evidence regarding participative management is supportive of its motivational effects (Park, Lee, & Kim, 2016; Scully, Kirkpatrick, & Locke, 1995; Tjosvold, 1982). For example, Scully and her colleagues (1995) demonstrated that the presence of participative management alone was not sufficient to have a positive effect on performance. Tjosvold (1982) found that participation in decision-making could lead to improvement, but it could also result in competition that was not always positive. Other studies have found that high-involvement work practices such as participative management have a positive effect on employee retention, which in turn has a positive effect on performance (Guthrie, 2001).

The differences in perspective are reasonable for four reasons. First, it is necessary to look at participation in decision making in the context in which it occurs (Jiang, Flores, Leelawong, & Manz, 2016; Scott-Ladd & Marshall, 2004; Suriyankietkaew, 2013). For example, increased participation could be the result of the organization downsizing or flattening its structure. In that case, the increased participation could lead to decreased job satisfaction and commitment. In those cases, if increased participation co-existed with negative effects it is often because of moderating independent variables.

A second reason for less than optimal results is the way managers and others in the organization and other elements of the organization's culture are prepared to implement participation (Kanter, 1981, 1982). Kanter suggested two elements that are necessary for participation to have the desired effect. First, managers and employees must

be trained in the skills associated with participation. Second, there must be explicit limitations on what is and is not included in the participative process. Structurally, participative decision making must be seen to supplement and not replace the existing hierarchy.

A third reason why some may not see the positive effect of participation is that the presence of organizational failures could lessen an employee's psychological empowerment (Budd et al., 2010). The lower levels of psychological empowerment have been related to employee perceptions that the purported participation is taking place in an environment in which management has not relinquished its central control functions. Employees may not believe that their participation makes any difference, so their response to participation could be passive without resulting improvement in performance. As Denison (1996) suggested, the culture advocated is expressed in values and assumptions must be supported by behaviors demonstrating a climate supportive of participation. Centralized decision making that takes precedence over participative teams will not support participative management.

The fourth reason has to do with the nature of teamwork itself. Some tasks do not lend themselves to success when performed by a team (Dow et al., 2013). The nature of care delivery is so complex that the conditions may not be suitable for supporting teamwork. If that is the case, the effectiveness of participative management could be questioned.

Participative management has been demonstrated as an important element in improving an organization's culture (Ariss, 2003; Grawitch, Ledford, Ballard, & Barber, 2009). Ariss reported that employee involvement in a company's decision-making and

problem-solving contributed to the organization's ability to create a sustainable improvement to its safety culture. Grawitch et al. found that employee involvement in decision-making provides a mechanism that supports practitioners' ability to influence change in an organization.

Some people disagree with the concept that participative management is always a good leadership style. For example, the effectiveness of participative management could depend on the culture of the organization as well as the employees' readiness to work in a participative environment (Mosadeghrad & Ferdosi, 2013). Effective leaders use more than one set of behaviors (Michel, Lyons, & Cho, 2011) so it is possible that participative management is effective when it is combined with other leadership behaviors and styles.

Numerous team-related interventions can be applied to improve a health care organization's safety culture. Two that apply to this study are work redesign and organization as well as structured tools and protocols (Pham et al., 2012). For example, work redesign and organization can involve changes to team composition and the manner of interaction. This could result in different levels of participation for AHPs or other team members. Structured tools and protocols could result in standardized interactions between team members. Once again, this could change the AHPs' involvement in decision making and problem solving.

Empowerment

Throughout the discussion of participative management, the term *empowerment* appeared frequently. Lee and Koh (2001) determined that empowerment includes behavior and perception. They defined empowerment as "the psychological state of a

subordinate perceiving four dimensions of meaningfulness, competence, self-determination, and impact…" (p. 686).

Behavior and perception enter the definition in that the subordinate's psychological state is dependent on his or her perception of the supervisor's behavior (Jiang et al., 2016). Empowerment in health care has been described as participation that is (a) engaged, (b) informed, (c) collaborative, (d) committed, and (e) intolerant of uncertainty (M. O. Johnson, 2011, p. 265). This study will investigate whether there is a relationship between structural empowerment (SEM), psychological empowerment (PEM), self-efficacy (SEF), and patient safety culture.

The importance of empowerment to this study is underscored by its inclusion as a Magnet Model component by the American Nurses Credentialing Center (ANCC) (2011). In the ANCC model, structural empowerment is one of four components that interact in nursing practice to influence superior outcomes. Although the Magnet Model only addresses nurses, the concept of empowerment was extended in this study to include other allied health professions that contribute to the care of a patient.

As noted in Chapter 1, one of the questions answered by this study is whether AHPs believe that physicians empower them to participate in decision-making and problem-solving at an appropriate level. The concept of empowerment as a management tool and imperative can be traced to the 1970s and 1980s (Kanter, 1977, 1993, 1989). Kanter explained how work environments that empower employees influence results at both the employee and organizational levels by differentiating between psychological empowerment at the individual level and structural empowerment at the organizational level.

Employee empowerment is considered to be a competency of *transformational leaders* (Jung & Sosik, 2002). Studies conducted by Jung and Sosik demonstrated that transformational leaders empower their followers, and that groups of workers who felt empowered were more effective. Studies of empowerment have focused on two levels -- leader actions and employee response to those actions (Srivastava, Bartol, & Locke, 2006).

In this study I considered physicians as leaders and investigated whether physicians' perceived collaborative behaviors empower AHPs. Sharing of knowledge is considered an empowering behavior and in this case, it is considered as an element of shared decision-making and problem-solving. Srivastava et al. (2006) found that empowering leaders had an effect on team efficacy, which in turn was positively related to performance.

Given the ANCC's (2011) model that shows structural empowerment affecting patient outcomes, it is not surprising that a body of nursing research addresses workplace empowerment. For example, a study of nurse leadership style demonstrated that empowerment mediated the relationship between the leader's style and self-rated performance (Wong & Laschinger, 2012). More generally, workplace empowerment of nurses has been found to be an antecedent to job satisfaction (Cicolini, Comparcini, & Simonetti, 2013). This relationship could lead to positive patient outcomes.

One implication of the initial Institute of Medicine findings (Kohn et al., 2000) and the relative lack of change in the years following the report (Denham et al., 2005; Leape et al., 2009; Leape & Berwick, 2005; Pronovost, Miller, & Wachter, 2006; Wachter, 2004; Wachter, 2010a) is that hospitals need to find innovative ways to address

the problem. This underscores the importance of empowerment in that structural and psychological empowerment have been found to predict innovative behavior in nurses (Knol & van Linge, 2009). Innovative behaviors in nurses and AHPs was necessary to discover and address the patient safety concerns that were reported by the IOM and continue to the present.

Structural Empowerment (SEM)

Empowerment is the ability to get things done in an organization, and structural empowerment is based on an employee's position in the organization (Knol & van Linge, 2009). It comprises both formal power that relates to position and informal power that relates to an employee's network of internal and external contacts. Structural empowerment facilitates the employee's access to opportunity, information, support, and resources. People who are empowered are able to get things done as expected.

Much of the empirical study of workplace empowerment in health care has been with nurses (Laschinger, Finnegan, Shamian, & Wilk, 2003). Regardless of other outcomes, nurses are aware that doing their job well relates directly to patient satisfaction and patient outcomes. Although they have not been studied as extensively as nurses regarding structural empowerment have, the same considerations should apply to AHPs. Kanter characterized structural empowerment (1977, 1993) as being based on how the employee perceives actual conditions in the workplace and the effect the conditions have on the ability to succeed. Because there is so much overlap between a nurse's and an AHPs' desired outcomes, the presence or absence of structural empowerment in AHPs should have similar relationships with psychological empowerment and self-efficacy as it does with nurses.

Poor nursing management practices and negative working conditions have been identified as threats to patient safety (Armstrong & Laschinger, 2006). Conversely, Armstrong and Laschinger found that there was a strong relationship between structural empowerment and nurses' perception of patient safety culture. This suggests that organizations that empower their nurses are supporting safe patient care.

Evidence-based practice (EBP) by nurses has been identified as one solution to prevent adverse events in hospitals, and there is a relationship between nurse empowerment and EBP. Nurses who feel empowered are more likely to apply EBP (Brown, Wickline, Ecoff, & Glaser, 2009; Wilson et al., 2015). Empowerment has been found to eliminate barriers to nursing evidence-based practice such as lack of authority to change practice and unclear workplace expectations. This could be extended to AHPs, but I performed a keyword-based search of the literature that did not find research to support this extension.

As noted above, poor nursing management practices can be threats to patient safety. To that end, empowering nurse leaders can be just as important to the safety culture as empowering nurses who are providing direct care. In fact, it has been found that informal and formal power enhanced the leaders' effectiveness and, in turn, increased their empowerment of staff who reported to them (Upenieks, 2002). This supports Kanter's (1981, 1982) contention that participation can be enhanced if leaders are properly prepared to be supportive.

Psychological Empowerment (PE)

Psychological empowerment is derived from the fundamental personal convictions that employees have about their role in the organization (Knol & van Linge,

2009). It implies that people have some control over their own jobs and is viewed from the individual's perspective rather than from the organization's (Spreitzer, 1996). Spreitzer suggested that psychological empowerment comprises meaning, competence, self-determination, and impact. In other words, (a) there is a fit between role and behaviors, (b) there is a belief in ability to do the job, (c) there is choice in how to do things, and (d) there is belief in ability to influence outcomes. The relationship between structural and psychological empowerment is that in order for employees to perceive that they are psychologically empowered, the organization must exhibit structural empowerment.

Psychological empowerment of a hospital's leadership is important if the hospital is to establish, nourish, and perpetuate a patient safety culture. Psychological empowerment has been found to be linked with leadership and inspiration (Spreitzer, Janasz, & Quinn, 1999); two characteristics that support a leader's change orientation. This has found to be the case with mid-level managers, which is important because the managers who have the most impact on direct care nurses will most likely be at that level.

Three elements of psychological empowerment -- autonomy, competence, and meaning – have been found to mediate the relationship between high performance and perception of high quality care (Bonias et al., 2010). This finding of Bonias et al. is important for two reasons. First, it explicitly demonstrates a relationship between psychological empowerment and patient safety. Second, their study sample included non-nurse clinical employees; not just nurses. As a result, the assumption was supported that AHPs will have links similar to nurses between empowerment and patient safety outcomes.

High performance work systems encompass a number of elements such as shared decision making and information sharing that relate to psychological empowerment (Leggat, Bartram, Casimir, & Stanton, 2010). As was the case in the study conducted by Bonias et al. (2010), psychological empowerment was found to have a significant effect on the quality of patient care. Bonias et al. also concluded that their results applied to all hospital employees and not just clinicians.

Structural empowerment has been shown to influence the degree to which employees believe they are psychologically empowered. Although structural empowerment was not explicitly mentioned, a study of psychological empowerment conducted across a wide spectrum of positions investigated the relationship between psychological empowerment and factors typically associated with structural empowerment (Liden, Anand, & Vidyarthi, 2016; Liden et al., 2000). An important finding was that empowerment results in higher levels of job performance. In addition, Liden et al. (2016) found that it is not only leaders who can influence an employee's feelings of empowerment. An employee's relationship with co-workers can also affect psychological empowerment.

As has been noted, empowerment is an important factor affecting innovation in nurses (Knol & van Linge, 2009). Zhang and Bartol (Zhang & Bartol, 2010) demonstrated that psychological empowerment is linked to creativity (Zhang & Bartol, 2010), and that the link is moderated by leaders who encourage creativity. If employees are encouraged to be creative, it should have an effect on their support for innovation in organizational practices. If empowerment is linked to application of EBP (Brown et al., 2009), then application of EBP should also result in increased creativity.

There is an interesting distinction in the literature regarding psychological empowerment between psychological and organizational climate that could influence the way safety culture is managed. Psychological climate refers to individual employee perception and interpretation of the organizational environment and organizational climate refers to shared perception (Aloisio et al., 2018; Carless, 2004). The psychological empowerment elements of meaning and competence mediate the relationship between psychological climate and intrinsic task motivation. AHPs who are intrinsically motivated may be more likely to perform in a manner that supports enhanced patient safety.

Psychological empowerment does not exist in a vacuum. Its influence on performance can be moderated by the presence of other factors. For example, perceived organizational support (POS) moderates the relationship between empowerment and job performance (Butts, Vandenberg, DeJoy, Schaffer, & Wilson, 2009). This suggests that design of empowerment interventions must also consider the level of POS, because low POS could lead to outcomes less than what might otherwise be expected from implementing a psychological empowerment initiative.

Self-Efficacy (SEF)

One of the elements of psychological empowerment is employees' belief that they have the ability to influence outcomes (Jiang et al., 2016; Spreitzer, 1996). This reflects Bandura's definition of self-efficacy: "Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Within this definition, there is also a link to structural

empowerment. Bandura (1982) discussed the existence of organizational mechanisms that can deter even the most committed individuals from taking action.

Self-efficacy emerged from the concepts of social cognitive theory (SCT). SCT posits a triadic reciprocal causation between the employee, the organization in which the employee functions, and previous successful or unsuccessful performances of a behavior (Alessandri, Borgogni, Schaufeli, Caprara, & Consiglio, 2015; Stajkovic & Luthans, 1998). Self-efficacy is based on an employee's belief regarding how behaviors will affect the environment. People with high levels of self-efficacy believe that they are capable of effecting change. This triadic relationship suggests the relationship hypothesized in this study, that is, that structural empowerment influences psychological empowerment that in turn influences self-efficacy.

Leadership behavior that supports empowerment influences the development of inexperienced employees' ability to perform and produce desired outcomes (Ahearne, Mathieu, & Rapp, 2005; Seibert, Sargent, Kraimer, & Kiazad, 2016). As the inexperienced individuals become more proficient, their level of self-efficacy increases. This in turn results in improved outcomes for the individual and the organization.

Bandura (1997) pointed out that perceived efficacy mediates the manner in which other factors influence educational and career choices. In my study, I assumed that self-efficacy has a similar effect on people's perception of their ability to affect patient safety. I assumed that if people believe they are empowered to act in a manner that leads to safe outcomes, they are more likely to act accordingly.

Studies have shown that empowerment is significantly correlated with performance (Kirkman & Benson, 1999; Seibert, Silver, & Randolph, 2004). This has

been partially explained by employees' beliefs that that the organization has provided them with what they need to succeed, and that they have the competency to take advantage of what has been provided for them. Although the term self-efficacy is not explicitly used, the employees' belief that they can produce results exemplified the definition of self-efficacy.

Theoretical Synthesis

Collaborative relationships have been found to influence nurses' job satisfaction and correlate positively with patient outcomes (Schmalenberg et al., 2005a, 2005b). In a health care environment, collaboration can influence levels of empowerment that, in turn improve an employee's orientation to work (Bandura & Locke, 2003; G. Wang & Lee, 2009). The combination of collaboration and empowerment as perceived by employees become elements of an organization's culture and the culture's impact on patient safety (James et al., 2008; Kirk et al., 2007).

Two elements of Sashkin's (1976) participative management model apply to this study: (a) participation in decision making and (b) participation in problem solving. Participative management can also be considered an ethical imperative if it contributes to a hospital's culture of safety (Sashkin, 1984, 1986). An organization in which participative management is practiced is likely to be one in which employees perceive a high level of structural empowerment. Employees who feel empowered will believe they have the ability to influence outcomes (Spreitzer, 1996), which translates to high levels of self-efficacy (Bandura, 1982), which in turn is related to higher levels of performance (Kirkman & Benson, 1999; Seibert et al., 2004).

Review of Research Method

In this study I employed a quantitative cross-sectional web-administered survey-based design. The survey method is an effective way to study the relationship between variables (Punch, 2003; Simsek & Veiga, 2000; Umbach, 2005). In this study, the key predictor variables are AHP psychological empowerment, structural empowerment, and self-efficacy. The single criterion variable is patient safety culture. I administered the survey electronically using postcards, electronic recruiting, and SurveyMonkey with no pre-notification. This approach has been found to produce results that do not differ significantly from paper surveys or from surveys with pre-notification (Hart, Brennan, Sym, & Larson, 2009; Olsen et al., 2004; Simsek & Veiga, 2000).

I invited a purposive sample (Tongco, 2007) of AHPs representing occupational therapists and physical therapists were invited to participate. To ensure a sample large enough for an appropriate statistical power (Cohen, 1988; Hallahan & Rosenthal, 1996; Price, Dake, Murnan, Dimmig, & Sutoidem, 2005), I used three approaches to invite participation. These approaches will be described in Chapter 3. I used standard multiple regression, Pearson product-moment correlations, between-groups analyses of variance, and independent-groups t-tests to compare relationships and mean differences.

Summary and Conclusion

In this study I investigated whether AHPs' perception of their inclusion by physicians in decision making and problem solving contributes to a hospital's patient safety culture. Since the late 1990s, it has been noted that between 44,000 and 98,000 Americans die in hospitals as a result of preventable medical errors (Austin et al., 2014; Kohn et al., 2000; Meurer et al., 2006; Wachter & Shojania, 2004). It has been found that

a culture of safety in hospitals leads to a reduction in life-threatening, preventable medical errors (Comeau & Adkinson, 2007; Leonard & Frankel, 2006).

When an organization's employees are allowed to participate in decision making and problem solving, it improves structural empowerment (Kanter, 1977, 1993; Knol & van Linge, 2009), psychological empowerment (Spreitzer, 1996; Spreitzer et al., 1999), and self-efficacy (Bandura, 1997; Spreitzer, 1996; Stajkovic & Luthans, 1998). People who are empowered are able to get things done as expected (Knol & van Linge, 2009). In a hospital, getting things done as expected means that there are no preventable errors leading to patient deaths. In this study I addressed the associations between patient-safety culture and the relationships among those who deliver patient care services, as well as how those variables relate to the patient safety culture.

Chapter 3: Research Method

Introduction

The research that I reviewed, analyzed, and presented in Chapters 1 and 2 established the primary concepts of this study. Studies have shown that a strong patient-safety culture in a hospital reduces medical errors (Kohn et al., 2000; Wachter, 2004). Weak and inconsistent patient safety culture in hospitals is a problem because it has been linked to medical errors that can result in preventable patient deaths (Comeau & Adkinson, 2007; Leonard & Frankel, 2006).

In 1998, the Institute of Medicine reported that between 44,000 and 98,000 patients in U.S. hospitals died as a result of medical errors (Kohn et al., 2000; Meurer et al., 2006; Wachter, 2010b; Wachter & Shojania, 2004) based on two different studies with different measurement criteria. In the ensuing years, the health care industry has attempted numerous solutions to reduce these numbers, but reports in 2016 indicated that the number of annual deaths in the United States caused by medical error is closer to 251,000 (Makary & Daniel, 2016; Weeks, 2016).

The larger number reported in 2016 is not the result from failure of attempted solutions, but from better and more complete reporting. For example, the IOM report only studied accidental deaths in hospitals. The higher number includes deaths from medical harm that occurred in other health care settings (Jewell & McGiffert, 2009). The development of a patient safety culture in hospitals has been established as a systemic improvement that should reduce the number of preventable medical errors (Comeau & Adkinson, 2007; Leonard & Frankel, 2006).

Relationships between physicians and others have been studied as they relate to patient safety (Armstrong & Laschinger, 2006; Leggat et al., 2010; Scherer & Fitzpatrick, 2008). Most of the research has studied relationships between physicians and RNs, but there has been very little research studying the relationships between physicians and AHP. This quantitative cross-sectional survey study investigated how the relationship between physicians and AHPs affects the path relationship of AHP structural empowerment → AHP psychological empowerment → AHP self-efficacy → culture of safety (see Figure 2 for a more detailed illustration of the hypothesized path relationships).

AHPs were surveyed to assess their perception of their relationships with physicians and how those relationships predict patient safety cultures. The survey incorporated items from validated surveys that have been used to assess the RN-physician relationship and predict how that relationship might affect patient safety culture. I will describe the items and their sources more fully in the Materials and Measures section of this chapter.

Chapter 3 begins with an explanation of the research design used in this study along with a rationale for the design. Next, I describe the methodology with identification of the participant population, the sampling strategy, and description of the data collection methods. I developed a survey for this study using items adapted from similar surveys that assess relationships between physicians and nurses (Fong et al., 2008). I review the validation studies for these items in this chapter. Finally, I discuss the methods that I used in analyzing survey results.

Research Design and Rationale

The type of research design is a cross-sectional survey-based scheme using a survey that incorporates psychometrically sound items from instruments used to assess relationships between RNs and physicians. The survey method addresses the basis of quantitative research, that is, the study of relationships between variables (Punch, 2003; Umbach, 2005). In this case, the study was nonexperimental because the variation in variables were naturally occurring and not manipulated by me, the researcher. The entire survey is attached in the Appendix.

The survey was administered electronically using SurveyMonkey. Solicitations and correspondence were by postcard and electronic by email and posting on websites. It has been found that the electronic solicitation and collection of survey data is effective for researchers with minimal financial and human resources (Olsen et al., 2004) and provides results that closely match mail-based paper surveys in richness and validity (Olsen et al., 2004; Simsek & Veiga, 2000). It has also been found that it is not necessary to prenotify participants who are invited electronically (Hart et al., 2009). In their study, Hart et al. found an insignificant difference between response rates of participants who were and were not prenotified.

There has been very little research studying the relationships between physicians and AHPs, but there has been extensive study of the physician-RN relationships. I adapted many of the items in the survey from surveys used in that research. For example, four items were adapted from the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration (Hojat et al., 1999; Hojat et al., 2001), a survey that assesses physician-nurse interactions.

Theoretical Framework

As noted in Figure 2, the survey assessed relationships between four constructs: (a) structural empowerment, (b) psychological empowerment, (c) self-efficacy, and (d) patient safety culture. Each construct is further divided into factors that are more specific. The factors comprising patient safety culture are measured in survey items 37 to 74 (Singer et al., 2007). For the other constructs, the items for each factor have been determined based on the construct definitions in Chapter 2. In this study, patient safety culture is hypothesized as a predictive function of structural empowerment and psychological empowerment, with self-efficacy mediating both forms of empowerment.

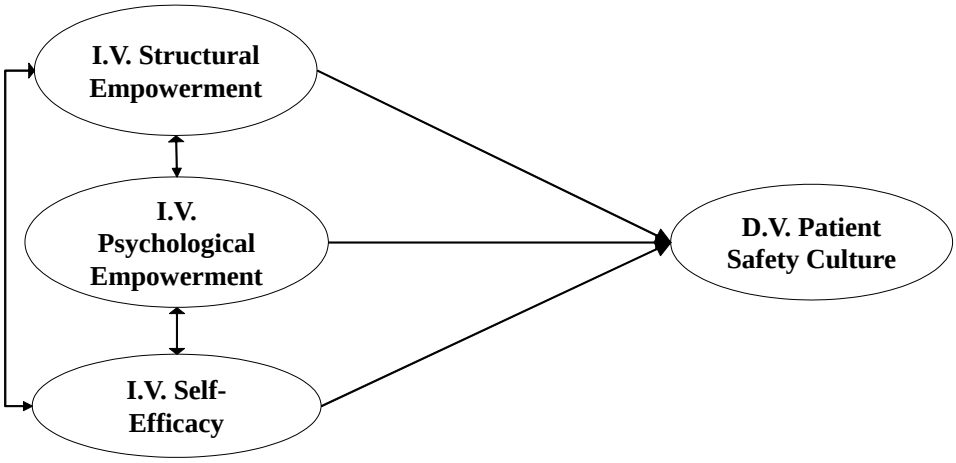

Figure 2. AHPs' structural empowerment, psychological empowerment, and self-efficacy relationships with patient safety culture.

Measures and Materials

I adapted twenty-eight of the survey items from instruments designed to assess relationships between physicians and nurses. I adapted them by rewording them so they would be applicable to AHPs instead of exclusively to nurses. Eight items are from the New General Self-Efficacy Scale (NGSE; Chen, Gully, & Eden, 2001). The 56 patient

safety culture questions are from the Patient Safety Climate in Health care Organizations survey (PSCHO; 2002).

I used the validated NGSE and PSCHO surveys in their entirety. I took the other 28 items from validated surveys, but the individual items have not themselves been validated. Other researchers have taken similar approaches to the design of their data-gathering instruments (Bennett, Banyard, & Garnhart, 2014; Fong et al., 2008; Hammerton, Zammit, Potter, Thapar, & Collishaw, 2014; Ottoni, Antoniolli, & Lara, 2012; Parks, Housemann, & Brownson, 2003). Although the adaptation methods in these studies do not exactly match the adaptation in this survey, they illustrate that others have used surveys and survey items outside of the context in which they were validated. Examples of how prior studies have used items that were not individually validated will be discussed later.

One of the studies investigated differences in physical activity in rural and urban adults (Parks et al., 2003). The study used a combination of questions from a number of different surveys, which is similar to my study. Also similar to my study, the data were self-report, although theirs was by telephone and mine were by postcard, email, and internet. The authors reported that some of their items were not systematically reviewed for validity and reliability; they were able to report statistically significant relationships between the factors being studied.

A second study looked at hospital quality performance reporting (Fong et al., 2008). The authors of this study used four databases to establish a composite score for their hospital quality data report. The study identified low correlation among the four databases, but they did find correlation between some of the measured factors and the

composite score. They identified correlation coefficients between .003 and .336 in pairwise comparisons between the four databases. A moderate correlation of .537 was found between the factor of hospital bed size and the composite score.

Hammerton et al. (2014) investigated suicide ideation in adolescent children of recurrently depressed parents. The authors created a scale from the Moods and Feelings Questionnaire (MFQ; Angold & Costello, 1987), an instrument that assesses depression in adolescents. Their data collection used a combination of MFQ items and clinically defined interview measures. They found that the items had a high internal consistency and reliable stability, and that there was construct validity when compared to previous studies.

A fourth study used items from three different assessments to investigate the association between Circadian preference and emotional and affective temperament (Ottoni et al., 2012). The authors did not discuss the validity of using a composite from individually validated instruments. Similarly, Ottoni et al. (2012) and Bennet et al., (2014) used scales that had been validated individually but had not been validated for use together by including eight validated scales and two open-ended questions to study barriers and facilitators of bystander intervention. The scales were administered at different times over the course of the study. Each scale was individually validated, but there was no discussion of the validity of using them together.

Nurses Opinion Questionnaire (NOQ)

I adapted eight items from the Nurses' Opinion Questionnaire (NOQ; Adams, Bond, & Arber, 1995; Dougherty & Larson, 2005). According to Dougherty and Larson (2005), the NOQ measures professional working relationships. Content validity of the

scale was determined using factor analysis, construct validity was established by comparing scores to observed characteristics, and construct validity was established by consistency between extracted factors and a priori grouping of items. Reliability was established as a result of a Cronbach's alpha of .81 and a test-retest correlation coefficient of 0.77

Practice Environment Scale of Nursing Work Index (PES)

I adapted three items from the Practice Environment Scale of Nursing Work Index (PES; Lake, 2002). The PES was developed using data from Magnet hospitals. A Magnet Hospital has been designated by the American Nurses Credentialing Center as meeting certain standards of excellence related to nursing best practices (Havens & Aiken, 1999). Based on their Magnet status, the hospitals were known to have shared organizational characteristics. Content validity was established using factor analysis and construct validity was determined based on comparison with interview responses. Reliability was established based on a Cronbach's alpha of .82.

Collaboration and Satisfaction about Care Decisions Scale (CDS)

I adapted four items from the Collaboration and Satisfaction about Care Decisions Scale (CDS; Judith G. Baggs, 1994). Collaboration and satisfaction are measured at general levels of practice and at the level of specific decision. Content validity for this instrument was established through literature reviews and by factor analysis that found a single factor to explain 75% of the collaboration variance. Reliability was established by a Cronbach's alpha of .95.

Collaborative Practice Scale (CPS)

I adapted nine items from the Collaborative Practice Scale (CPS; Weiss & Davis, 1985). The CPS is based on a model first proposed by Ruble and Thomas (1976) that establishes five preferred modes of conflict management behavior. The instrument measures collaborative practices of physicians and of nurses. Construct validity was established using factor analysis, concurrent validity was established based on Spearman coefficients that showed different results for the physician and nurse scales, and predictive validity demonstrated that the CPS scores predicted physician behavior. Reliability was established based on Cronbach's alphas of .79 on the nurse scale and .6 on the physician scale.

Jefferson Scale of Attitudes toward Nurse-Physician Collaboration

I adapted four items from the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration (Jefferson; Hojat et al., 1999). The Jefferson scale contains 20 items addressing various physician-nurse interactions. One interesting feature of the Hojat et al. psychometric study is that the participants in the study were medical and nursing students, not fully practicing professionals. Factor analysis established the construct validity for the instrument. Reliability was established by a Cronbach's alpha of .85.

New General Self-Efficacy Scale

I used eight items taken directly from the New General Self-Efficacy Scale (NGSE; Chen et.al., 2001) with no adaptation. Chen and his colleagues (Chen, Gully, & Eden, 2001) found that the scale is theory-based, unidimensional, internally consistent, and reliable over time. Reliability was established by administering the scale to the same

population at three different times. The test-retest reliability scores were $r_{t1\text{-}t2}$ = .65, $r_{t2\text{-}t3}$=.66, and $r_{t1\text{-}t3}$ = .62. Content validity was established as a result of review by two independent groups of industrial and organizational psychology graduate and undergraduate students. Those reviews also established discriminant validity, as the panels found the NGSE items to be more consistent with the general self-efficacy construct than the items on an older scale that also assesses situation-based self-efficacy.

In addition to the validation of the entire scale, the individual items in the NDSE were also found to be valid (Scherbaum, Cohen-Charash, & Kern, 2006). Scherbaum et al. used item response theory to demonstrate that all of the items in the scale demonstrate acceptable psychometric properties. The NGSE displayed the most desirable psychometric properties of the three scales examined in their study.

Patient Safety Climate in Health care Organizations

The items measuring patient safety culture are from the Patient Safety Climate in Health Care Organizations survey (PSCHO; 2002). Validation was established using the results of a multitrait analysis of 8,535 responses to the survey (Singer et al., 2007). The analysis found a discriminant validity quotient from this analysis was 97%. Reliability was established by Cronbach's alpha coefficients for the nine scales in the instrument that ranged from .5 to .89.

Table 2 depicts the reliability ratings for the seven instruments used as sources for survey items.

Table 2

Cronbach's Alpha Scores for Source Instruments

Instrument	Cronbach's alpha
Nurses Opinion Questionnaire	.81
Practice Environment Scale of Nursing Work Index	.82
Collaboration and Satisfaction about Care Decisions Scale	.95
Collaborative Practice Scale	Physician Scale - .60 Nurse Scale - .79
Jefferson Scale of Attitudes toward Nurse-Physician Collaboration	.85
New General Self-Efficacy Scale	Not reported[a]
Patient Safety Climate in Health care Organizations	Nine scales measured with range of .5 to .89

[a] Test-retest reliability scores for three administrations of the instrument were .65, .66, and .62.

Survey Items and Analysis Factors

I selected items 1 – 28 in the survey from the source surveys based on their correspondence to definitions of the four structural empowerment sub-factors and two psychological empowerment sub-factors. The following paragraphs describe the definitions of each sub-factor and the survey items associated with each.

Structural Empowerment – Roles One element of structural empowerment is the extent to which individuals are able to actively shape their work roles (Daniels & Guppy, 1994; Leggat et al., 2010). Items 1, 12, 26, 27, and 28 are intended to measure this factor.

Structural Empowerment – Teamwork Structural empowerment includes problem solving advice from colleagues and access to human resources to assist in achieving results (Kanter, 1977, 1993; Leggat et al., 2010). The ability for teams to make

decisions and make organizational contributions are also considered (Kirkman, Rosen, Tesluk, & Gibson, 2004). The survey assesses participants' belief that these elements, classified as teamwork, are present and are measured by items 2, 3, 7, 8, 9, and 15.

Structural Empowerment – Relationships can be considered as a consequence of teamwork (Kirkman & Benson, 1999) in that teamwork fosters heightened relationships among members. In addition, poor relationships with co-workers has been found to be an indication of lack of empowerment (H. Laschinger, Leiter, Day, & Gilin, 2009). Items 10, 11, and 13 in the survey measure this factor.

Structural Empowerment – Professional Practice An element of structural empowerment that appears in almost every definition of the construct is the ability to practice with autonomy and to be accountable for results (Kirkman & Benson, 1999; Kirkman et al., 2004; Lankshear, Kerr, Laschinger, & Wong, 2013; H. Laschinger et al., 2009; Seibert et al., 2004; Wallace, Johnson, Mathe, & Paul, 2011). Survey items 4, 5, 6, and 14 measure this factor.

Psychological Empowerment – Professional Practice Zimmerman (Zimmerman, 1995) described an intrapersonal component of psychological empowerment that included the individual's perceived competence. This factor often manifests as self-confidence (Cattaneo & Chapman, 2010). The items in the surveying measuring this factor are 16, 19, 20, 21, 22, and 24.

Psychological Empowerment – Assertiveness Zimmerman's (1995) description of psychological empowerment also included an interactional component that included the ability to mobilize resources. According to Zimmerman, the interactional skills enable

individuals to exert control. Others have referred to this as self-determination (Knol & van Linge, 2009). The survey items that measure this factor are 17, 18, 23, and 25.

Sampling

I invited a purposive sample (Tongco, 2007) of AHPs from two professional groups – occupational therapists and physical therapists - to participate. Purposive sampling has been defined as the "the deliberate choice of an informant due to the qualities the informant possesses" (Tongco, 2007, p. 147). In this case, I selected and invited the participants invited in three ways. First, I sent postcards to a mailing list of 1,500 professionals purchased from professional societies. When the mailing did not receive an adequate response, I placed invitations to participate on the professional societies' websites. Finally, leadership in the Northeastern University Department of Physical Therapy, Movement, and Rehabilitation Sciences used their contacts for online and email invitations. I collected data using an electronic survey, and I obtained informed consent using a check-off on the first page of the online survey.

Statistical Power and Sample Size

Statistical power has been defined as "the ability to find significant differences when differences truly exist" (Mitchell & Jolley, 2004, p. 557). I selected the three methods used to solicit participation to ensure that there was a large enough sample to support the statistical power of the analysis. To ensure a sample large enough for an appropriate statistical analysis (Cohen, 1988; Hallahan & Rosenthal, 1996; Norman, 2010; Price et al., 2005), a sample size of 100 was required. The sample size should ensure that the results were useful to detect significant differences within the sample. According to a table provided by Templin (2007, p. 23), an effect size of .05 and power

of .80 with a significance level of $\alpha = .05$ could be achieved with a sample size of $n = 76$ for a one-way between-groups analysis of variance.. The numbers in the table were calculated using GPOWER (Erdfelder, Faul, & Buchner, 1996).

Data Analyses

The problem addressed in this study was determination of whether physicians' collaborative behavior that supports or decreases empowerment in turn compromises or enhances overall patient safety culture. Based on the conceptual framework that psychological empowerment, structural empowerment, and self-efficacy predict a patient safety culture, the following three hypotheses were established to test the path model depicted in Figure 2:

H_{01}: There is no relationship between structural empowerment, psychological empowerment, self-efficacy and patient safety culture as evidenced by Pearson Product-Moment Correlation analysis of the results of the survey.

H_{a1}: There is a relationship between structural empowerment, psychological empowerment, self-efficacy, and patient safety culture as evidenced by Pearson Product-Moment Correlation analysis of the results of the survey.

H_{02}: AHPS' structural empowerment, psychological empowerment, and self-efficacy do not predict patient-safety culture as evidenced by simple multiple regression analysis of the results of the survey.

H_{a2}: AHPS' structural empowerment, psychological empowerment, and self-efficacy predict patient-safety culture as evidenced by simple multiple regression analysis of the results of the survey.

H_{03}: There are significant mean differences based on responders' age, gender, length of service, and specific allied health profession as evidenced by independent groups *t*-tests and one-way between groups analysis of variance of the results of the survey.

H_{a3}: There are no significant mean differences based on responders' age, gender, length of service, and specific allied health profession as evidenced by independent groups *t*-tests and one-way between groups analysis of variance of the results the results of the survey.

Statistical Analyses

I analyzed data for this study using the Statistical Package for the Social Sciences – v25.0 (SPSS, 2018). To test the first hypothesis that there is a relationship between structural empowerment, psychological empowerment, self-efficacy and patient safety culture as evidenced by the results of the survey, I performed Pearson Product-Moment Correlations. I performed a standard multiple regression analysis to test the second hypothesis that AHPS' structural empowerment, psychological empowerment, and self-efficacy predict patient-safety culture as evidenced by the results of the survey. To test the third hypothesis that there are significant mean differences for structural empowerment, psychological empowerment, and self-efficacy as a function of gender, allied health profession, age category, and years of service category, I performed independent groups *t*-tests and one-way between groups analyses of variance (Green & Salkind, 2005; Tabachnick & Fidell, 2007).

Ethical Issues

The participants in this study were AHPs representing two professions who work in hospitals. I surveyed them using a web-based survey and provided protection using

standard guidance on the ethical practice of industrial-organizational psychology (American Psychological Association, 2002; Lefkowitz, 2003; Lowman, 2006). A key element of protecting the participants in a study of this nature is ensuring that responses were anonymous and confidential. I ensured both elements in three ways: (a) the survey was conducted online using SurveyMonkey, a system that allows complete anonymity and confidentiality of responses; (b) respondents were asked for demographic information for comparison purposes, but they were not asked to identify themselves; and (c) the data will only be available in aggregate form, not as raw data.

Another key element of participant protection is informed consent (APA, 2002; Ilgen & Bell, 2001). The introduction to the survey contains all of the information the respondents needed about the nature of the study as well as contact information for the researcher, the dissertation committee chair, and a Walden IRB representative. All of the protections were ensured by an initial IRB review (approval # 10-25-17-0030626) as well as follow-up reviews each time a collection method was added.

Standard ethical considerations also apply to the use of the work of others (APA, 2002; 2010). In this study, I adapted all of the survey items from existing surveys. I obtained letters of authorization from the owners of all surveys from which items are adapted or from the Copyright Clearing House and those surveys are appropriately cited.

Chapter 4

Introduction

Weak and inconsistent patient-safety culture in hospitals is a problem because it has been linked to medical errors that can result in preventable patient deaths (Comeau & Adkinson, 2007; Leonard & Frankel, 2006). In this nonexperimental, quantitative study, I investigated whether structural empowerment, psychological empowerment, and self-efficacy influence patient-safety culture (Creswell, 2009). The nonexperimental approach is appropriate because I was looking for relationships and not causality (Mitchell & Jolley, 2004)

This chapter includes presentation of the statistical results from hypotheses related to three research questions: (a) Are structural empowerment, psychological empowerment, self-efficacy, and patient-safety culture related to each other, (b) Do structural empowerment, psychological empowerment, and self-efficacy predict patient-safety culture, and (c) Are there significant mean differences on measures of structural empowerment, psychological empowerment, and self-efficacy based on responders' age, gender, length of service, and specific allied health professions (Armstrong & Laschinger, 2006; Kutney-Lee et al., 2016). A total of 100 participants responded to the survey and after review, I used 95 of those surveys in the analyses. I eliminated because the respondents left a number of items blank.

Data Collection

A purposive sample of physical therapists working in hospitals was invited to respond to an online survey during a 5-month period (Tabachnick & Fidell, 2007). The initial mailing to 1500 occupational therapists and physical therapists yielded a result of

only 33 responses. I modified the data collection methodology was modified to include electronic solicitation of responses from (a) members of the Academy of Acute Care Physical Therapy, (b) members of the American Occupational Therapy Association, and (c) alumni of the Northeastern University Department of Physical Therapy, Movement and Rehabilitation Sciences.

Measures and Materials

I collected data using an electronically-administered 84-question survey, adapted specifically for this study, which incorporated items from several established scales into a single instrument (Punch, 2003). The specific scales included are the Nurses' Opinion Questionnaire (NOQ; Adams et al., 1995; Dougherty & Larson, 2005), Practice Environment Scale of Nursing Work Index (PES; Lake, 2002), the Collaboration and Satisfaction about Care Decisions Scale (CDS; Judith G. Baggs, 1994), Collaborative Practice Scale (CPS; Weiss & Davis, 1985), Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration (Hojat et al., 1999), New General Self-Efficacy Scale (NGSE; Chen et.al., 2001), and the Patient Safety Climate in Health care Organizations survey (PSCHO; 2002). I discussed psychometric properties of the instruments from which the items were derived in the Chapter 3 Measures and Materials section.

I analyzed data for this study using the Statistical Package for the Social Sciences – v25.0 ("SPSS," 2018) . Missing values for all variables included nine missing cells, randomly distributed throughout the entire survey. Because the missing data were minimal and random, I replaced each missing response using the median replacement technique (Tabachnick & Fidell, 2007). Of the 100 received responses, five were removed because of the number of missing responses. In addition, alpha analyses in

SPSS found 15 negative values. I reviewed the items were reviewed determined that they negative statements. I reverse coded those items and conducted new alpha analyses. This resulted in no negative values.

All scales had distribution characteristics that were acceptable to skewness (< 1) and kurtosis (< 2) according to the guidance found in Tabachnick and Fidell (2007). I performed a visual inspection of histograms for each variable to assess the shape of their distributions against a normal curve, and each variable distribution approximated a normal curve. Table 3 presents each of the scales and descriptive statistics of central tendency, variability, distribution, and reliability using Cronbach's alpha.

Table 3

Central Tendency, Standard Deviation, Skewness, Kurtosis, Reliability

Scale	*M*	*SD*	Median	Skewness	Kurtosis	Reliability
Structural empowerment	58.75	9.29	60.00	-.33	-.01	.86
Psychological empowerment	32.39	4.54	32.00	-.30	-.10	.73
Self-efficacy	33.61	3.53	32.00	.22	-.60	.86
Patient-safety culture	129.98	18.58	127.00	-.30	.54	.92

Note. $N = 95$.

Results

Descriptive Results

Demographic descriptors consisted of gender, age, length of service, and allied health profession. The results are presented in Table 4. Of the 95 participants, there were 81 women (85.3%) and 14 men (14.7%). There were three age groups represented in the results (a) 25 – 34, (b) 35 – 44, and (c) 45 and older. I included a fourth category of 25 and younger in the survey but none of the respondents were in that category. There were 38 respondents in the 25 – 34 group (40%), 20 in the 35 – 44 group (21%), and 37 in the

45 and older group (39%). For years of service, 26 participants had 1 – 5 years (27.4%), 16 had 6 – 10 years (16.8%), 11 had 11 – 15 years (11.6%), 12 had 16 to 20 years (12.6%), and 30 had 21 years or more (31.6%). The professional groupings were 74 physical therapists (77.9%) and 21 occupational therapists (22.1%).

Table 4

Frequencies and Percentages for Demographic Variables

	n	%
Gender		
Women	81	85.3
Men	14	14.7
Age		
25 – 34	38	40
35 – 44	20	21
45 and older	37	39
Years of Service		
1 – 5	26	27.4
6 – 10	16	16.8
11 – 15	11	11.6
16 – 20	12	12.6
21 or more	30	31.6
Allied Health Profession		
Physical Therapists	74	77.9
Occupational Therapists	21	22.1

Inferential Statistical Results

Research Question 1

To test the hypothesis that there are relationships between structural empowerment, psychological empowerment, self-efficacy, and patient safety culture, I performed Pearson product moment correlations. The correlations are listed in Table 5.

Table 5

Pearson Product-Moment Correlation Between Scales

	1	2	3	4
1. Structural empowerment	--			
2. Psychological empowerment	.11	--		
3. Self-efficacy	.14	.30**	--	
4. Patient-safety culture	.35**	.00	.52**	--

** $p < .01$.

I found Patient Safety culture to have a significant positive correlation with structural empowerment ($r = .35$, $r^2 = .12$, $p < .01$) and self-efficacy ($r = .52$, $r^2 = .27$, $p < .01$). In addition, I found that self-efficacy had a significant positive correlation with psychological empowerment ($r = .30$, $r^2 = .09$, $p < .01$). The alternative hypothesis was supported.

Research Question 2

To test the hypothesis that AHPs' structural empowerment, psychological empowerment, and self-efficacy do not predict patient safety culture, I performed multiple regression analysis to determine whether the predictor variables of structural empowerment, psychological empowerment, and self-efficacy would predict patient-safety culture. See Table 6 for the nonstandardized regression coefficients (B), standardized beta weights (β), R, *r*-squared, and adjusted *r*-squared.

Table 6

Multiple Linear Regression of Structural Empowerment, Psychological Empowerment, and Self-Efficacy on Patient-Safety Culture

	B	Standard Error	*B*
(constant)	22.71	17.71	
Structural empowerment	.59	.17	.30**
Psychological empowerment	-.78	.35	-.19
Self-efficacy	2.81	.46	.54**

** $p < .01$; R = .62; $r^2 = .38$; Adjusted $r^2 = .36$

The R for this regression analysis (R = .68) was statistically significant, $F(3,91) = 18.71$, $p < .01$. The three predictor variables accounted for 36.1% of the variability in patient-safety culture ($r^2 = .38$). In addition, it was found that self-efficacy significantly predicted patient-safety culture ($\beta = .54$, $p < .01$) as did structural empowerment ($\beta = .30$, $p < .01$). The model demonstrated that psychological empowerment did not significantly predict patient-safety culture ($\beta = -.19$, $p > .01$). The alternative hypothesis that the predictor variables predict patient-safety culture was accepted.

Research Question 3

To test the hypothesis that there are no significant mean differences based on responders' age, gender, length of service, and specified allied health profession (AHP), I analyzed the mean differences based on gender and AHP by performing independent groups *t*-tests and the mean differences based on age and years of service by performing one-way between groups analysis of variance. For all *t*-tests and ANOVAs, I assumed equal variance ($p > .05$), except patient-safety culture score for years of service ($p = .02$). None of the mean differences were statistically different at the .01 level. I used the .01

convention as a conservative measure to control for small sample size in the independent variable.

The following tables present the results of the tests for mean differences.

Table 7

Structural empowerment, psychological empowerment, self-efficacy, and patient-safety culture based on gender

	t	*p*	Cohens *d*
Structural empowerment	1.36	.18	.38
Psychological empowerment	1.05	.30	.31
Self-efficacy	.61	.55	.17
Patient-safety culture	-2.12	.04	-.61

p = ns.

Table 8

Structural empowerment, psychological empowerment, self-efficacy, and patient-safety culture based on position

	t	*p*	Cohens *d*
Structural empowerment	1.96	.05	.49
Psychological empowerment	.61	.55	.15
Self-efficacy	.62	.52	.15
Patient-safety culture	-.51	.61	-.13

p = ns.

Table 9

Structural empowerment, psychological empowerment, self-efficacy, and patient-safety culture based on age

	f	*p*	η^2
Structural empowerment	.08	.58	.01
Psychological empowerment	.01	.99	.00
Self-efficacy	.48	.62	.01
Patient-safety culture	2.07	.13	.04

p = ns.

Table 10

Structural empowerment, psychological empowerment, self-efficacy, and patient-safety culture based on years of service

	f	*p*	η^2
Structural empowerment	.1.65	.17	.07
Psychological empowerment	.38	.17	.02
Self-efficacy	.39	.17	.02
Patient-safety culture	.31	.87	.01

p = ns.

Summary of Findings

I performed Pearson Product-Moment correlation to test the first hypothesis that there is no relationship between structural empowerment, psychological empowerment, self-efficacy, and patient safety culture (Schmalenberg et al., 2005a, 2005b). Structural empowerment and self-efficacy had a significant positive correlation with patient-safety culture and psychological empowerment had a significant positive correlation with self-efficacy, but psychological empowerment did not have a significant correlation with patient safety culture. Because of the positive correlations that I did find, the alternative hypothesis that there were relationships was accepted.

I performed a multiple regression analysis to test the second hypothesis that AHPs' structural empowerment, psychological empowerment, and self-efficacy do not predict patient safety culture (Schmalenberg et al., 2005a, 2005b). On an individual variable level, structural empowerment and self-efficacy do predict patient-safety culture, but psychological empowerment does not. Because the three predictor variables predict patient safety culture, the alternative hypothesis was accepted.

I performed independent groups *t*–tests and one-way between groups analysis of variance to test the third hypothesis that there are no significant mean differences based on responders' age, gender, length of service, and specified allied health profession (Schmalenberg et al., 2005a, 2005b). I found no mean differences, so I rejected the alternative hypothesis that there would be mean differences. There is no difference in the way that age, gender, length of service, and specified allied health profession are related to patient-safety culture (Collette et al., 2017; Ghahramanian, Rezaei, Abdullahzadeh, Sheikhalipour, & Dianat, 2017; Thornton et al., 2017).

In Chapter 5, I discuss the findings, recommendations for future research, and the implications for the health care industry and positive social change.

Chapter 5: Discussion

Introduction

In this study, I have attempted to determine whether a relationship exists between structural empowerment, psychological empowerment, self-efficacy and perceived patient-safety culture. Positive patient-safety culture in hospitals has been found to improve patient outcomes through reduction of adverse events (Brilli et al., 2013; Mardon et al., 2010). Negative patient-safety culture has been identified as a contributor to more than 251,000 deaths in U.S. hospitals caused by medical error (Makary & Daniel, 2016; Weeks, 2016).

Research has linked physicians' participative and collaborative behaviors with nurses to the nurses' empowerment and self-efficacy (Dechairo-Marino et al., 2001; Hearld et al., 2008; Larson, 1999; Orchard et al., 2009; Teng et al., 2009; Wagner & Bear, 2009). In addition, nurses' empowerment and self-efficacy have been linked to a hospital's patient-safety culture (Ammouri et al., 2015; Kirwan et al., 2013). The literature does not address whether physicians' behaviors are linked to allied health AHPs' empowerment and self-efficacy or how that is related to patient-safety culture, and in this study, I address that gap.

The data for this study was collected from a purposive sample of AHPs ($N = 95$) in two specific professions: physical therapists and occupational therapists. I used a purposive sample because it was based on a deliberate choice of respondents based on a specific quality: their profession (Tongco, 2007). My findings in this survey-based quantitative study indicate that patient-safety culture has a significant positive correlation

with structural empowerment and self-efficacy and that self-efficacy has a significant positive correlation with psychological empowerment. I also found that structural empowerment and self-efficacy significantly predict patient-safety culture. Finally, the results showed no significant mean differences based on responders' age, gender, length of service, or specified AHP.

Interpretation of the Findings

As indicated in Chapter 4, two of the three alternative hypotheses were accepted and the third was rejected. In respect to the first hypothesis that there are relationships between structural empowerment, psychological empowerment, self-efficacy, and patient-safety culture the findings of significant relationships between structural empowerment and self-efficacy matched similar findings reported for nurses (Ammouri et al., 2015; Kirwan et al., 2013; Orchard et al., 2009; Wagner & Bear, 2009). Although the survey results did not indicate a relationship between psychological empowerment and patient-safety culture, the results did demonstrate a significant correlation between psychological empowerment and self-efficacy. This supports the theory that individuals' belief that they are in control enhances their self-efficacy (Bandura & Locke, 2003).

Regarding the second hypothesis, AHPs' structural empowerment, psychological empowerment, and self-efficacy together significantly predicted patient-safety culture. This illustrates that the relationship between physicians and AHPs has a similar relationship to patient-safety culture as the relationship between physicians and nurses (Schmalenberg et al., 2005a, 2005b). The results were similar to the first hypothesis in that structural empowerment and self-efficacy as individual predictor variables predicted patient-safety culture, but psychological empowerment did not.

The third hypothesis is that there are differences between how certain demographic characteristics relate to patient safety culture. The specific demographics I tested in this study were age, gender, years of service, and specific allied health profession. In contrast to research that showed that there are differences (Singer, Falwell, et al., 2009; Singer, Gaba, et al., 2009), I did not find mean differences between demographic characteristics.

Patient Safety Culture and Predictable Events

The findings that AHPs' structural empowerment, but not psychological empowerment, correlates with and predicts patient culture is similar to the evolution in findings regarding nurses. An early study reported that psychological empowerment of nurses as well as other clinical professionals was linked to patient safety (Bonias et al., 2010). More recent studies have demonstrated the link between structural empowerment and patient-safety culture (D'Innocenzo, Luciano, Mathieu, Maynard, & Chen, 2016; Goedhart, Oostveen, & Vermeulen, 2017). Other studies have supported the results that demonstrate a relationship between psychological empowerment and structural empowerment (DiNapoli, O'Flaherty, Musil, Clavelle, & Fitzpatrick, 2016). What follows next is an analysis of the overall findings of this study within the context of its scope and theoretical framework.

A major driver for conducting this study was the link between patient-safety culture and preventable events, particularly deaths, in hospitals. As noted in Chapter 2, stronger patient-safety culture correlates with better patient outcomes (Schmalenberg et al., 2005a, 2005b). Furthermore, relationships exist between patient-safety culture and outcomes at the hospital and nursing unit level (DiCuccio, 2015). Although I did not

include nurses or specific outcomes in this study, I investigated patient-safety culture in relationship to certain allied health professions. Because of the nature of the sample, the findings expand on DiCuccio's in that they are not limited to individual hospitals or units. Because these findings are not limited to nursing or to levels, they provide broader evidence of a relationship between empowerment, self-efficacy, and patient-safety culture.

One of the clear findings from this study is that there is no mean difference in the AHP sample in terms of age, gender, professional specialty, or years of service. Evidence in literature suggests that this is not always the case. For example, Matziou et al. (2014) found that physicians' age, gender, and years of experience significantly affected their communication and collaboration with nursing staff. I will discuss this in further detail in the Limitations and Recommendations sections of this chapter.

Gap in Literature

In this study, I addressed the associations between patient-safety culture and the relationships among those who deliver patient care services, particularly physicians and AHPs, as well as how those variables relate to the patient safety culture (Dobrzykowski & Tarafdar, 2015; Nembhard & Edmondson, 2006; Tucker et al., 2007). A gap in the literature exists with regard to AHP attitudes as they relate to patient safety and positive patient outcomes are an infrequently studied phenomenon. Cohen et al. (2015) conducted a study demonstrating that this gap still exists. Cohen et al. included primary care and behavioral health clinicians in their study, but they did not address AHPs.

The positive, statistically significant correlation between AHPs' structural empowerment and psychological empowerment is similar to findings related to general

empowerment and to nurses' empowerment. Van Bogaert et al. (2016) reported that nurses who experienced structural empowerment also had experiences that fall under the definition of psychological empowerment, that is, a sense of perceived control, competence, and goal internalization (Menon, 1999). It also reflects the contention that employees will feel that they are psychologically empowered if the organization supports structural empowerment (Knol & van Linge, 2009).

Limitations

My study had numerous limitations, one of which was alluded to in the previous section. Matziou et al. (2014) reported that although the nurses in their study differed based on years of experience, physicians differed based on years of experience, age, and gender. This reflects the dyadic nature of their study, with nurses and physicians being the two sides of their dyad. In my study, AHPs and physicians make up two sides of the studied dyad, but I only surveyed AHPs. A dyadic study is more effective if both sides of the dyad are surveyed (LaPlaca, Lindgreen, & Vanhamme, 2018).

A second limitation is the population that I studied. The Association of Schools of Health Professions (ASAHP) lists more than 60 professions that are classified as allied health professions (Association of Schools of Health Professions, 2018). This study only included two of those professions – physical therapists (PTs) and occupational therapists (OTs). In addition, I only contacted PTs and OTs contacted if they were members of particular professional associations or affiliated with one university. It would be difficult to generalize these findings to all allied health professions because of the limited population. Because of small sizes for some of the independent variable groupings (e.g.,

14 males compared with 81 females in the independent groups *t* – test), I used the .01 significance level instead of the .05 significance level.

I conducted his study entirely at the individual respondent level. Much of the literature regarding patient-safety culture is at either the hospital or unit level (Farup, 2015; S.-H. Lee, Phan, Dorman, Weaver, & Pronovost, 2016; Makary & Daniel, 2016; McFadden, Stock, & Gowen, 2015). This difference limits the linkage of the study results to existing knowledge regarding the relationship between empowerment, self-efficacy, and patient-safety culture.

I modified the initial data collection method twice as a result of low response rate. As noted by Olsen et al. (2004), electronic collection of survey data is effective for researchers with minimal financial and human resources which was the case with this study. That convenience was offset by a disadvantage reported by Heiervang and Goodman (2011). Web-based surveys may result in low participation. In this case, the originally planned six-week data gathering cycle lasted almost 6 months

Recommendations

Future researchers should consider a number of possibilities suggested by this study. The first follows from what I have described in previous sections. Although I investigated how relationships between physicians and AHPs relate to patient-safety culture, I only surveyed AHPs for the study. The results of this study could be enhanced by studying both sides of the dyad (LaPlaca et al., 2018). In addition, the study only addressed two allied health professions so future studies that include the other side of the dyad should also include other professions.

The survey I used in this study was adapted from a number of other surveys. When this is done, it's possible that the validity and reliability of the original instruments might not pertain to my instrument (Creswell, 2009). Even if the psychometrics of the original instruments hold true, the statistical methods to establish validity and reliability might not be sufficient (Maul, 2017; McGrane & Nowland, 2017). If future researchers use this survey to conduct studies, they should consider using their data, as well as mine, to analyze the survey's psychometrics.

The literature cited in Chapters 1 and 2 described links between patient-safety culture as assessed by nurses and patient outcomes, that is, there is a relationship between positive patient-safety culture and reduced medical errors (Orchard et al., 2009; Teng et al., 2009; Wagner & Bear, 2009). Recent research has demonstrated a link between patient-safety culture, patient satisfaction, and outcomes (Smith, Yount, & Sorra, 2017). In this study I found links between AHPs empowerment, self-efficacy, and patient-safety culture but I did not assess whether patient-safety culture assessed by AHPs is linked to patient outcomes. It would be useful to conduct studies to determine whether that link exists for AHPs as it does for nurses.

Because this study was exploratory, I did not assess potential improvements from interventions. There are a number of possible interventions that could be studied to determine whether they improve the participant AHPs' perception of patient-safety culture. Research has demonstrated that collaboration between nurses and physicians has a positive impact on patient care (House & Havens, 2017; Larson, 1999). Reinders et al. (2018) found that reflective feedback regarding collaborative behaviors resulted in changes to those behaviors. Research that included reflective feedback to physicians and

AHPs about their collaborative behavior could improve that behavior. Such studies could then measure whether those improvements also resulted in increased levels of empowerment, self-efficacy, and positive patient-safety culture.

Since 2007, the American Council for Graduate Medical Education has required training on collaborative skills to be part of medical school and residency curricula (ACGME, 2007). The associated learnings are not always reflected in physicians' practice (Haidet et al., 2001; Haidet et al., 2002; Haidet et al., 2005; Mulder, ter Braak, Chen, & ten Cate, 2018). I will provide the results of this study to ACGME for them to determine whether it can support their education initiatives.

Senot et al. (2016) found that different professional perspectives affected collaboration between physicians and nurses. Their research discovered that physicians typically favored evidence-based standards of care referred to as a disease-focus challenge and that nurses were often hesitant to speak-up during their interactions with the physicians which they refer to as a hierarchical challenge. They discovered that nurse-led collaborative efforts mitigated the disease-focused challenge and that physician-led collaborative efforts mitigated the hierarchical challenge. In both cases, the result was improved collaboration. Similar studies with physicians and AHPs could determine whether there were opportunities to improve patient-safety culture through adjusting the leadership of collaboration teams.

Shared decision making, evidence-based medicine, and communication all affect the quality of patient care in hospitals (Delisle, Grymonpre, Whitley, & Wirtzfeld, 2016; Hoffmann, Montori, & Del Mar, 2014). Greenhalgh (2014) reported that problems with evidence-based medicine such as the overwhelming amount of available data could lead

to less than optimal results. Along with collaboration, shared decision making is an element of participative management (Budd et al., 2010; Huang et al., 2010; Sashkin, 1976). In today's health care environment, the increased use of electronic medical records (EMRs) has been found to be related to improved patient outcomes (Campanella et al., 2016). There is evidence to suggest that the use of data from the EMRs improves the quality of evidence-based decision making (Wang, Kung, Wang, & Cegielski, 2018). A study could include consideration of how AHPs could be used in the decision-making process and application of evidence-based medicine to ensure safer, more patient-outcome-centered use of EMR data.

Social Change Implications

Although it was originally reported in 1998 (Kohn et al., 2000), the health care industry continues to experience large numbers of preventable medical errors in hospitals. Medical errors include events such events misdiagnosis, wrong site surgeries, and medication errors (Southwick et al., 2015), but the major issue is that there are more than 251,000 deaths every year as a result of preventable medical errors (Kavanagh, Saman, Bartel, & Westerman, 2017; Makary & Daniel, 2016) . As reported in Chapters 1 and 2, there has been a great deal of research demonstrating that (a) relationships between physicians and nurses affect the nurses empowerment and self-efficacy, (b) high levels of nurse empowerment and self-efficacy relate to positive patient-safety culture, and (c) positive patient-safety culture relates to improved patient outcomes.

A study commissioned by the American College of Health Care Executives (American College of Healthcare Executives & IHI/NPSF Lucien Leape Institute, 2017) concluded that the entire organization must be engaged to ensure the establishment of an

appropriate culture of safety. My study was conducted to address the associations between patient-safety culture and the relationships among those who deliver patient care services, particularly physicians and AHPs, as well as how those variables relate to the patient safety culture (Dobrzykowski & Tarafdar, 2015; Nembhard & Edmondson, 2006; Tucker et al., 2007). I found that AHPs exhibit correlations between empowerment, self-efficacy, and patient-safety culture similar to those reported for nurses. The major social implication of this study is that implementation of my recommendations in this chapter could lead to decreases in preventable medical errors that contribute to 251,000 avoidable deaths every year.

Conclusion

Health care providers have both professional and ethical obligations to ensure that their patients are confident that they will receive the best possible care (Bowman, 2017; Rasoal, Skovdahl, Gifford, & Kihlgren, 2017; van Dyk, Martoia, & O'Sullivan, 2018). Since 1998, there has been extensive evidence that this is not always the case and that each year between 45,000 and more than 251,000 Americans die in hospitals as a result of preventable medical errors (Kavanagh et al., 2017; Kohn et al., 2000; van Dyk et al., 2018). Simply stated, that means that the professional and ethical obligations are not always being met.

Over the past 20 years, the phenomenon of preventable deaths and other errors has been studied extensively (Makary & Daniel, 2016; Shojania & Dixon-Woods, 2017). Research has determined that certain elements of relationships between physicians and nurses relate to a positive patient-safety culture, which in turn relates to improved patient outcomes (Judith Gedney Baggs et al., 1999; Clemmer et al., 1998; House & Havens,

2017; Larson, 1999). Numerous interventions have been reported that address these relationships but the condition persists.

The results from this study show that there are relationships between physicians and AHPs that are similar to those between physicians and nurses. The survey results demonstrate that there is similarity in that AHPs' empowerment and self-efficacy correlate with and predict patient-safety culture. The care team's performance can affect quality of outcomes (Ryan, 2017) and the AHPs should be considered members of the team when relationships and interventions are proposed and studied. The results of this study, along with previous research, suggest that this inclusion could be one solution to reducing the numbers of annual preventable deaths and other errors in hospitals.

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Appendix: Survey

Informed Consent and Survey Instructions

You are invited to participate in a study of physician relationships with allied health professionals (AHPs). You were selected as a possible participant because of your status as a physical therapist or occupational therapist. Please read this form and ask any questions you may have before acting on this invitation to be in the study.

This study is being conducted by Jay Spitulnik, a Ph.D. candidate at Walden University. Jay is an Associate Director and Adjunct Instructor at Northeastern University.

The purpose of the study is to investigate whether physician collaborative behaviors affect AHPs in a manner that will affect patient safety culture. Studies have found links between physician relationships with nurses, patient safety culture, and patient outcomes, but less is known about a similar link between physician relationships with AHPs, patient safety culture, and patient outcomes.

If you agree to be in this study, you will be asked to complete the survey that follows these instructions. You should be able to complete the survey in 10 - 20 minutes.

Your participation in this study is strictly voluntary. If you initially decide to participate, you are still free to withdraw at any time. In the event you experience stress or anxiety during your participation in the study, you may terminate your participation at any time. You may refuse to answer any questions you consider invasive or stressful.

This survey contains 74 questions as well as 10 demographic questions. Please answer the questions by checking the appropriate box or by following the specific instructions for the question if there is no check box.

Questions 1 – 36 ask about your perceptions of your relationships with physicians and of your ability to do your job. The following is an example:,

1. AHPs have a good understanding with the physicians about our respective responsibilities.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

Questions 37 – 74 ask about your perceptions of your hospital's patient-safety culture. The following is an example:

1. I am provided with adequate resources (personnel, budget, and equipment) to provide safe patient care.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

Questions 75 – 84 ask for information about you that will aid in analysis of the data provided by you and other respondents. The following is an example:
How long have you worked in this hospital?

a. Less than 1 year
b. 1 to 5 years
c. 6 to 10 years
d. 11 to 15 years
e. 16 to 20 years
f. 21 years or more

The only risk associated with participation in this study is fatigue resulting from completing a lengthy study. There are no short or long-term benefits to participating in this study. There will be no compensation provided for your participation.

The records of this study will be kept confidential and private. In any report of this study that might be published, the researcher will not include any information that will make it possible to identify you. Research records will be kept in a password protected file, and no person other than the researcher will have access to the records.

The researcher conducting this study is Jay Spitulnik who can be contacted at jay.spitulnik@waldenu.edu. The researcher's faculty advisor is William Disch, Ph.D., who can be contacted at william.disch@waldenu.edu. You may ask any questions you have before you begin the survey. If you have questions later, you can contact the researcher at jay.spitulnik@waldenu.edu.

If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210 or email address IRB@mail.waldenu.edu.
The approval number for this study is 10-25-17-0030626 and it expires on October 24th, 2018.

By completing the survey, you agree that you have read the above information, that you have asked and received answers, and that you consent to participate in the study. Please save or print a copy of this page and the previous page for your records.

If you are interested in receiving a 1 – 2 page summary of the results when the survey and analysis are complete, please email me at jay.spitulnik@waldenu.edu to request a copy of the summary.

	Strongly Disagree ▼	**Disagree ▼**	**Neither ▼**	**Agree ▼**	**Strongly Agree ▼**
1. AHPs have a good understanding with the physicians about our respective responsibilities.	☐1	☐2	☐3	☐4	☐5
2. Physicians are usually willing to take into account the convenience of the AHP staff when planning their work.	☐1	☐2	☐3	☐4	☐5
3. I believe that patient treatment is not adequately discussed.	☐1	☐2	☐3	☐4	☐5
4. AHPs and physicians share similar ideas about how to treat their patients.	☐1	☐2	☐3	☐4	☐5
5. Physicians are willing to discuss AHP issues.	☐1	☐2	☐3	☐4	☐5
6. Medical staff would be willing to cooperate with new practices in our discipline.	☐1	☐2	☐3	☐4	☐5
7. The physicians in this hospital do not usually ask for AHP opinions	☐1	☐2	☐3	☐4	☐5
8. Physicians anticipate when AHPs will need their help.	☐1	☐2	☐3	☐4	☐5
9. There is a lot of teamwork between AHPs and physicians.	☐1	☐2	☐3	☐4	☐5
10. Physicians and AHPs have good relationships.	☐1	☐2	☐3	☐4	☐5
11. There is functional collaboration/joint practice between AHPs and physicians...	☐1	☐2	☐3	☐4	☐5
12. AHPs and physicians plan together to make the decisions about care.	☐1	☐2	☐3	☐4	☐5

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
13. Open communication between physicians and AHPs take place as decisions are made.	☐1	☐2	☐3	☐4	☐5
14. As decisions are considered, AHPs and physicians each actively represent their professional perspectives about patient needs.	☐1	☐2	☐3	☐4	☐5
15. Decision making is coordinated between physicians and AHPs.	☐1	☐2	☐3	☐4	☐5
16. I ask physicians about their expectations regarding the degree of my involvement in health care decisions.	☐1	☐2	☐3	☐4	☐5
17. I negotiate with the physician to establish our responsibilities for discussing different kinds of information with the patient.	☐1	☐2	☐3	☐4	☐5
18. I clarify the scope of my professional expertise when it is greater than the physician thinks it is.	☐1	☐2	☐3	☐4	☐5
19. I discuss with physicians the degree to which I want to be involved in planning aspects of patient care.	☐1	☐2	☐3	☐4	☐5
20. I suggest to physicians patient care approaches that I think would be useful.	☐1	☐2	☐3	☐4	☐5
21. I discuss with physicians areas of practice that reside more within the realm of medicine than my discipline.	☐1	☐2	☐3	☐4	☐5
22. I tell physicians when, in my opinion, their orders seem inappropriate.	☐1	☐2	☐3	☐4	☐5
23. I tell physicians of any difficulties I foresee in the patient's ability to deal with treatment options and their consequences.	☐1	☐2	☐3	☐4	☐5

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
24. I inform physicians about areas of practice that are unique to my discipline.	☐1	☐2	☐3	☐4	☐5
25. AHPs should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient.	☐1	☐2	☐3	☐4	☐5
26. AHPs should be involved in making policy decisions concerning the hospital support services on which their work depends.	☐1	☐2	☐3	☐4	☐5
27. AHPs should be accountable to patients for the care they provide.	☐1	☐2	☐3	☐4	☐5
28. The primary function of the AHP is to carry out the physician's orders.	☐1	☐2	☐3	☐4	☐5
29. I will be able to achieve most of the goals that I have set for myself.	☐1	☐2	☐3	☐4	☐5
30. When facing difficult tasks, I am certain that I will accomplish them.	☐1	☐2	☐3	☐4	☐5
31. In general, I think that I can obtain outcomes that are important to me.	☐1	☐2	☐3	☐4	☐5
32. I believe I can succeed at most any endeavor to which I set my mind.	☐1	☐2	☐3	☐4	☐5
33. I will be able to successfully overcome many challenges.	☐1	☐2	☐3	☐4	☐5
34. I am confident that I can perform effectively on many different tasks.	☐1	☐2	☐3	☐4	☐5

	Strongly Disagree ▼	**Disagree** ▼	**Neither** ▼	**Agree** ▼	**Strongly Agree** ▼
35. Compared to other people, I can do most tasks very well.	☐1	☐2	☐3	☐4	☐5
36. Even when things are tough, I can perform quite well.	☐1	☐2	☐3	☐4	☐5

This section of the survey asks for your opinions about patient safety issues, medical error, and event reporting in your hospital and will take an additional 10 to 15 minutes to complete.

If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

- *An **"event"** is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.*
- ***"Patient safety"** is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.*

SECTION A: Your Work Area/Unit

In this survey, think of your "unit" as the work area, department, or clinical area of the hospital where you spend *most* of your work time or provide *most* of your clinical services.

37. What is your primary work area or unit in this hospital? Select ONE answer.

- ☐ a. Many different hospital units/No specific unit
- ☐ b. Medicine (non-surgical)
- ☐ c. Surgery
- ☐ d. Obstetrics
- ☐ e. Pediatrics
- ☐ f. Emergency department
- ☐ g. Intensive care unit (any type)
- ☐ h. Psychiatry/mental health
- ☐ i. Rehabilitation
- ☐ j. Pharmacy
- ☐ k. Laboratory
- ☐ l. Radiology
- ☐ m. Anesthesiology
- ☐ n. Other, please specify: _____

Please indicate your agreement or disagreement with the following statements about your work area/unit.

Think about your hospital work area/unit…	**Strongly Disagree** ▼	**Disagree** ▼	**Neither** ▼	**Agree** ▼	**Strongly Agree** ▼
1. People support one another in this unit	☐1	☐2	☐3	☐4	☐5
2. We have enough staff to handle the workload	☐1	☐2	☐3	☐4	☐5
3. When a lot of work needs to be done quickly, we work together as a team to get the work done	☐1	☐2	☐3	☐4	☐5

4. In this unit, people treat each other with respect	☐1	☐2	☐3	☐4	☐5
5. Staff in this unit work longer hours than is best for patient care.....	☐1	☐2	☐3	☐4	☐5

SECTION A: Your Work Area/Unit (continued)

Think about your hospital work area/unit…	**Strongly Disagree ▼**	**Disagree ▼**	**Neither ▼**	**Agree ▼**	**Strongly Agree ▼**
6. We are actively doing things to improve patient safety	☐1	☐2	☐3	☐4	☐5
7. We use more agency/temporary staff than is best for patient care.....	☐1	☐2	☐3	☐4	☐5
8. Staff feel like their mistakes are held against them	☐1	☐2	☐3	☐4	☐5
9. Mistakes have led to positive changes here.....	☐1	☐2	☐3	☐4	☐5
10. It is just by chance that more serious mistakes don't happen around here	☐1	☐2	☐3	☐4	☐5
11. When one area in this unit gets really busy, others help out	☐1	☐2	☐3	☐4	☐5
12. When an event is reported, it feels like the person is being written up, not the problem.....	☐1	☐2	☐3	☐4	☐5
13. After we make changes to improve patient safety, we evaluate their effectiveness.....	☐1	☐2	☐3	☐4	☐5
14. We work in "crisis mode" trying to do too much, too quickly	☐1	☐2	☐3	☐4	☐5
15. Patient safety is never sacrificed to get more work done	☐1	☐2	☐3	☐4	☐5
16. Staff worry that mistakes they make are kept in their personnel file	☐1	☐2	☐3	☐4	☐5
17. We have patient safety problems in this unit.....	☐1	☐2	☐3	☐4	☐5
18. Our procedures and systems are good at preventing errors from happening.....	☐1	☐2	☐3	☐4	☐5

SECTION B: Your Supervisor/Manager

Please indicate your agreement or disagreement with the following statements about your immediate supervisor/manager or person to whom you directly report.

	Strongly Disagree ▼	Disagree ▼	Neither ▼	Agree ▼	Strongly Agree ▼
1. My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.....	☐1	☐2	☐3	☐4	☐5
2. My supervisor/manager seriously considers staff suggestions for improving patient safety.....	☐1	☐2	☐3	☐4	☐5
3. Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts ..	☐1	☐2	☐3	☐4	☐5
4. My supervisor/manager overlooks patient safety problems that happen over and over.....	☐1	☐2	☐3	☐4	☐5

SECTION C: Communications

How often do the following things happen in your work area/unit?

Think about your hospital work area/unit…	Never ▼	Rarely ▼	Some-times ▼	Most of the time ▼	Always ▼
1. We are given feedback about changes put into place based on event reports	☐1	☐2	☐3	☐4	☐5
2. Staff will freely speak up if they see something that may negatively affect patient care.....	☐1	☐2	☐3	☐4	☐5
3. We are informed about errors that happen in this unit	☐1	☐2	☐3	☐4	☐5
4. Staff feel free to question the decisions or actions of those with more authority.....	☐1	☐2	☐3	☐4	☐5
5. In this unit, we discuss ways to prevent errors from happening again.....	☐1	☐2	☐3	☐4	☐5
6. Staff are afraid to ask questions when something does not seem right.....	☐1	☐2	☐3	☐4	☐5

SECTION D: Frequency of Events Reported

In your hospital work area/unit, when the following mistakes happen, *how often are they reported?*

	Never ▼	Rarely ▼	Some-times ▼	Most of the time ▼	Always ▼
1. When a mistake is made, but is *caught and corrected before affecting the patient*, how often is this reported?.....	☐1	☐2	☐3	☐4	☐5
2. When a mistake is made, but has *no potential to harm the patient*, how often is this reported?	☐1	☐2	☐3	☐4	☐5

3. When a mistake is made that *could harm the patient*, but does not, how often is this reported?	☐1	☐2	☐3	☐4	☐5

SECTION E: Patient Safety Grade

Please give your work area/unit in this hospital an overall grade on patient safety.

☐	☐	☐	☐	☐
A	**B**	**C**	**D**	**E**
Excellent	Very Good	Acceptable	Poor	Failing

SECTION F: Your Hospital

Please indicate your agreement or disagreement with the following statements about your hospital.

Think about your hospital…	**Strongly Disagree** ▼	**Disagree** ▼	**Neither** ▼	**Agree** ▼	**Strongly Agree** ▼
1. Hospital management provides a work climate that promotes patient safety.....	☐1	☐2	☐3	☐4	☐5
2. Hospital units do not coordinate well with each other.....	☐1	☐2	☐3	☐4	☐5
3. Things "fall between the cracks" when transferring patients from one unit to another.....	☐1	☐2	☐3	☐4	☐5
4. There is good cooperation among hospital units that need to work together	☐1	☐2	☐3	☐4	☐5

SECTION F: Your Hospital (continued)

Think about your hospital…	**Strongly Disagree** ▼	**Disagree** ▼	**Neither** ▼	**Agree** ▼	**Strongly Agree** ▼
5. Important patient care information is often lost during shift changes.....	☐1	☐2	☐3	☐4	☐5
6. It is often unpleasant to work with staff from other hospital units.....	☐1	☐2	☐3	☐4	☐5
7. Problems often occur in the exchange of information across hospital units.....	☐1	☐2	☐3	☐4	☐5
8. The actions of hospital management show that patient safety is a top priority	☐1	☐2	☐3	☐4	☐5
9. Hospital management seems interested in patient safety only after an adverse event happens	☐1	☐2	☐3	☐4	☐5
10. Hospital units work well together to provide the best care for patients.....	☐1	☐2	☐3	☐4	☐5

11. Shift changes are problematic for patients in this hospital.....	☐1	☐2	☐3	☐4	☐5

SECTION G: Number of Events Reported

In the past 12 months, how many event reports have you filled out and submitted?

- ☐ a. No event reports
- ☐ b. 1 to 2 event reports
- ☐ c. 3 to 5 event reports
- ☐ d. 6 to 10 event reports
- ☐ e. 11 to 20 event reports
- ☐ f. 21 event reports or more

SECTION H: Background Information

This information will help in the analysis of the survey results.

1. **How long have you worked in this hospital?**
   - ☐ a. Less than 1 year
   - ☐ b. 1 to 5 years
   - ☐ c. 6 to 10 years
   - ☐ d. 11 to 15 years
   - ☐ e. 16 to 20 years
   - ☐ f. 21 years or more

2. **How long have you worked in your current hospital work area/unit?**
   - ☐ a. Less than 1 year
   - ☐ b. 1 to 5 years
   - ☐ c. 6 to 10 years
   - ☐ d. 11 to 15 years
   - ☐ e. 16 to 20 years
   - ☐ f. 21 years or more

3. **Typically, how many hours per week do you work in this hospital?**
   - ☐ a. Less than 20 hours per week
   - ☐ b. 20 to 39 hours per week
   - ☐ c. 40 to 59 hours per week
   - ☐ d. 60 to 79 hours per week
   - ☐ e. 80 to 99 hours per week
   - ☐ f. 100 hours per week or more

SECTION H: Background Information (continued)

4. **What is your staff position in this hospital? Select ONE answer that best describes your staff position.**
   - ☐ Physical Therapist
   - ☐ Occupational Therapist

5. **In your staff position, do you typically have direct interaction or contact with patients?**
   - ☐ a. YES, I typically have direct interaction or contact with patients.
   - ☐ b. NO, I typically do NOT have direct interaction or contact with patients.

6. **How long have you worked in your current specialty or profession?**
   - ☐ a. Less than 1 year
   - ☐ b. 1 to 5 years
   - ☐ c. 6 to 10 years
   - ☐ d. 11 to 15 years
   - ☐ e. 16 to 20 years
   - ☐ f. 21 years or more

7. **Do you consider yourself to be?**
   - ☐ Hispanic or Latino/Latina
   - ☐ American Indian or Alaska Native
   - ☐ White
   - ☐ Native American or Pacific Islander

☐ Asian
☐ Black or African American
☐ African
☐ Other:_____
☐ Decline to answer

8. Are you male or female?

☐ Male
☐ Female

9. What is the highest level of education you have completed?

☐ Some high school
☐ High school graduate or GED
☐ Trade/technical training
☐ Some college, no degree
☐ Associate degree
☐ Bachelor's degree
☐ Master's degree
☐ Professional degree (e.g., MD, JD)
☐ Doctorate (e.g., PhD, EdD)

10. What is your age?

☐ Under 25
☐ 25 – 34
☐ 35 - 44
☐ 45 – 54
☐ 55 – 64
☐ 65 or older

SECTION I: Your Comments

Please feel free to write any comments about patient safety, error, or event reporting in your hospital.