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Determining Perceived Barriers Affecting Physicians' Readiness to Disclose Major Medical Errors

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This is to certify that the doctoral dissertation by

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Abstract

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MA, Walden University, 2013

BS, Kaplan University, 2011

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Care Administration

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Abstract

Medical errors have been detrimental in the field of medicine. They have impacted both patients and doctors. While physicians recognized that error disclosure was an ethical and professional obligation, most remained silent when mistakes happened for different reasons. Guided by the theory of planned behavior and Kant's deontological theory, the purpose of this quantitative study was to investigate the perceived barriers affecting physicians' willingness to report major medical errors. An association was tested between the independent variables physician fear of disclosure of errors, organizational culture toward patient safety, physician apology, professional ethics and transparency, physician education, and the dependent variable physician willingness to disclose major medical errors. Using a cross-sectional method, 122 doctors out of 483 surveyed, completed the online and paper-based survey. Multiple linear regression and descriptive statistics models were used to analyze and summarize the data. The results showed there was a statistically significant relationship between the independent variables organizational culture toward patient safety, physician apology, professional ethics and transparency, and physician education and the dependent variable physician willingness to disclose major medical errors. There was no relationship between the independent variable fear of disclosure of errors and the dependent variable. The findings added to the knowledge base regarding barriers to physicians' medical errors disclosure. The results and recommendations could provide positive social change by helping hospitals raising doctors' awareness regarding major medical errors disclosure.

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Dedication

The completion of this doctoral study is the result of four and half years of hard work that could not be done without the help and support of my fiancée Reine-Prisca Gunn and my late parents. To my dad who pushed me to pursue higher education, I say thank you for your vision. To my mom, my hero who was there for me until her last breath, thanks a lot for all your sacrifices, prayers and for showing me that hard work always pays off.

This work is also a dedication to all people out there who did not have the opportunity I had to pursue a doctoral study. Furthermore, I dedicated this project to all devoted physicians and healthcare professionals in hospitals, nursing homes, and clinics striving to provide quality care to patients.

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Chapter 1: Introduction to the Study

Introduction

Medical errors are common today, and they happen regularly in hospitals and other health care organizations (Bonney, 2014; D'Errico et al., 2015; Guillod, 2013). The rate of these preventable adverse events among hospital patients ranged from 4% to 16% (D'Errico et al., 2015). For many years, medical errors became the focal point for patient safety and quality improvement (Lipira & Gallagher, 2014; Poorolajal, Rezaie, & Aghighi, 2015). Medical errors were ranked as the third leading cause of death in the United States (U.S.) resulting from either individual mistakes or system failures (Bonney, 2014; D'Errico et al., 2015; Kalra, Kalra, & Baniak, 2013; Nevalainen, Kuikka, & Pitkala, 2014). The Institute of Medicine, IOM (1999) estimated that medical errors were responsible for approximately 44,000 to 98,000 deaths annually in the U.S. While these medical mistakes caused fatalities, they also remained costly for the U.S. economy and hospitals that spent an estimated $3.5 billion per year on costs associated with the errors (Kalra et al., 2013). However, the IOM (2001) offered prospective recommendations to reduce problems related to medical mistakes. These reports discussed medical errors issues and their consequences on patient safety and health care quality.

Medical errors remained an important issue for health care organizations and physicians in the U.S. and worldwide (Elwahab & Doherty, 2014; Plews-Ogen, Owens, & May, 2013). When the mistakes occurred, physicians were reluctant to report them. Although 87% of physicians recognized that it has been their ethical duty to admit errors, only 37% reported these errors (Anwer & Abu-Zaid, 2014; D'Errico et al., 2015;

Kachalia & Bates, 2014). The reporting data showed a discrepancy between what physicians said and did. According to the AMA (2016), in the case of complications resulted from the physician's mistake, the physician is ethically required to inform the patient. Also, the Patient Safety and Quality Improvement Act of 2005 encouraged voluntary reporting of adverse events, and therefore, reinforced the AMA Code of Medical Ethics (Agency for Healthcare Research and Quality [AHRQ], 2012). However, despite these efforts to ease the disclosure of medical mistakes, medical errors were still underreported.

Disclosure of medical errors remained a significant measure of patient-centered healthcare, and an essential element of patient safety and quality improvement (Lipira & Gallagher, 2014; Martinez & Lehmann, 2013). Despite growing pressures to disclose errors, 51% of physicians who committed mistakes never reported the medical errors (Poorolajal et al., 2015). Underreporting of medical mistakes may be the results of barriers such as lack of appropriate training in handling medical mistakes and the fact that physicians were less likely to disclose errors they felt were not severe (Lipira & Gallagher, 2014; Poorolajal, 2015). Other factors that inhibited physicians' reporting of errors included fear of legal actions, loss of trust, and loss of job or position (Jahromi, Parandavar, & Rahmanian, 2014; Soydemir, Intepeler, & Mert, 2016; Wu et al., 2013). However, Zaghloul et al. (2015) showed that fear of litigation and other barriers such as loss of reputation and organizational culture constituted the biggest hurdle that limited doctors' ability to report mistakes. They laid out five factors that represented major barriers to disclosure. These factors on which this project was based included fear of

disclosure, physician apology, organizational culture toward patient safety, professional ethics and transparency, and patient and physician education (Zaghloul et al., 2015). The U.S litigation system provided incentives through settlement to the patient who sued a doctorl; however, not all states protected doctors' statements related to medical mistakes reporting. Therefore, this made it difficult for a doctor to disclose errors (Wu et al., 2013).

Although all these factors impacted errors reporting, the proposed project only focused on the perceived barriers at the individual level because the instrument I used to collect the data drew attention to these barriers. Whatever the nature of the error, it should be reported once it occurred in accordance with the AMA Code of Medical Ethics. The study looked at major medical errors that included moderate and critical errors. These errors were frequent and leading causes of medical malpractice lawsuits (Schiff et al., 2009). While 87% (D'Errico et al., 2015) of physicians believed that it was ethical to admit mistakes, there should be a consensus on the subject. Nevertheless, there was a mismatch between what was said and done by medical doctors. Therefore, it was necessary to understand the factors that prevented a majority of physicians from reporting medical errors when they occured.

The objective of the study was to contribute new understanding to existing knowledge on disclosure of medical errors. By understanding physicians' reluctance regarding errors admission and gaining insight into medical errors disclosure, it might be possible for hospitals and health care leaders to design an intervention to help physicians disclose medical mistakes as soon as they happened. After the introduction, the rest of the

chapter focused on describing the study background, problem statement, purpose of the study, and research questions the study addressed. Further, the next sections of the chapter delineated the nature of the study and some relevant terms, and provided an overview of the study limitations, assumptions, and significance.

Background

Approximately 44,000 to 98,000 people die in U.S. hospitals each year due to medical errors (Bonney, 2014; D'Errico et al., 2015; Guilod, 2013; IOM, 1999; Kalra, Kalra, & Baniak, 2013). While these errors caused harm, they remained underreported. Over a decade, the Joint Commission (2016) has mandated hospitals and physicians to divulge medical errors irrespective of the doctors' liability concerns, but compliance with this directive has not yet been completely attained in the U.S.

After the publication of the IOM critical report, policymakers, and health care leaders have worked tirelessly to initiate strategies and laws to alleviate patient harm and promote patient safety. Congress enacted the National Medical Error Disclosure and Compensation Act in 2005. The objective of the bill was to promote a culture of safety in U.S. hospitals through the enhancement of quality care by reassuring open communication between physicians and patients about medical errors, decreasing avoidable medical errors rates, and guaranteeing that patients received rational compensation due to medical harm resulting from medical mistakes. Furthermore, this bill minimized the costs of medical liabilities insurance for physicians and hospitals (The National MEDiC Act, 2005). However, a significant aspect of the bill was that it required doctors and hospitals to report any incident whether it was a medical mistake or patient

safety incident (The National MEDiC Act, 2005). Seventeen years later after the IOM report and despite a widespread investment in patient safety initiatives, medical errors are still underreported, and the adverse events rates were still in the range of 4 to 16% (D'Errico et al., 2015; Shojania & Thomas, 2013).

Even though the AMA Code of Ethics (AMACE) recommended that physicians admit errors, physicians' disclosures differed significantly. Only 33% of nearly 90% of physicians who said that error disclosure was an ethical duty reported mistakes (Anwer & Abu-Zaid, 2014; D'Errico et al., 2015; Kachalia & Bates, 2014; Taggaddosinejad, Mesri, Sheikhazadi, Mostafazadeh, & Farahani, 2013). These statistics showed a discrepancy between physicians' willingness to admit errors and their current medical mistake reporting practices, but the reasons behind this behavior was not well studied. However, the main reasons for physicians' reluctance to report errors were fear of litigation, loss of reputation, and absence of legal protection for doctors (Jahromi et al., 2014; Wu et al., 2013). Therefore, this study was required and significant as it sought to understand the perceived barriers that prevented doctors from reporting medical errors and their reluctance to comply with the Joint Commission mandate and the AMA Code of Ethics.

Their disclosure was essential as they could contribute to improving flaws that endanger patient safety (Crane et al., 2015). For this project, I used a questionnaire as the basis of the study. The questionnaire investigated five major factors that could impact a physician's ability to disclose medical errors. These factors were fear of disclosure, physician apology, organizational culture toward patient safety, professional ethics and transparency, and patient and physician education (Zaghloul et al., 2015). Although

Zaghloul et al. (2015) showed that the five factors played a great role in physician' reluctance to admit errors, however, it had some limitations. Since the study was conducted in the United Arab Emirates (UAE), the result may have been impacted by local organizational and cultural norms.

I reused Zaghloul et al. questionnaire with two critical variations. First, I repeated the questionnaire in the U.S. to study any variation in results due to changes in organizational behavior and culture. Second, I limited collected responses to major mistakes only so that the effect of these variables on perceived barriers could be identified. The study was necessary because it could lead to having a better understanding of the reasons behind doctors' reluctance to report errors.

I reproduced the instrument in the U.S. to determine the variance in results that may be due to the influence of organizational and cultural norms and see the effects on phyisicians perception. From there, it could be possible to develop strategies to alleviate barriers which hindered physician errors reporting. The reason for lessen barriers to errors reporting was that knowing how errors happened, physicians and health care institutions could take actions to correct these errors and prevent them from occurring, thus improving patient safety and fostering a culture of safety (Crane et al., 2015; Kachalia & Bates, 2014).

Problem Statement

In the U.S., medical errors occurred frequently in hospitals (D'Errico et al., 2015; Guillod, 2013; Rafter et al., 2014). Belgian, Portuguese, and U.S. hospitals combined have shown that the median percentage of adverse events among hospital patients was

9.2% (Marquet et al., 2015; Sousa et al., 2014; Rafter et al., 2014; Zeeshan, Dembe, Seiber, & Bo, 2014). In the United States, these errors were responsible for the deaths of approximately 44,000 to 98,000 people annually (D'Errico et al., 2015; Wu, Boyle, Wallace, & Mazor, 2013). Patients and the public wanted errors to be disclosed, but many physicians or medical doctors were reluctant due to fear of legal actions and loss of trust (Anwer & Abu-Zaid, 2014; D'Errico et al., 2015). Although 90% of health care professionals have agreed to errors disclosure in a hypothetical situation, less than 40% disclosed mistakes when they happened, showing a mismatch between what was said and done (Anwer & Abu-Zaid, 2014; D'Errico et al., 2015).

Although 87% of physicians considered that it was a deontological and ethical duty to admit mistakes, only a few, 33% reported errors (D'Errico et al., 2015; Kachalia & Bates, 2014). Even though the Joint Commission mandate asked the hospitals to disclose medical errors and adverse events, conformity with this mandate has not been fully accomplished in U.S. hositals (D'Errico et al., 2015; Kachalia & Bates, 2014; Lipira & Gallagher, 2014). Despite years-long consideration of improving disclosing practices, a significant gap has existed between admission of errors and current practice (Lipira & Gallagher, 2014). The research problem was the perceived barriers that hindered physicians' ability to report medical errors when they happened during the delivery of health care services in hospitals. The proposed study may begin to fill the gap in understanding factors which influenced physician disclosure of medical errors or challenges in reporting errors. The study sought to investigate the relationship between fear of disclosure, physician apology, organizational culture toward patient safety,

professional ethics and transparency, and patient and physician education, and physicians' readiness to disclose major medical errors. Dissemination of study findings may help inform health care administrators and policymakers about implementing policies and interventions which promote full disclosure of error as a critical element of quality care to enhance patient safety.

Purpose of Study

The purpose of this cross-sectional quantitative study was to determine and understand perceived barriers affecting physicians' readiness to disclose major medical errors. A primary focus of health care has been to evaluate physicians' attitudes toward errors admission in order to improve a proper disclosure of error (Kalra, Kalra, & Baniak, 2013). To address the barriers to error disclosure, the study used a cross-sectional online and paper survey method to explore the relationship between perceived barriers and doctors' willingness to disclose major medical mistakes. Perceived barriers are measured as the independent variable and physicians' readiness to disclose major errors measured by Linthorst et al. questionnaire, is the dependent variable. Moreover, I used a paper-based survey because I did not have access to all participants' emails. The study aimed to address the gap in present literature which was identifying barriers impacting physicians' abiliy to report meical errors when they occured.

Research Question and Hypotheses

The following research question guided the study:

RQ1: What are the most critical perceived barriers affecting physicians' readiness to disclose major medical errors?

Research Hypotheses

H_01: Physicians' readiness to report major medical errors are not related to fear of disclosure.

H_a1: Physicians' readiness to report major medical errors are related to fear of disclosure.

H_02: Physicians' readiness to report major medical errors are not related to organizational culture toward patient safety.

H_a2: Physicians' readiness to report major medical errors are related to organizational culture toward patient safety.

H_03: Physicians' readiness to report major medical errors are not related to phyisician apology.

H_a3: Physicians' readiness to report major medical errors are related to physician apology.

H_o4: Physicians' readiness to report major medical errors are not related to professional ethics and transparency.

H_a4: Physicians' readiness to report major medical errors are related to professional ethics and transparency.

$H_o5)$: Physicians' readiness to report major medical errors are not related to patient and physician education.

$H_a5)$: Physicians' readiness to report major medical errors are related to patient and physician education.

The independent variables were fear of disclosure, organization culture toward patient safety, physician apology, professional ethics and transparency, and patient and physician education. The dependent variable was physicians' willingness to disclose medical error.

Theoretical Framework

The theory of TPB and Kant's deontological theory grounded this research.

Theory of Planned Behavior

The TPB was developed to predict and explain individuals' behaviors and intentions. The model linked and individual beliefs and behavior (Ajzen, 1991; Finke, Hickerson, McLaughlina, Nippold, & Camarata, 2015). The theory suggested that a person's intention to engage in behavior was determined by three predictors: Attitude toward the behavior, subjective norm, and perceived behavior control (Ajzen, 1991; Finke et al., 2015). The combination of these three predictors led to the development of a behavioral intention (Javadi, Kadkhodaee, Yaghoubi, Maroufi, & Shams, 2013). In fact, TPB linked beliefs and behaviors by using intent to predict behavior (see Figure 1).

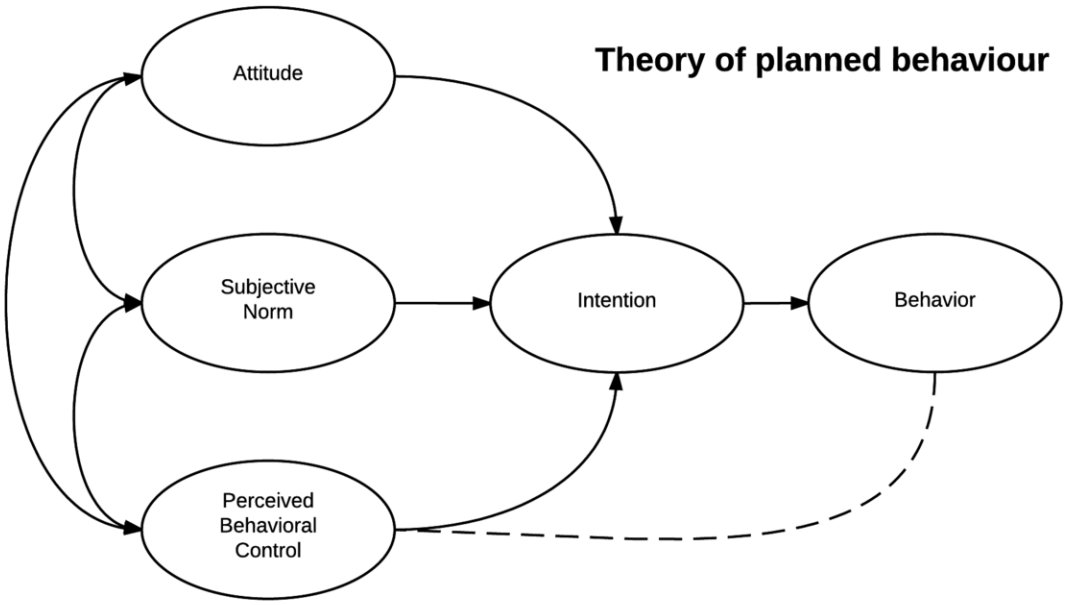

Figure 1. Model of TPB

Even though other variables may affect behavior, it was evident that human action was most precisely predicted by the fundamental determinants of attitude, subjective norm, and perceived behavioral control (Lapkin, Levett-Jones, & Gilligan, 2015). According to the TPB, attitude referred to a person's favorable or unfavorable dispositions when performing a precise behavior, while subjective norm referred to the perception about how other people would judge a person for executing an indicated behavior (Lapkin et al., 2015). Perceived behavioral control indicated the assessment of a person's competence to accomplish a chosen behavior (Lapkin et al., 2015). The supposition behind the TBP was that combining these variables offered a clear perception of individuals' behavioral intentions (Lapkin et al., 2015). The more favorable the attitude and subjective norm, the greater the perceived control. Resiliency depended on

the individual's intention to accomplish the behavior in question (Javadi et al., 2013; Lapkin et al., 2015). Given an appropriate level of actual control over the behavior, people were likely to complete their intentions when the prospect arose (Javadi et al., 2013; Lapkin et al., 2015).

The TPB has been used in health care and health-related fields to understand the factors that influenced physicians and nurses' patient safety associated with behaviors (Finke et al., 2015; Javadi et al., 2013). The TPB was suitable for this study because the theory was previously used to explain physicians' attitudes and behaviors regarding medical errors reporting (Finke et al., 2015). It was also relevant in the way that the intent to report an error may have been swayed by other factors such as malpractice lawsuits, loss of professional reputation, and loss of patient trust that may lead to non-reporting behaviors (Hutchinson, Sales, Brotto, & Bucknall, 2015).

Kant's Deontological Theory

Kant's deontological theory was one of the five ethical theories that also included utilitarianism, casuist, virtue, and rights theories. Deontology "emphasized the obligation of an individual to adhere to universal moral rules, principle to determine moral behavior" (Xu & Ma, 2016, p. 538). Kant focused on a duty-based theory or ethics that inferred truth telling, doing good for people, respecting individual autonomy, and doing no harm (Ghazal, Saleem, & Amlani, 2014; Reddy & Mythri, 2016). The morality of an action is measured by its observance of the rules (AlArbeed & AlHakim, 2015; Pinar & Peksoy, 2016). For Kant, physicians' compliance with the regulations remained a means to provide equal treatment to every patient (Al Arbeed & Al Hakim, 2015).

Kant's deontological theory has been used in health care training and education for helping physicians and care professionals in reaching an ethical decision in their practices (Pinar & Peksoy, 2016). The deontological theory has been significant in the expansion of bioethical theory to guide doctors and health care professionals' moral behaviors (Ghazal et al., 2014). The theory was appropriate for this study because of the ethical implications of physicians' decision regarding errors disclosure.

Nature of the Study

A cross sectional quantitative technique using online survey data collection and paper questionnaires served as the research approach for this study to examine the disclosure of medical errors. The approach was consistent with the study because it helped determine the prevalence of an outcome (Omair, 2015; Sedgwick, 2014) such as identifying the proportion of physicians who were supportive of a full admission of medical error. Using this method may provide insights about physicians' attitudes regarding error disclosure. Keeping the focus on the factors that impacted error admission should be constant with Kant's deontological theory and the TPB's capability to explain physicians' intentions and behavior regarding errors admission.

Doctors' attitudes were assessed to determine factors that influence their approach toward error admission. A questionnaire was used to assess physicians' attitudes. A nonexperimental method was used to understand factors influencing physicians' disclosure of medical errors.

I collected data through a paper-based questionnaire and via Survey Monkey from physicians operating in three community hospitals. These three hospitals were in Iowa

and Illinois. I emailed 194 physicians and mailed 289 physicians. A total of 483 questionnaires were sent via email and mail. 12 emails and 6 mail questionnaires were sent back to me because the participants were no longer working in these hospitals. The response rate was 25%. Six minutes and 20 seconds was the typical time spent by physicians to complete the online survey. I analyzed data gathered using the International Business Machines – Statistical Package for the Social Sciences (IBM SPSS) statistics version 24.

Definition of Terms

Physicians and health care professionals used different terms to define medical errors and disclosure of errors. However, the terms that were relevant for this study included the following:

Adverse events (AEs): Harm resulting from the administration of health care services (Guillod, 2013; Kalra et al., 2013; Mira et al., 2015). Most adverse events were not linked to medical errors. Thus, they were not preventable (Lipira & Gallagher, 2014).

Critical errors: Mistakes that caused death, permanent disability, or near life threatening events (Schiff et al., 2009).

Culture of safety: An organizational system based on nonpunitive action, which emphasized honesty, excellence, accountability, and integrity with the aim to improve care (Crigger & Godfrey, 2014; Howell, 2015). It is also the way health care leaders and physicians deal with crucial safety issues (Howell, 2015).

Disclosure of errors: The process of reporting a mistake and providing a complete detail of an event that happened during the delivery of health care services (Ghazal et al.,

2014; Hannawa, 2014). However, errors were divulged in less than a third of all medical errors cases (Hannawa, 2014).

Medical errors: Mistakes committed by physicians that can have severe consequences such as harm or death of the patient. Mistakes included the failure of an intentional action to be accomplished as intended, or the use of an erroneous plan to achieve an objective. Medical errors were also seen as behaviors that were below the standard of care (Guillod, 2013). These errors included errors in diagnosis, medication errors, and errors in performing surgical procedures (Ghazal et al., 2014).

Moderate errors: These include short-term morbidity, increased length of stay, higher level of care, and invasive procedures (Schiff et al., 2009).

Patient safety: Freedom from unintentional injury (Kalra et al., 2013). Physicians and patients could improve patient safety through leadership and clinical expertise and practice safety-related behaviors to minimize errors (Shemesh et al., 2015).

Patient-centered healthcare (PCC): A type of care that is "respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guided all clinical decision" (Berghout, Exel, Leensvaart, & Cramm, 2015, p. 1). PCC was used as means of attaining greater patient satisfaction, better health outcomes, and reduced health care costs (Constand, MacDermid, Bello-Haas, & Law, 2014).

Physician readiness: This is the physician's willingness or ability to do something. In the context of the study, physician readiness meant a doctor's willingness to disclose a major medical error.

Physician: According to Title 20 of the Code of Federal Regulations (CFR), physician include "doctors of medicine, surgeons, podiatrists, dentists, clinical psychologists, optometrists, chiropractors, and osteopathic practitioners within the scope of their practice as defined by state law" (Legal Information Institute, 2018, p. 1). For this study, physicians surveyed were doctors of medicine.

Assumptions

According to Denscombe (2014), assumptions are factors that are out of the researcher's control. Thus, assumptions were important as they may provide the basis for conducting the study. First, medical errors occurred frequently, and despite initiatives to curb medical error rates, it is inevitable that physicians and other care providers would continue to commit errors. Second, it was assumed that physicians who were involved in the study had the expertise to provide relevant information on the research topic. The third assumption was that physicians would provide truthful, accurate, and honest answers to understand their reluctance regarding error disclosure. Fourth, it was assumed that information from physicians regarding errors underreporting may be helpful in designing strategies to encourage transparency in errors disclosure. The fifth assumption was that different factors such as professional ethics and organizational culture may play a certain role in facilitating or hindering physicians' decision to report medical mistakes or not depending on how these factors are implemented.

Scope and Delimitations

The objective of this project was to determine the different factors which impacted or prevented physicians from reporting medical mistakes that happen during the

delivery of health care services. The scope of the study involved participants who were physicians operating in three community hospitals in Illinois and Iowa. These hospitals had more than 1,000 physicians and residents with various specialties. This study analyzed data obtained through internet and paper-based surveys from these physicians from three hospitals to understand the reasons behind physicians' medical errors underreporting.

The study was not intended to cover a specific medical specialty such as a surgeon, or a medical department like the intensive care unit because medical errors were becoming a public health issue and the purpose of the study was to get a broader understanding of the factors contributing to physicians' underreporting. In addition, physicians with less than one year of experience were excluded from the study because of their limited medical experience.

While expectancy and social cognitive theories were related to the study, they were not investigated because they did not provide clues to predict physicians' behaviors related to errors disclosure. Expectancy model was more relevant as work-motivation theory while the social cognitive concept has served as health promotion with emphasis on the individual and the environment. Thus, these theories were not suited for this project. Instead, the study used TPB and Kant's deontological theory. These theories have been used in health care to predict and explain physicians' behaviors and guide their moral decisions (Finke et al., 2015; Pinar & Peksoy, 2016).

Regarding generalizability, it is essential to recognize that data from the study could be generalizable to a larger population of physicians based on the number of

participants and survey response rate. For this study, I surveyed doctors from three community hospitals. Thus, the research findings could be applied to this population.

Limitations

According to Denscombe (2014), limitations of a study encompass the prospective weaknesses and shortcomings that are out of the researcher's control. The proposed study had three primary limitations. First, the participants were not required to have experience with medical errors or get involved in medical mistakes events. Second, the sample obtained may be biased. Some participants may be less enthusiastic about responding to the questionnaire as they are already experienced with the issue and may feel embarrassed to talk about this problem again. The third limitation was that the study was based on self-reported data which could lead to potential participant respondent and information bias. To address these limitations, I made sure the questions were clearly labeled and precise, and the sample was representative of the target population.

Significance of the Study

Medical errors frequently happened at a high rate in U.S. hospitals (D'Errico et al., 2015; Guillod, 2013). When these mistakes happened, some doctors chose not to disclose them to patients and their families (Anwer & Abu-Zaid, 2014; D'Errico et al., 2015). This research aimed to fill a gap in understanding barriers to medical mistakes reporting by focusing on factors that influenced physicians' disclosure of medical errors. This study was significant as the findings would help health care organizations adopt and promote patient safety culture.

Though medical errors cause approximately 44,000 to 98,000 deaths annually in the United States, they also had a financial cost (Bonney, 2014; D'Errico et al., 2015; Guilod, 2013; IOM, 1999; Kalra et al., 2013). According to Kalra et al. (2013), forty-five cents of each dollar paid out in the U.S. were connected to medical errors. The median cost per error has risen from $892 in 2008 to $939 in 2009 (David, Gunnarson, Waters, Horblyuk, & Kaplan, 2013). Furthermore, the annual cost of medical mistakes reached $17 billion in 2009 (Kalra et al., 2013). It was evident that these skyrocketing costs due to medical errors affected existing human capital and financial resources. These funds could be used for investing in new technologies to prevent medical mistakes or training physicians on how to disclose mistakes.

Study findings would help understand the reasons behind physicians' medical errors and underreporting behaviors. Insights gained from this study would help inform care organizations to develop and implement policies for full disclosure of mistakes and change the culture of professionalism to a culture of safety. The development of a culture of safety would contribute to changing doctors' behaviors and attitudes from fear and defensiveness about what went wrong in the delivery of care to an attitude of honesty and a willingness to learn (Guillod, 2013). The change in doctors' attitudes would be beneficial to them and patients who wanted to know the truth, which would prevent the patients from engaging in legal actions because they sought explanations and apologies rather than financial compensation (Guillod, 2013). Understanding physicians' stance on disclosure of errors may move health care organizations to develop a mechanism to

support physicians and adopt a full disclosure policy as well as a culture of safety for the best interests of the American society.

This study may contribute to social change by helping health care organizations in implementing safety culture policies which would encourage physicians to report medical errors. Through errors reporting, physicians would learn from their mistakes and be keen to avoid repeating the same mistakes. This practice would contribute to enhancing patient safety that is *sine qua non* of quality care.

Summary

Medical errors represented a major health issue for health care organizations and physicians in the U.S. (Elwahab & Doherty, 2014; Plews-Ogen, Owens, & May, 2013). It is important for all physicians to report medical mistakes in order to enhance patient safety. Health care agencies and patient safety organizations have focused their efforts on improving medical errors reporting, but physicians were still reluctant to adhere to these efforts.

This chapter introduced the proposed study which was to explore and understand the factors that impacted physicians' disclosure of errors. It provided an explanation of the problem statement, background of the research, and the theoretical framework that grounded the study. Furthermore, this chapter outlined the research questions the study answered and described the nature as well as the significance of the study. In the next chapter, the literature relevant to the physicians' reporting of medical mistakes will be reviewed.

Chapter 2: Literature Review

Introduction

In the United States and across the world, medical errors represented a major health issue for physicians and health care organizations (Elwahab & Doherty, 2014; Plews-Ogen, Owens, & May, 2013). In the U.S., medical mistakes occurred frequently in hospitals during the delivery of health care services (D'Errico et al., 2015; Guillod, 2013). When these medical errors happen, they should be reported, but many physicians were reluctant for many reasons including but not limited to legal actions and loss of trust (Anwer & Abu-Zaid, 2014; D'Errico et al., 2015). While 90% of physicians believed it was their ethical duties to report errors, approximately 37% reported errors (D'Errico et al., 2015; Kachalia & Bates, 2014). These underreporting statistics showed a discrepancy between what physicians said and did when they experienced medical mistakes. Therefore, the purpose of this study was to understand the factors that influenced physicians' disclosure of medical errors.

Medical errors have negatively affected patients and health care organizations and undermined the delivery of quality care. Reporting of medical mistakes has been essential to the enhancement of patient safety. However, underreporting of medical errors remained a major problem (Gong, Song, Wu, & Hua, 2015; Tsao & Browne, 2015). The reason for some U.S. physicians not disclosing errors was that they still ignored the importance of errors reporting despite numerous efforts and initiatives such as the enactment of the Medical Error Disclosure Act to encourage medical mistakes reporting (Renkema, Broekhuis, & Ahaus, 2014; Tagaddosinejad, Mesri, Sheikhazadi,

Mostafazadeh, & Farahami, 2013). According to Gong et al. (2015), the annual underreporting rate of medical mistakes and adverse events was estimated at 50%. These findings demonstrated the urgency and necessity for hospitals and healthcare leaders to understand the factors that prevent most doctors from reporting medical errors.

The next part of the chapter focused on delineating the literature search strategy as well as the TPB and Kant's deontological theory which grounded this study. The rest of the chapter included a review of the current literature. This part is followed by the summary and chapter conclusion.

Literature Search Strategy

The primary databases used for this review of the literature were the health sciences and psychology databases. Accessed databases included Medline with full text, CINAHL Plus with full text, CINAHL and MEDLINE Simultaneous search, Science Direct, PsycINFO, SAGE Premier, and SocIndex with full text. Other relevant search engines and databases used were Google Scholar and Thoreau Databases. The key search terms were *medical errors*, *patient safety*, *medical errors reporting*, *culture of safety*, *medical errors disclosure*, *physician attitude and errors reporting*, *theory of planned behavior*, *theory of planned behavior and medical errors disclosure*, *theory of planned behavior and physician attitude*, *barriers to physician errors reporting*, *medical malpractice*, *medical errors reporting systems*, *deontological theory*, and *deontological theory and medical errors*.

The search generated hundreds of articles. The selected articles were within the 5-year time frame, meaning these articles were published between 2013 and 2016. All articles were from peer-reviewed journals.

Theoretical Foundation

The TPB and Kant's deontological theory were the theories that grounded this study. The TPB would help to understand factors related to doctors' intention to report medical mistakes. The deontological model also explained the motivation behind physician ethical decision regarding error disclosure.

Theory of Planned Behavior

The TPB was developed by Icek Ajzen in 1991 to explain individuals' behaviors by relating motivational factors and attitudes to behavioral intention and concrete actions. According to the theory, an individual's behavior could be predicted by the strength of the person's intention to assume a specified behavior (Ly et al., 2015). This intention was influenced by the individual's attitude toward the behavior, the person's subjective norm, and perceived control over the behavior (Ly et al., 2015).

The TPB has been widely used in health care to predict physicians' behaviors (Thompson-Leduc, Clayman, Turcotte, & Legare, 2015). Furthermore, a systematic review demonstrated that the TPB was useful to explain physicians' behaviors and intentions (Thompson-Leduc et al., 2015). The TPB constructs were used to explain variance in physicians' intention to report medical errors. According to the TPB, attitude, subjective norm, and perceived behavioral control determined independently a person's intention to perform a precise behavior. When individuals chose whether to engage in

behavior, they factored in their attitudes toward the behavior, their beliefs about how others may feel about the behavior, and the comfort with which they achieved the behavior (Ajzen, 1991). Regarding physicians underreported behaviors, the TPB meant that efforts needed to be made by health care organizations to create positive beliefs about the benefits of errors reporting and ascertain that all health care professionals including physicians support error reporting.

Subjective norms and normative beliefs were the important factors that influenced nurses' patient safety behaviors (Javadi, Kadkhodaee, Yaghoubi, Maroufi, & Shams, 2013). However, Javadi et al. (2013) measuring these variables, demonstrated that among other variables, normative beliefs had the highest effect on nurses' intention to implement patient safety behaviors. Javadi et al. (2013) defined normative beliefs as "beliefs about the normative expectations of others and motivation to comply with these expectations". Lapkin et al. (2015) examined medical doctor students' behavioral intentions regarding medication safety and concluded that the TPB constructs such as attitude, subjective norm, and perceived behavioral control played an important role in behavioral intention. The TPB as designed to study behavioral intention and understand the reason behind an individual intention to behave on a particular way. As a result, the TPB emerged as a reliable tool to evaluate and explain behavioral intentions (Lapkin et al., 2015).

To understand factors that affected nurses' incident reporting behaviors, Lee, Yang, & Chen (2015) surveyed 1,200 registered nurses and found out that subjective norms, perceived behavioral control, and other factors such as attitude toward incident reporting have correlated positively with the intention to report errors. Lee et al. applied

the TPB to identify the factors that influence a hospital registered nurses' intention to report errors. After surveying 1,200 nursing staff, Lee et al. (2015) found a positive correlation between the TPB constructs and the registered nurses' intention to report incidents. Registered nurses' attitudes toward incident reporting behavior could positively or negatively impact their intentions to report the incident (Lee et al., 2015). This conclusion substantiated the fact that the TPB constructs led to the development of a behavioral intention which predicted behavior (Ajzen, 1985).

Kant's Deontological Theory

The deontological theory was developed by Immanuel Kant (1724-1804), a German philosopher. This concept emphasized moral actions motivated by observance of organizational rules, regulations, and norms (Al Arbeed & Al Hakim, 2015; Chakrabarty & Bass, 2015; Pinar & Peksoy, 2016). In Kant's perspective, right is "the sum of conditions under which the choice of one can be united with the choice of another in accordance with universal law of freedom" (Bernstein & Brown, 2004, p. 171). The grounds to decide whether an action was right or wrong was independent of the action's consequences (Theofanidis, Fountouki, & Pediaditaki, 2013). Based on this assertion, it was evident that physicians had an obligation to tell the truth when an error occurred no matter what the consequences of their actions may be.

The fundamental notion of Kant's Deontological theory was duty defined as "that action to which someone is bound" (Bernstein & Brown, 2004, p. 170). Thus, for Kant, all duties could be seen as either duty of right for which external lawgiving was possible or duties of virtue for which external lawgiving was not feasible (Bernstein & Brown,

2004). The theory also accentuated the categorical imperative, the basis of ethics which was an unconditional command that must govern the morality of individual's behavior (Bernstein & Brown, 2004). According to Kant categorical imperative, it was not permitted to lie even for the sake of the good (Bernstein & Brown, 2004; Bowie, 2015). Translated into the error disclosure impasse, a physician who did not report a mistake committed a lie. In medical practice and under Kant's framework, a physician who has committed an error had an obligation to tell the truth (Ghazal et al., 2014).

Kant's deontological theory was influential in the development of bioethics theories. It has also been used in health care to direct and guide physicians and nurses' ethical decision making (Pinar & Peksoy, 2016). Theofanidis et al. (2013) discussed whether to practice abortion in a case where a mother of an anencephalic fetus was facing moral decisions. They referred to ethical theories such as utilitarianism and deontological theories to guide health care decision regarding an anencephalic fetus. Theofanidis et al. debated whether there was a moral justification to abort a fetus with abnormalities or deny it when the mother's life was in danger. Through the lens of utilitarianism, they argued that it would be helpful to balance benefit over harm by determining the consequences of the decision before asserting that the best course of action should be to consider what would be the greatest benefit for the parties involved (Theofanidis et al., 2013). On the other hand, based on the deontological framework, Theofanidis et al. found that abortion was not acceptable even if the fetus was abnormal and if the action could save the mother's life. In fact, for the deontological perspective, abortion was immoral. Stefan (2014) agreed with this assertion and contended that individuals' action must be

deemed moral in Kant's deontology's theory. With two opposing theories, Theofanidis et al. (2013) concluded that physicians and nurses need to rely on these ethical theories and follow the rules to guide their ethical decisions.

AlArbeed and AlHakim (2015) studying the ethical dimension of a clinical event linked to paternalistic intervention indicated that this type of intervention conflicted with the essence of deontological theory which was do the right thing and follow the rules. Thus, according to AlArbeed and AlHakim, compliance with the standards remained the best way to provide equal treatment to each and doing so would increase trust in health care professionals such as nurses and physicians. As patient-physician relation was a fiduciary relationship based on trust, this relation required openness and sharing of information (Entwistle & Kalra, 2014). Refraining from the duty to report error undermine this relation (Entwistle & Kalra, 2014). According to Kant's theory, disclosing mistakes was right because it followed the rule of conduct which met the obligation of the principle of duty (Bernstein & Brown, 2004).

The choice of both theories as theoretical framework upon which this study was grounded lay in the fact that the TPB focused on theoretical concepts concerned with persons' motivational factors as elements of the probability of executing definite behaviors (Glanz, Rimer, & Viswanath, 2015) while Kant's deontological theory focused on the morality of an action and its compliance with the standards (AlArbeed & AlHakim, 2016). Both TPB and Kant's Deontological Theory have been useful to predict and understand individual's behaviors and what motivated individual's moral decision

making (AlArbeed & AlHakim, 2016; Glanz et al., 2015; Lee et al., 2015). As such, these theories may be relevant in understanding physicians' underreporting behaviors.

As the purpose of this study was to identify perceived barriers affecting physicians' disclosure of major medical errors, it related to the TPB and Kant's deontological theory because the theories' aims were to explain and predict individual's behaviors and understand the motivation behind their ethical decisions. On the other hand, the research question challenged the theories as the question was not based on the theories' constructs.

Literature Review Related to Key Variables

Factors Preventing Errors Reporting

Medical errors represented a major public health issue that threatened patient safety in the U.S. and across the world (Khammarnia, Ravangard, Barfar, & Setoodehzadeh, 2015; Lee et al., 2015; Poorolajal, Rezaie, & Aghighi, 2015). Defined as "an act of omission or commission in planning or execution that contributed or could contribute to an unintended result," medical errors remained an inescapable reality of the healthcare system (Anwer & Abu-Zaid, 2014, p. 1). Medical mistakes were responsible for approximately more than 90,000 deaths annually in the U.S. (D'Errico et al., 2015; Lee et al, 2015). These findings showed that medical errors were an urgent issue which called on health care institutions and organizations to establish a mechanism to encourage physicians to report errors. As illustrated by Lee et al., the disclosure of medical errors allowed healthcare organizations to analyze the causes fully and eliminate risks of

upcoming incidents by fine-tuning the system because, in high-risk industries, incidents disclosure was considered beneficial.

However, figures showed that medical errors remained underreported and that 50% of mistakes were not disclosed (Gong et al., 2015; Khammarnia et al., 2015; Lee et al., 2015). While errors reporting was crucial to improving patient safety, Khammarnia et al. (2015) found that factors which prevented physicians to disclose errors were various and multifaceted. In a cross-sectional study to assess barriers to medical errors reporting, 350 physicians were surveyed in public hospitals. Khammarnia et al. (2015) found that organizational and individual factors were the prominent factors that prevented physicians to report mistakes. However, a one-way ANOVA indicated that physicians with less than five years of experience did not report errors (Khammarnia et al., 2015). The latter finding suggested that working experience was also a factor that influenced doctors' disclosure of errors. But, the problem with this finding was that doctors with ten or more years of working experience committed mistakes they did not report. In fact, Khammarnia et al. findings showed that multivariate factors could explain physicians' behaviors regarding errors disclosure.

It has been true that factors that prevented doctors to report medical mistakes were numerous. Crane et al. (2015), contended that barriers to medical mistakes reporting included concern over punitive actions, supplementary workload burden, and psychological barriers to acknowledge an error. Nevertheless, a cross-sectional study conducted to analyze barriers to medical errors reporting revealed that almost 51% of the 2183 physicians surveyed committed medical mistakes they never reported (Poorolajal,

Rezaie, & Aghighi, 2015). Citing the main reasons behind the underreporting, 60% of the participants noted the absence of an effective reporting system while 56% pointed out the lack of psychological support for a physician who committed a mistake. Furthermore, 52% of doctors cited the deficiency of reporting properly (Poorolajal, Rezaie, & Aghighi, 2015). Lee et al. (2015) supported these findings. They noted that instead of an unsupportive work environment, other factors such as peer pressure, time-consuming process of writing an incident report and the fact for a physician to be seen as unprofessional and incompetent have affected doctors' intentions to report medical errors In this regard, Lee et al. contended that the intention to report a mistake should be considered based on the association between the reporting individual and the event circumstances. Despite the multiplicity of factors that affected physicians' admission of medical errors, there were no known specific factors that predicted doctors' errors reporting behaviors. However, Lee et al., (2015) suggested that attitude toward behavior can predict physician medical error reporting behavior without confirming it. They hypothesized that attitude toward the behavior represented the positive or negative evaluation of event reporting behavior, and that this assessment has affected physicians' behavioral intentions (Lee, Yang, & Chen, 2015). This assertion emphasized the importance of the proposed study that sought to understand all the factors that have influenced doctors' reporting behaviors.

Culture of Safety

The development of a culture of safety in hospitals was central to the achievement and improvement of patient safety initiatives and care quality (Jones & O'Connor, 2016;

Weaver et al., 2013). Weaver et al. (2013) wrote that the existence of a culture of safety have contributed to shaping healthcare professionals and clinicians' perception about normal behaviors associated with patient safety. They also recognized that a culture of safety informed physicians' awareness about what was commendable and what was indictable. Thus, a culture of safety impacted a clinician's enthusiasm to involve in safe behaviors (Weaver et al., 2013). For a culture of safety to influence and provide an exceedingly consistent and safe care, it must rely on three predominant principles such as trust, reporting, and improvement (Tsao & Browne, 2015). The presence of these principles may allow clinicians to trust their organization, regularly report errors to learn from their mistakes and improve (Tsao & Browne, 2015). But, health care organizations need to hold their doctors accountable to the observance of safety protocols and measures to sustain a high degree of consistency and trust (Tsao & Browne, 2015).

While researchers have agreed that a culture of safety was the cornerstone of quality care, they did offer different perspectives on the components and principles of a culture of safety. Weaver et al. (2013) suggested that culture of safety needed to be based on trust, reporting, and improvement. Nevertheless, Ulrich and Kear (2014) contended that a culture of safety must include three critical elements such as learning culture, just culture, and reporting culture. A just culture in which fairness and accountability were important elements defined what was acceptable and unacceptable whereas a reporting culture empowered and facilitated errors reporting. A learning culture offered the opportunity to learn from errors and safety events (Ulrich & Kear, 2014). These three elements were connected because without a just culture, there would be less reporting;

without error disclosure, physicians would have no prospect to learn from their mistakes and improve. Ulrich and Kear (2014) assertion could also explain the actual underreporting gap because the lack of a culture of safety in a health care organization could cause underreporting of errors (Kagan & Barnoy, 2013).

Kagan and Barnoy (2013) asserted that the way culture of safety was implemented in a health care organization influenced physicians' patient safety behaviors and medical error reporting. For the safety culture to impact physicians' behaviors, there needed to be a positive climate within the health care organization. With this kind of positive working environment, doctors would be able to ask questions when they come across something they do not understand (Kagan & Barnoy, 2013). It was obvious that a health care organization's environment that was prone to a culture of safety may be favorable to physicians regarding errors reporting, and that could lead to an improvement in patient care (Hemingway, O'Malley, & Silvestri, 2015). In contrast, the absence of a culture of safety could hinder the implementation of patient safety mechanism and discouraged physicians' mistake reporting (Lee, Yang, & Chen, 2015). Therefore, the lack of a culture of safety could explain in part physicians' underreporting behaviors and could constitute an important factor that have impacted doctors' decision-making process.

Ulrich and Kear (2014) demonstrated that a culture of safety was related to doctors' behaviors such as disclosing adverse events. Their research conducted in 37 states indicated that a higher safety performance in hospitals was associated with a higher level of a culture of safety. This finding was the indication that health care

organizations and leaders need to devote sufficient time and efforts to implement a culture of safety in their institutions. The reason for adopting a culture of safety in all hospitals was that a culture of safety has an influence in physicians' errors reporting and personal views (Kagan & Barnoy, 2013). When physicians found the error-handling procedure to be appropriate and had all the safety information available, they would become more likely to engage in patient safety behaviors such as reporting errors (Kagan & Barnoy, 2013).

Kagan and Barnoy (2013) used the example of a study conducted in Israel to investigate the correlation between the culture of safety and error reporting the incidence to assert organizational culture of safety which influenced physicians' reporting behaviors. They stated that their conclusions were consistent with previous studies that found a similar relationship between an organizational culture of safety and nurses' reporting behaviors. As Kagan and Barnoy (2013) pointed out, the implications for healthcare organizations were to make a significant influence on the expansion of a culture of safety through the creation and promotion of a vision and strategy for safety and quality. Ulrich and Kear (2014) shared Kagan and Barnoy's vision by calling on healthcare executives to promote a culture of safety.

Abdi, Delgoshaei, Ravaghi, Abbasi, and Heyrani (2015) recognized that ensuring patient safety was a high priority in hospitals. It was because patient safety formed the underpinning of healthcare delivery (Ulrich & Kear, 2014). However, achieving patient safety formed the basis in the creation of a culture of safety that was suggested as an important strategy to improve patient safety (Abdi et al., 2015). Moreover, the creation of

a culture of safety which prohibited the blame and punitive culture would make physicians feel more comfortable in reporting errors while sustaining professional accountability (Abdi et al., 2015). In fact, per Abdi et al. (2015), the adoption of a culture of safety in hospitals contributed to increasing errors reporting. Kagan and Barnoy (2013) supported Abdi et al. (2015) findings by acknowledging the existence of a positive correlation between a culture of safety and physicians' reporting behaviors. From this perspective, it was obvious that a healthcare organization with a positive culture of safety could learn from medical errors and proactively changed the causal systems to prevent mistakes from happening instead of blaming or punishing the perpetrator (Abdi et al., 2015).

Nie et al. (2013) contended that the IOM report "To Err is Human: Building a Safer Health System" reasoned for the development of a safety culture in which medical errors can be disclosed without any blame. While Nie et al. (2013) recognized the importance of safety culture, they also alleged that the existence of patient safety culture has promoted patient safety and has helped to enhance patient safety standards. There was no doubt that the implication of this finding for healthcare organization has contributed to the development of a safety culture to promote quality care and ensure patients' safety. Hemingway et al. (2015) agreed with this assertion and suggested that healthcare organizations and professionals including physicians must commit to a culture of safety which was indispensable to improve quality care and avoid medical errors. Moreover, patient safety culture was seen as an indispensable tool to direct doctors' voluntary behaviors toward seeing patient safety as a high priority (Fujita et al., 2013).

Patient Safety

Patient safety was an eminent challenge for healthcare organizations and professionals in the United States and around the world (Brasaite, Kaunonen, & Suominen, 2015). In the U.S., patient safety moved to the forefront of healthcare following the surprising and breakthrough IOM report of 1999 (Ulrich & Kear, 2014). Defined as "the absence of preventable harm to the patient during the process of health care," patient safety was a critical concept in healthcare. In this way, Brasaite et al. (2015) suggested that improving healthcare depended on the shared responsibility for patient safety among doctors and patients. However, for Ulrich and Kear (2014), improving patient safety depended on the health care ability to provide safe, effective, patient-centered, timely, efficient, and equitable care. They emphasized the need for healthcare leaders to create a working environment that would prevent and mitigate errors. In contrast, Brasaite et al. (2015) found that it has been important to improve patient safety attitude between physicians to promote a safer atmosphere for patients.

Ammouri et al. (2015) contended that patient safety was central to healthcare quality. As such, it represented a significant parameter scrutinized by healthcare institutions. The reason was that each year many deaths were recorded in hospitals due to medical errors and adverse events. Ammouri et al., (2015) recognized the importance of reducing the death rate passed by strengthening patient safety. However according to Ulrich and Kear (2014) the improvement of patient safety in hospitals could not be made without ending the blame and punitive culture that hindered physicians reporting of medical mistakes. Therefore, it was evident that achieving a better patient safety required

a fundamental change from a punitive culture to a culture that facilitated openness and transparency.

Physician Training

It was unfortunate that when medical errors occurred, physicians have failed to meet their expectation which was to report these adverse events. Despite physicians' ethical responsibilities, errors were reported in less than a third of all cases (Hannawa, Shigemoto, & Little, 2016). Hannawa et al., recognized that there was a disclosure gap, but the reasons for this gap were multiple. Hannawa et al. (2016) asserted that reporting errors were something psychologically difficult for doctors to do because it challenged their professional pride and hospitals did not provide physicians the support needed to move forward and disclose mistakes. However, in Hannawa et al.' view, the important factor that held physicians back was their lack of skills or expertise in handling errors reporting. This raised the question of physicians' errors disclosure training and whether they received the appropriate training. Anwer and Abu-Zaid (2014) answered to this question was unequivocal. Physicians and medical students were not well equipped with the skills needed to handle medical errors disclosure. The reason behind doctors' lack of training was that formal education of transparency in medical mistakes was inadequately taught in medical education programs and negligible (Anwer & Abu-Zaid, 2014). Thus, physicians were confronted with distressing challenges when they face with medical errors reporting. In such situation, physicians decided to follow their instinctive feeling and cover these errors (Anwer & Abu-Zaid, 2014).

Nabilou, Feizi, and Seyedin (2015) recognized that the medical advances have contributed to the improvement in health care services. However, they also acknowledged that these advancements threatened patient safety in hospitals with the high number of deaths due to medical errors that were underreported. The underlying reason or factor behind physician underreporting behaviors was the lack of proper training, skills, and knowledge on how to handle such situation (Alsafi et al., 2015; Nabilou et al., 2015). According to Alsafi et al. (2015), physicians' knowledge about medical mistakes and mistakes reporting was crucial to understand to attain a better quality and the safer health care environment. Nevertheless, this goal could not be achieved without providing physicians with an appropriate education and training to improve their knowledge, experiences, and attitudes regarding patient safety including medical errors reporting (Nabilou et al., 2015). Without adequate training, errors could remain underreported, and efforts to reach a safer health care environment remained ineffective (Nabilou et al., 2015).

Tevlin, Doherty, and Traynor (2013) recognized that physicians had an ethical and professional obligation to report errors when they occurred because the reporting of medical mistakes represented a widespread sentiment that many countries and health institutes including the United States have embraced. However, the lack of knowledge has made difficult for physicians to report medical errors appropriately. Although the Institute of Medicine (IOM) in its landmark reports "To Err is Human: Building a Safer Health System" (1999) and "Crossing the Quality Chasm: A New Health System for the 21st Century" (2001) has called for physicians training, it was unfortunate to see that

today doctors lacked knowledge and expertise in handling medical errors (Bradley, Fischer, & Walsh, 2013). This lack of knowledge affected doctors' attitude regarding disclosure of medical errors (Yaprak & Seren, 2015). These findings emphasized the need for physicians training to improve their reporting skills, attitudes, and perceptions of errors reporting (Yaprak & Seren, 2015).

Medical Malpractice

Doctors who made mistakes had a professional duty imposed by their code of ethics to report their errors and even inform the patient. But, doctors failed to comply with their medical code of ethics and chose not to disclose the mistakes. Physicians concerns were that the reporting of medical errors would increase the risk litigation that became more and more frequent (Bonetti, Cirillo, Musile, & Trinchero, 2016). By enacting the tort system in the U.S. under which medical mistakes were prosecuted, lawmakers wanted to discourage negligence by financially punishing neglectful physicians and recompensing the incapacitated parties (Sohn, 2013). Nevertheless, this law has opened the door for patients to sue physicians without knowing the central difference between adverse events and medical errors, and between system errors and true negligence (Sohn, 2013).

Bonetti et al. (2016) alleged that medical malpractice involved patient harm, injury or death attributed to neglectful behaviors by a doctor or other health care professionals. Thus, patients or their families who thought that they were victims of medical malpractice filed claims against the physician. Bonetti et al. (2016) acknowledged that from 2004 to 2012, almost 39,000 claims due to suspected medical

malpractice were filed in Italy. Among these 39,000 claims, only 15,000 were compensated, meaning that half of the claims were not considered as negligent acts. The U.S. was not immune to the medical errors litigation. Votruba and Saks (2013) asserted that in Arizona at least 20,000 injurious adverse events were registered each year that resulted in 1,300 deaths. However, only 5,600 cases were considered as negligent acts. Votruba and Saks also noted that nine lawsuits have risen from every 100 negligent adverse events and two from every 100 adverse events.

The increasing number of litigations had a negative impact on doctors' behaviors (Sohn, 2013). Furthermore, the medical errors litigations did not add to the physicians' motivation. Instead, they contributed to the creation of an environment of fear and anxiety where physicians were reluctant to report any medical mistakes that occurred during the delivery of healthcare services (Sohn, 2013). Also, the plethora of lawsuits constrained any chance of transparency and openness required to categorize and address the root causes of medical errors (Schwartz, 2016). In fact, a medical malpractice reform was needed to improve patient safety (Schwartz, 2016; Sohn, 2013; Votruba & Saks, 2013).

Summary and Conclusion

This chapter addressed the factors that prevented doctors to report medical errors. From a theoretical standpoint, this chapter explained how the TPB and its constructs such as attitude, subjective norm, and perceived behavioral influenced individual's behavior in making an ethical decision. Furthermore, the chapter explained the deontological theory propositions and how the framework could clarify and directing physicians' moral

decision making. It also described some factors such as the culture of safety, patient safety, physician training, and medical malpractice and how the impact errors were reporting.

Medical errors frequently happened in the delivery of healthcare services. When these mistakes occurred, most physicians were hesitant to report those errors. Although doctors had an ethical and professional obligation to report errors, and even though physicians believed that errors disclosure was the right thing to do, their behaviors created a reporting gap in what they said and did when errors occurred. In fact, many factors could explain physicians' underreporting behaviors. The known factors included fear of repercussion, loss of trust, blame, lack of psychological support, and medical malpractice. Other unknown factors that the proposed study seeks to understand may also explain doctors' behaviors toward errors reporting.

Research have shown that to alleviate the barriers that prevented physicians to disclose mistakes, it should be imperative for healthcare organizations to prohibit the blame and punitive culture that inhibited any chance of error reporting and adopt a culture of safety that promoted openness and transparency (Abdi et al., 2015; Kagan and Barnoy, 2013; Ulrich & Kear, 2014). Moreover, studies have pleaded for a reform of the actual tort law that was enacted to punish physician's negligent act and recompensed the victims because the excessive use of this law in medical errors litigations impeded doctors' mistakes reporting. This study would fill the gap in understanding factors that influenced doctors' disclosure of medical errors. Knowing these factors would add to the

knowledge base and help healthcare organizations to design a mechanism to improve errors disclosure.

The next chapter examined the methodological approach use to understand factors that influenced physicians' disclosure of medical errors. It explained the research design and how it is related to the research questions. The chapter also delineated the ethical procedures required to complete this study.

Chapter 3: Research Method

Introduction

Evaluating and analyzing factors that influenced physicians' reporting of medical errors was necessary to develop a policy or program that facilitated errors disclosure. These factors included fear of disclosure, organizational culture toward patient safety, physician apology, professional ethics and transparency, and patient and physician education. The study used Ajzen's TPB and Kant's deontological theory to help understand and explain these factors that affected doctors' behaviors, especially medical error reporting practices and moral decision making.

One research question and five hypotheses guided the study:

RQ1: What are the most critical perceived barriers affecting physicians' readiness to disclose major medical errors?

$H_0 1$: Physicians' readiness to report major medical errors are not related to fear of disclosure.

$H_a 1$: Physicians' readiness to report major medical errors are related to fear of disclosure.

$H_0 2$: Physicians' readiness to report major medical errors are not related to organizational culture toward patient safety.

$H_a 2$: Physicians' readiness to report major medical errors are related to organizational culture toward patient safety.

H_03: Physicians' readiness to report major medical errors are not related to physician apology.

H_a3: Physicians' readiness to report major medical errors are related to physician apology.

H_o4: Physicians' readiness to report major medical errors are not related to professional ethics and transparency.

H_a4: Physicians' readiness to report major medical errors are related to professional ethics and transparency.

H_o5: Physicians' readiness to report major medical errors are not related to patient and physician education.

H_a5: Physicians' readiness to report major medical errors are related to patient and physician education.

The next section described the research design as well as the population from which the sample was drawn. It also described the sampling and data collection procedures followed by the instrumentation, threat to validity, and ethical procedures. The chapter ended by a summary of the main point discussed.

Research Design

A quantitative cross-sectional online survey method and paper questionnaire method were used to understand factors that impacted physicians' disclosure of medical errors. The use of a quantitative design employing both a web and paper-based survey research methodology were appropriate for this study because the study sought to determine fundamental factors which prevented the majority of physicians from reporting

errors. Cross-sectional allowed for a comparison of different variables. In this case, the independent variables were fear of disclosure and physician image consequences, organization culture toward patient safety, physician apology, professional ethics and transparency, and patient and physician education in relation to the dependent variable willingness to disclose medical errors. Moreover, this design allowed for a consistent and steady collection of data.

Furthermore, the choice of a quantitative method was relevant as the technique allowed to measure the incidence of numerous opinions and views among physicians regarding disclosure of medical errors. Also, this method was useful in controlling for any bias so that the phenomenon of physicians' errors underreporting could be well understood in an unprejudiced way (Park & Park, 2016). Furthermore, the quantitative method allowed for a broader study and enhance generalization of findings.

In this study, I determined the most critical perceived barriers affecting physicians' readiness to disclose major medical errors. The chosen strategy helped to identify perspectives and reported behaviors of physicians (Kutty & Sreeramareddy, 2014). Thus, the research design was connected to the research questions.

Time and Resource Constraints

When deciding which research design to choose, researchers consider constraints and study purpose. A quantitative cross-sectional research design was chosen for many reasons. One reason was that the method was predominantly used in social sciences, and it was swift and easy to conduct (Frankfort-Nachmias & Nachmias, 2008; Sedgwick, 2014). Another reason was that the design allowed researchers to conduct studies in

factual scenarios using probability sampling to strengthen the external validity of the study (Frankfort-Nachmias & Nachmias, 2008). Research constraints meant that the study took place over a comparatively limited period where data collection was affected by physicians' busy schedules, family obligations, access to the internet, and their uneasiness to answer the questions. This has resulted in a reduction of the amount of information to be collected. Moreover, as the research method did not allow for follow-up because participants were surveyed once, resource constraints prevented the researcher from following up with physicians who did not participate in the study to determine whether there were significant differences between doctors who were surveyed and those who opted out from the study. For this study, the data collection process took two months to complete; therefore, all online based and paper-based questionnaires were received within 60 days. Data collection started on October 20, 2017 and ended on December 20, 2017.

Consistency of Design Choice

A non-experimental research design was used because this study did not intend to manipulate the independent variables (Radhakrishnan, 2013). This design facilitated data collection at a given point in time. It was consistent with the research design needed to advance knowledge in the discipline because most studies analyzed for the literature review used cross-sectional design (Alsafi et al., 2015; Khammarnia et al., 2015; Martinez & Lehman, 2013; Mira et al., 2015; Poorolajal, Rezaie, & Aghighi, 2015; Sedgwick, 2014; Tagaddosinejad et al., 2013). This research method did not establish cause and effect relations, it has been used in health care research to investigate existing

status of a phenomenon (Radhakrishnan, 2013; Sedgwick, 2014). However, based on my analysis I was able to make causal inference from it. This approach was appropriate as it represented a cost-effective technique for collecting data from physicians and afterward, describing form of relationships between variables for impartial interpretation and description (Williams, 2012). I used the survey design to reduce researcher's bias and to enhance physicians' confidentiality as well as privacy. The survey was completed anonymously. Additionally, other researchers could build on the results of the proposed study to conduct qualitative research to provide rich information about doctors' live experiences of medical errors reporting.

Methodology

Population

The study's target population consisted of physicians working in three community hospitals located in Iowa and Illinois. The hospitals physicians' database combined had a list of more than 2,000 physicians from various specialties. The choice of this population was due to the fact that only physicians could provide the reasons behind their medical errors underreporting behaviors. For this purpose, I surveyed a sample of physicians working in these community hospitals. The sample size was determined through power analysis.

Sampling and Sampling Procedures

A simple random sampling method was used to choose the sample for this study. This sampling strategy was commonly used in survey sampling, and it offered an equal chance for each participant to be included in the sample (Acharya, Prakash, Saxena, &

Nigam, 2013; Frankfort-Nachmias & Nachmias, 2008; Tipton, 2013). This sampling technique was advantageous to reduce selection bias and contribute to improving generalization. The choice of this sampling strategy ensured a better representation of groups of physicians (Acharya et al., 2013).

The sample came from these hospitals database which contained a significant number of physicians. From the list, physicians were randomly selected. Researchers used different tools such as tables of random digits or computer programs to create random samples. In this study, I used a Microsoft Excel, especially its RAND function to generate the sample. The choice of this function was based on the fact that it allowed the generation of numbers that were homogeneous and randomly distributed, and the technique was also reliable with simple random sampling (Allbright, Winston, & Zappe, 2009). After the data set was ready, I followed these steps to create the sample:

- Inserted a new column titled “Random number” in the worksheet.
- Typed “RAND()” in the first empty cell and
- Validated by pressing “Enter” and a cell with a random number showed up.
- Copied the formula and pasted it in other cells in the “Random _number” column.
- Sorted the values in “Random number” column.
- Selected the first 129 physicians who corresponded to the sample size determined through power analysis.

Inclusion and Exclusion Criteria

Physicians who participated in this study were from the three community hospitals. They have worked in these hospitals for at least 1 year. These doctors must have knowledge of medical errors and errors reporting. They must also consider whether their behaviors and attitudes toward mistakes disclosure were guided by their behavioral, normative, and control beliefs which were factors that influenced an individual's behaviors.

It was evident that not all doctors from these hospitals would participate in the study. Resident physicians and doctors without a valid e-mail and postal address were excluded from this study

Sample Size

The determination of a sample size was critical in research as it defined how large or small the sample would be (Charan & Biswas, 2013; Fugard & Potts, 2015). The calculation of the sample size was determined using power analysis, and it took into consideration the effect size, alpha level, and power level (Fugard & Potts, 2015). Thus, to calculate the sample size for multiple linear regression, the input parameters included an alpha (α) level of 0.05, an effect size of 0.15, and a power analysis of 0.95. With these parameters, the power analysis tool found that the estimated sample size for this study was 129. G*Power 3.1.9.2 was the tool used to calculate the sample size for this study.

The effect size, alpha and power levels chose were used in some studies cited in the literature review (Nevalainen, Kuikka, & Pitkala, 2014; Poorolajal, Rezaie, & Aghighi, 2015; Tagaddosinejad et al., 2013). Effect size specified the extent of

experiential effect or correlation among variables. The variables were important in research (Maher, Markey, & Ebert-May, 2013; Peng & Chen, 2014). In this study, setting power at 95% and alpha error probability at 0.05% were an indication that there was 5% probability of erroneously sustaining the null hypothesis and 95% chance of obtaining the response from physicians. Furthermore, the medium effect size of 0.15 have helped to measure the strength of the factors. For this study, the sample size was 129 respondents, after power analysis. The sample size n=129 met the minimum requirement for effect size, even though 122 survey questionnaires were collected.

Procedures for Recruitment and Data Collection

Recruiting Procedures

I sent a letter to one hospitals to request access to the list of physicians. Once access was granted, physicians' names were entered into an online randomized system that which selected eligible participants. For the other two hospitals, I recruited doctors from their web sites. Selected doctors received an email and a letter requesting them to participate in the study. The email and letter explained to selected physicians the purpose of the study. Two weeks later, a second email and letter were sent out inviting qualified doctors to complete the survey. The email contained a link to SurveyMonkey, an internet-based survey tool which hosted the survey. On the other hand, the letter contained the paper-based questionnaire and the consent form. The demographic data collected included participants' gender, age, years of experience, and level of education, as well as specialty. The specialty field was typed in by physicians.

Upon clicking on the survey link to access the questionnaire, eligible physicians were presented with an informed consent document which explained the study, and the intended and confidential status of the research. At this page, physicians had the option to click on "YES" to continue and complete the survey or click on "NO" to simply exit the survey. Physicians who agreed to take the survey completed it between 05-10 minutes. The completion time for the paper-based questionnaire was unknown. It was important to emphasize that the data was collected only one time as the cross-sectional approach required it. Eligible physicians were informed that they could exit the study at any time they wanted. As the research design did not allow any follow-up because data were gathered at one point in time, there was no any additional interviews with the physicians.

289 survey questionnaires were mailed to participants in these community hospitals. Six participants responded that they were unable to complete the survey since they were no longer working in these hospitals. 108 participants fully completed the survey. A copy of mailed questionnaire survey is in Appendix C. For the purpose of this study, only 122 participants were analyzed.

Instrumentation and Operationalization of Constructs

Instruments

Zaghloul, Elsergany, and Mosallam (2015) believed that reporting of medical errors was beneficial to patients, physicians and health care organizations as it has contributed to decreasing lawsuits and enhanced patient safety. But, they also acknowledged that there was a deficiency in the literature about the tools to assess the barriers to errors disclosure. For this purpose, Zaghloul et al. (2015) developed a

questionnaire to identify and assess factors which prevented physicians to report medical mistakes.

Zaghloul et al. questionnaire was developed based on the literature regarding medical errors disclosure. The questionnaire had two sections. The first section was related to participants' demographic information such as age, gender, position, years of experience, specialty, and education while the second part contained 27 items related to errors reporting. Age was measured less than or greater than and equal to 40. Sex was measured to be female or male. Position was measured to be either physician or nurse. For specialty, this is a string variable and participants can choose to fill in the blank. For education, it was measured bachelor's degree or postgraduate degree. For experience, it was measured less than or greater than and equal to 10. For the study, only 24 items were analyzed and used. Since, all the participants were physicians, the demographic variable position was eliminated from this study. The independent variables included 23 items and the dependent variable included 1 item. The instrument used a Likert scale to rate the 27 items that range from (1) strongly disagree, (2) disagree, (3), neutral, (4) agree, to (5) strongly agree. This questionnaire was used in this study to collect data needed to answer the research questions. As the study focused on understanding the factors influencing physicians' disclosure of medical errors, it was proven that Zaghloul et al. (2015) instrument was appropriate because the questionnaire was developed to assess physicians' underreporting barriers and facilitate errors disclosure.

Permission to use this instrument from the developers or their copyright agency was required. I filed an online application on Rightslink website, and I received a

copyright license from Wolters Kluwer Health, Inc., the license Publisher and Copyright Clearance Center. The license to use the questionnaire was included in Appendix B.

Reliability and validity were important concepts in quantitative research. Reliability referred to the instrument's consistency to produce the exact results when used in the same condition among a similar population while validity related to the degree to which the instrument measured what it was set to measure (Bolarinwa, 2015). To validate the questionnaire, the developers conducted a pilot testing among eight physician and nurses (Zaghloul et al., 2015). The feedback received allowed the developers to modify the questionnaire. The new version of the questionnaire that I used was tested again among 1056 physicians and nurses working in public and private hospitals in the United Arab Emirates. The Cronbach coefficient of the questionnaire for the first 12 items was 0.65 and 0.62 for the 11 items remaining (Zaghloul et al., 2015). Also, Zaghloul et al. tested the instrument validity and it was found to be valid. The questionnaire was included in Appendix B. The approval to use the questionnaire was included in Appendix A.

The dependent variable was measured using part of a questionnaire titled "Internists Willingness to Disclose Medical Errors Questionnaire". The questionnaire was retrieved from the Linthorst et al (2012)'s study. Only 4 items were requested to be used in this study which were item questions 24 to 27. The Cronbach coefficient of the questionnaire was 0.67. Permission to use the questionnaire was requested via email. The date for the request was Sept 10, 2017. Through email content, G.E Linthorst approved the request to use the questionnaire for this study to be conducted in the United States.

Linthorst also authorized me to modify the instrument as needed. For this study, I modified the original scale. Instead of "Probably" and "Certainly", I used 4-point Likert scale ranging from (1) Probably Not, (2) Probably, (3) Certainly to (4) Certainly Not. The questionnaire was included in Appendix D. The approval email content was included in Appendix C.

Operationalization

The principal variables of interest in this study included independent variables of fear of disclosure, patient safety, physician apology, ethics and transparency, as well as patient and physician education. The dependent variable was physicians' willingness to disclose medical error. The independent variables represented the underlying factors or barriers determined by Zaghloul et al. (2015) such as fear of disclosure, physician apology, organizational culture toward patient safety, professional ethics, and patient and physician education that prevented physicians to report errors when they occurred. Zaghloul et al. (2015) defined disclosure of error within the context of the questionnaire as "communication between a health care provider and a patient, family members, or the patient's proxy that acknowledges the occurrence of an error, discusses what happened, and describes the link between the error and outcomes in a manner that is meaningful to the patient" (p. 1). The dependent variable, physician willingness to disclose medical errors determined if physicians reporting was affected by the primary factors mentioned. The dependent variable was derived from item 26 from the questionnaire developed by Linthorst et al (2012). There was only one dependent variable for this study however participants completed the 4 items (item 24 to 27) via survey questionnaire. The reason

for one item per dependent variable was because multiple linear regression only allowed for one item for the dependent variable.

The independent variables as described served as barriers to major medical errors disclosure. Each barrier was rated by several items. Fear of disclosure was measured by ten items (8, 9, 10, 11, 12, 13, 14, 15, 16, and 17). There were four items (6, 21, 22, and 23) for organizational culture toward patient safety. Three items (18, 19, 20) on the questionnaire were used to rate physician apology. Three items (1, 2, and 3) served to measure professional ethics and transparency. The independent variable patient and physician education was measured using three items (4, 5, and 7).

The principal factors were assessed using an ordinal level measurement scale. Precisely, physicians rated their perception of these factors using a Likert scale ranging from 1 = “Strongly disagree”, 2 = “Disagree”, 3 = “Neutral”, 4 = “Agree”, and 5 = “Strongly Agree”. It was important to note this questionnaire produced data where each response was assessed using a five-point Likert scale as described above. However, the developers used factorial analysis to categorize the items into five factors, and the score of each item exposes the subsequent factor. The dependent variable was assessed using ordinal level measurement. The willingness to report a major mistake was measured using a Likert scale ranging from 1=” Probably Not”, 2 =” Probably”, 3 = “Certainly, and 4 = “Certainly Not”.

Data Analysis Plan

Statistical Package for Social Sciences (SPSS) version 24.0 was used in this study for data analysis. SPSS served as a tool for data cleaning and screening. The statistical

screening procedure did not modify the survey, but it allowed the researcher to be attentive to the descriptive statistics of individual items such as means, standard deviation and skewness (DeSimone, Harms, & DeSimone, 2015). Using the statistical screening, the researcher detected extreme responses by comparing individual answers to item response distributions. For data cleaning procedures, I inspected each data to detect any data-entry errors as suggested by DeSimone et al. (2015). Multiple linear regression was used to analyze the relationship between independent variables and dependent variable.

Research Question and Hypotheses

RQ1: What are the most critical perceived barriers affecting physicians readiness to disclose major medical errors?

$H_0 1$: Physicians' readiness to report major medical errors are not related to fear of disclosure.

$H_a 1$: Physicians' readiness to report major medical errors are related to fear of disclosure.

$H_0 2$: Physicians' readiness to report major medical errors are not related to organizational culture toward patient safety.

$H_a 2$: Physicians' readiness to report major medical errors are related to organizational culture toward patient safety.

$H_0 3$: Physicians' readiness to report major medical errors are not related to physician apology.

$H_a 3$: Physicians' readiness to report major medical errors are related to physician apology.

H_o4: Physicians' readiness to report major medical errors are not related to professional ethics and transparency.

H_a4: Physicians' readiness to report major medical errors are related to professional ethics and transparency.

H_o5: Physicians' readiness to report major medical errors are not related to patient and physician education.

H_a5: Physicians' readiness to report major medical errors are related to patient and physician education.

Statistical Tests

The independent variables were fear of disclosure, patient safety, physician apology, ethics and transparency, as well as patient and physician education. The dependent variable was willingness to disclose medical error. Multiple linear regression tests were performed to determine the factors which predicted medical errors reporting. Statistical significance was set at alpha (α) = 0.05. Descriptive statsitcs was conducted to summarize and analyze the demographic data. Inclusion of potential covariates was not completed and there was no evidence that other variables such as year of experience and specialty type could influence physician reporting behavior. The interpretation of test results was based on the parameters inputs such as alpha = 0.05, effect size = 0.15, and confidence level at 95%.

Threats to Validity

Threats to External Validity

The main threat to external validity was selection bias. In order to avert the selection bias in this study, the researcher used a simple random sampling method. This strategy helped to ensure a better representation of the participants and improve generalizability of the findings. Thus, in terms of extenal validity, this study might be generalize to all physicians working in the community hosptials.

Threats to Internal Validity

A threat to internal validity ocurred when the instrument did not have satisfactory reliability (Melnyk & Morrison-Beedy, 2012). Discrepancies in the instrument could lead to inaccurate answers that would affect the research results. Thus, to avoid this instrumentation bias, I made sure the questionnaire was reliable and the questions properly labelled. In the case of this study, the questionnaire has been found to be reliable and valid with a Cronbach alpha of 0.65 and 0.62.

Ethical Procedures

I collected data from physicians working at three community hospitals located in Illinois and Iowa. Before the data collection process, I requested IRB approval. The IRB approval number was 05-11-170338815. I took National Institute of Health (NIH) online ethics training to ensure strict adherence to protocol and safety measures of data collection.

In regard to the ethical concerns related to recruitment material and data collection, necessary precautions was taken to protect the physicians' confidentiality.

Physicians signed a consent document before the data collection. The document provided doctors with relevant information regarding the purpose of the study, the data collection procedures, data protection procedures, and voluntary study participants procedures. The consent document outlined risks and benefits to the physicians. The study was not intended to have any risks. The research study followed all ethical standards and addressed all ethical issues. The Walden's Institution Review Board approved the research before the data collection process. Study participants were informed that the data results were used for research purposes only.

The data collected was coded to be anonymous and treated with confidentiality. The data files were saved on my computer and a flash drive protected with a password. The study related documents were stored in a fireproof lock safe. The data remained stored for at least five years before being destroyed. I would use a computer software to erase the data files. Hard copies should be destroyed by incineration.

Summary

The proposed study used a quantitative, cross-sectional online and paper-based survey method to evaluate critical barriers which affected doctors readiness to disclose major medical errors. Data was collected from physicians operating in community hospitals. A simple random sampling method was used to select the study participants. A questionnaire with a five-point Likert scale served as a data collection tool. Chapter 4 presented the data collection and results of the study.

Chapter 4: Results

Introduction

The purpose of this quantitative project was to determine the effect of i fear of disclosure, organizational culture toward patient safety, physician apology, professional ethics transparency, and patient and physician education on medical errors disclosure in the United States. This study had a cross-sectional quantitative design that included data collection from physicians. The survey questionnaire method was used to analyze the research hypotheses. The dataset contained 122 research participant respondents. For this study, the data set only included physicians who were working at three community hospitals located in Illinois and Iowa. The total sample size for this study was n=122. In this study, I analyzed the research questions and hypotheses, using multiple linear regression analysis through SPSS Version 24.

RQ1: What are the most critical perceived barriers affecting physicians' readiness to disclose major medical errors?

H_01: Physicians' readiness to report major medical errors are not related to fear of disclosure and physician image consequences.

H_a1: Physicians' readiness to report major medical errors are related to fear of disclosure and physician image consequences.

H_02: Physicians' readiness to report major medical errors are not related to organizational culture toward patient safety.

H_a2: Physicians' readiness to report major medical errors are related to organizational culture toward patient safety.

H_03: Physicians' readiness to report major medical errors are not related to apology.

H_a3: Physicians' readiness to report major medical errors are related to apology.

H_o4: Physicians' readiness to report major medical errors are not related to professional ethics and transparency.

H_a4: Physicians' readiness to report major medical errors are related to professional ethics and transparency.

H_o5: Physicians' readiness to report major medical errors are not related to patient and physician education.

H_a5: Physicians' readiness to report major medical errors are related to patient and physician education.

The study design described in Chapter 3 included the targeted population, sample size, data collection strategy, and data analysis plan. This chapter presents the results and findings of the study in graphic and narrative formats. Also, the chapter summarizes answers to the research questions.

Data Collection

My data collection covered two periods. The first period was from June 1, 2017 to August 24, 2017 (55 days). During the first period, I emailed 600 physicians in a hospital located in Iowa the link to complete the survey in SurveyMonkey. Only 24 participants completed the questionnaire. Two physicians declined to participate in the study without giving any specific reason.

During the collection process, I noticed two discrepancies. The first inconsistency related to low responses rate led me to request a change in procedure to address the issue. The change requested was to provide a $5 Starbuck gift card to participants as a thank you gift and motivate them. The second discrepancy was related to the instrument. In fact, the questionnaire did not have any item allowing me to measure the dependent variable. To address the issue, I amended the Institutional Review Board (IRB) application to add a new questionnaire and two hospitals to increase my chance to get more responses. All data collected at this point were deleted.

The second collection period started after IRB approval. It ran from October 20, 2017 to December 20, 2017 (60 days). No inconsistencies in data collection were detected. The collection involved using the questionnaires "A Measure of Barriers toward Medical Disclosure among Health Professionals in the United Arab Emirates" and the "Internists' Willingness to Disclose Medical Errors Questionnaire." The first questionnaire served to measure the independent variables. The second questionnaire measured the dependent variable. Requesting access to the first questionnaire involved an operational procedure that required the provision of private information such as name, address, phone number, email address, and institution. Supplementary material included the study's purpose, title, and description (see Appendix). Requesting access to the second questionnaire involved writing an email to the primary investigator and receiving a reply to approve the use of the questionnaire.

There were two types of data collection process. The first type of data collection is via email. The second type of data collection is via mail. A total of 483 questionnaires

were sent. Twelve emails and six mail questionnaires were sent back to me because the participants were no longer working in these hospitals. The response rate was 25%. The average time spent on online survey completion was 6 minutes and 20 seconds. Via email, I collected data through an online questionnaire via SurveyMonkey from physicians operating in three different community hospitals in Illinois and Iowa. Physicians were emailed a link to complete the study, along with the consent form. A paper survey was mailed to physicians' work addresses. In total, 125 completed survey questionnaires were received via email and mail. However, only 122respondents fully completed the questionnaire and therefore via power analysis, 122 respondents' data was used in this study.

Handling of Missing Values

As previously noted, I did not collect the original data for this study; consequently, attention to missing data and data cleaning is essential (Cheema, 2014). I used list-wise deletion to handle this issue in instances where less than 10% of the data were missing. However, when more than 10% were missing, I used multiple imputations, a method to handle missing data. For data to be included in the analysis, all participants must fully complete the survey. Therefore, completed survey questionnaires with missing values were excluded from the final data.

Data Exclusion

The main exclusion criteria were participant professionals who were not physicians. Furthermore, participants who did not have a valid email and postal addresses to receive survey instrument were excluded.

Data Inclusion

The data only included information from physicians who have worked more than one year in the community hospitals. Statistics from three doctors were removed. They failed to state their physicians.

Instruments

The survey instrument from Zaghloul, Elsergany, and Mosallam (2016)'s journal article was used in this study. The questionnaire was titled "A Measure of Barriers toward Medical Disclosure among Health Professionals in the United Arab Emirates." The license number for the questionnaire was 3942871027500. The license date was Sept 06, 2016. The licensed content publisher was Wolters Kluwer Health, Inc. There were 23 items in the questionnaire divided into five domains. The five domains were image consequences, patient safety, apology, professional ethics and transparency, and patient and physician education. The questionnaire also included the items for physicians' readiness to report major medical errors.

There were ten items for fear of disclosure (item 8, 9, 10, 11, 12, 13, 14, 15, 16, and 17). There were four items for organizational culture toward patient safety (item 6, 21, 22, and 23). There were three items for physician apology (item 18, 19, and 20). There were three items for professional ethics and transparency (item 1, 2, and 3). There were three items for patient and physician education (item 4, 5, and 7). All items in the questionnaire were rated using a 5-point Likert scale; 1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 =strongly agree for the independent variables. This questionnaire is attached in Appendix B.

In addition, there were four items related to physicians' readiness to report medical errors (item 24, 25, 26, and 27). The questionnaire was titled "Internists Willingness to Disclose Medical Errors Questionnaire" (Linthorst et al., 2012). Three items were not analyzed in this study. Only one item which was item 26 was analyzed in this study. Item 26 served to measure medical physicians disclosure of errors and near misses. Item 26 was measured on a Likert Scale; 1 represented probably not, 2 represented probably, 3 represented certainly, and 4 represented certainly not. The purpose of the questionnaire was to understand physicians' perspectives on the issues of medical errors disclosure. This questionnaire is attached in Appendix D.

Fidelity of statistical Tests and Categorization of Variables

I used multiple linear regression to analyze the samples and address the five research hypotheses. Given that the key variables analyzed were quantitative (ordinal), the challenges encountered while applying linear regression in SPSS were negligible.

Table 1

Relevant Variables Analyzed in This Study

Variable Label	Variable Name	Level of Measurement
AGE	Age of the Study participant	Numerical
SEX	Sex of the Study Participant	Categorical
SPECIALITY	Specialty	Nominal
EDUCATION	Education	Numerical
EXPERIENCE	Experience	Ordinal
CONSEQUENCES	Independent Variable	Numerical
SAFETY	Independent Variable	Numerical
APOLOGY	Independent Variable	Numerical
TRANSPARENCY	Independent Variable	Numerical
PHYS EDUCATION	Independent Variable	Numerical
ERRORS	Dependent Variable	Numerical

Table 2

Variable Definition and Measurement Scale

Variable Label	Variable Name	Level of Measurement	Value
AGE	Age of the Study Participant	Numerical	0-1
SEX	Sex of the Study Participant	Categorical	0-1
SPECIALITY	Specialty	Nominal	0-1
EDUCATION	Education	Numerical	0-1
EXPERIENCE	Experience	Ordinal	0-1
CONSEQUENCES	Independent Variable	Numerical	1-5
SAFETY	Independent Variable	Numerical	1-5
APOLOGY	Independent Variable	Numerical	1-5
TRANSPARENCY	Independent Variable	Numerical	1-5
PHYS EDUCATION	Independent Variable	Numerical	1-5
ERRORS	Dependent Variable	Numerical	1-5

Table 3

Variable Values and Definitions

Variable Label	Value
AGE	0 - Less than 40 years old
0-1	1 - More than 40 years old
SEX	A- Male
A-B	B- Female
EDUCATION	0- bachelor's Degree
0-1	1- Postgraduate Degree
EXPERIENCE	0- <10
0-1	1- >10

Table 4

Relevant Variables Coding

Variable label	Variable name
V12	AGE
H13	SEX
V14	EDUCATION
V154	EXPERIENCE
V134	SPECIALITY

Table 1 to 4 represented the variable labels, names, level of measurement, and values.

Demographics

Table 5

Age of Study Participants

	Frequency
<40 y	42
≥40 y	80
Total	122

According to Table 5, 42 study participants were under the age of 40 years old. There were 80 study participants were equal to 40 or greater years old.

Table 6

Gender of Study Participants

	Requency
Female	37
Male	85
Total	122

Table 6 showed that 37 female and 85 male physicians participated in the study.

Table 7

Education of Study Participants

	Frequency
Bachelor	1[a]
Postgraduate	121
Total	122

a. This participant with a bachelor's degree was allowed to practice as a doctor.

According to Table 7, there was only one study participant who received bachelor's degree. 121 study participants received postgraduate degrees.

Table 8

Work Experiences of Study Participants

	Frequency
Less than 10 years	42
More than 10 years	80
Total	122

From Table 8, 42 study participants have worked less than ten years in the community hospitals. 80 study participants have worked more than ten years in these hospitals.

Table 9

Specialty of Study Participants

Specialty	Frequency
Not Specified	4
Anesthesiology	1
Cardiology	7

(table continued)

Critical Care	8
Electrophysiology	1
Emergency Medicine	16
Endocrinology	1
Family Medicine	7
General Surgery	15
Infectious Disease	1
Internal Medicine	12
Neurological Surgery	1
OB-GYN	14
Oncology	6
Pathology	1
Pediatrics	11
Physical Medicine & Rehabilitation	1
Primary Care	1
Family Practice	12
Psychiatry	1
Urgent Care	1
Total	122

Table 9 depicted study participants' specialty. It revealed that physicians who took the survey came from various specialty. However, the dominant specialties were

emergency medicine, general surgery, OB-GYN, internal medicine, family practice, and pediatrics.

Data Analysis Results

Table 10 to 14 analyzed the relationships between the independent variables and dependent variable. For multiple linear regression test, I had five independent variables measured at continuous and ordinal levels. Therefore, the test assumptions were met.

Hypothesis 1

As illustrated in Table 10, there was no significant relationship between fear of disclosure and physician' readiness to report major medical mistakes. The *p* value was 0.754 ($p < 0.05$).

Table 10

Multiple Linear Regression of Relationship Between fear of disclosure and Physician' Readiness to Disclose Major Medical Mistakes

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	15.970[a]	40	.399	.818	.754
Intercept	1751.548	1	1751.548	3586.375	.000
Question_8	1.555	4	.389	.796	.532

(table continued)

Question_9	3.902	4	.975	1.997	.104
Question_10	.563	4	.141	.288	.885
Question_11	.808	4	.202	.414	.798
Question_12	1.003	4	.251	.513	.726
Question_13	.819	4	.205	.419	.794
Question_14	1.352	4	.338	.692	.600
Question_15	.843	4	.211	.432	.785
Question_16	2.659	4	.665	1.361	.256
Question_17	.680	4	.170	.348	.845
Error	35.652	73	.488		
Total	6315.000	114			
Corrected Total	51.623	113			

a. R Squared = .309 (Adjusted R Squared = -.069

Hypothesis 2

Table 11 showed there was a significant relationship between patient safety and physician readiness to report major medical mistakes. The p value was 0.50 ($p<0.05$).

Table 11

Multiple Linear Regression of Relationship Between Patient Safety and Physician' Readiness to Disclose Major Medical Mistakes

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	38.858[a]	75	.518	1.598	.050
Intercept	1906.568	1	1906.568	5880.725	.000
Question_6	.295	4	.074	.228	.921
Question_21	1.381	4	.345	1.065	.386
Question_22	.989	3	.330	1.017	.395
Question_23	3.049	3	1.016	3.135	.035
Question_6* Question_21	6.772	10	.677	2.089	.049
Question_6* Question_22	2.088	6	.348	1.074	.394
Question_6 Question_23	2.052	5	.410	1.266	.297
Question_21* Question_22	3.282	8	.410	1.266	.287
Question_21* Question_23	2.749	8	.344	1.060	.409
Question_22* Question_23	6.687	5	1.337	4.125	.004
Question_6* Question_21* Question_22	1.268	1	1.268	3.910	.055

(table continued)

Question_6* Question_21* Question_23	2.046	2	1.023	3.156	.053
Question_6* Question_22* Question_23	.000	0	.	.	.
Question_21* Question_22* Question_23	.000	0	.	.	.
Question_6* Question_21* Question_22* Question_23	.000	0	.	.	.
Error	13.617	42	.324		
Total	6526.000	118			
Corrected Total	52.475	117			

a. R Squared = .741 (Adjusted R Squared = .277)

Hypothesis 3

As shown in Table 12, there was a significant relationship between apology and physician' readiness to report major medical mistakes. The p values were 0.055 ($p < 0.05$).

Table 12

Multiple Linear Regression of Relationship Between Physician Apology and Physician' Readiness to Disclose Major Medical Mistakes

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	24.740[a]	41	.603	1.531	.055
Intercept	2397.354	1	2397.354	6081.061	.000
Question_18	1.208	4	.302	.766	.550
Question_19	3.276	4	.819	2.077	.092
Question 20	4.414	4	1.104	2.799	.032
Question_18* Question_19	3.208	6	.535	1.356	.243
Question_18* Question 20	3.737	8	.467	1.185	.319
Question_19* Question 20	2.841	8	.355	.901	.520
Question_18* Question_19* Question_20	3.552	3	1.184	3.003	.036
Error	29.567	75	.394		

(table continued)

Total	6479.000	117
Corrected Total	54.308	116

a. R Squared = .456 (Adjusted R Squared = .158)

Hypothesis 4

Table 13 indicated there was a significant relationship between professional ethics and transparency and physician' readiness to report major medical mistakes. The p value was 0.011 ($p<0.05$)

Table 13

Multiple Linear Regression of Relationship Between Professional Ethics and Transparency and Physician' Readiness to Disclose Major Medical Mistakes

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	21.344[a]	30	.711	1.893	.011
Intercept	1237.560	1	1237.560	3292.190	.000
Question_1	2.552	3	.851	2.263	.087
Question_2	.549	3	.183	.487	.692
Question_3	1.682	4	.420	1.118	.353

(table continued)

Question_1*	4.138	4	1.035	2.752	.033
Question 2					
Question_1*	4.277	6	.713	1.896	.090
Question 3					
Question_2*	3.373	5	.675	1.795	.122
Question 3					
Question_1*	.181	2	.091	.241	.787
Question_2*					
Question_3					
Error	33.456	89	.376		
Total	6626.000	120			
Corrected total	54.800	119			

a. R Squared = .389 (Adjusted R Squared = .184)

Hypothesis 5

Table 14 showed there was a significant relationship between physician education and physician' readiness to report major medical mistakes. The p value was 0.015.

Table 14

Multiple Linear Regression of Relationship Between Physician Education and Physician' Readiness to Disclose Major Medical Mistakes

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	31.123[a]	51	.610	1.752	.015
Intercept	1960.330	1	1960.330	5627.947	.000
Question_4	1.018	4	.255	.731	.574
Question 5	1.867	4	.467	1.340	.264
Question_7	3.612	4	.903	2.593	.044
Question_4* Question 5	7.526	13	.579	1.662	.089
Question_4* Question 7	2.225	9	.247	.710	.698
Question_5* Question 7	1.378	8	.171	.491	.859
Question_4* Question_5* Question_7	3.770	5	.754	2.164	.068
Error	24.034	69	.348		
Total	6690.000	121			
Corrected Total	55.157	120			

a. R Squared = .564 (Adjusted R Squared = .242)

Data Summary

The results have shown that there was a significant statistical relationship between 4 independent variables (organizational culture toward patient safety; physician apology; professional ethics and transparency; and physician's education) and the dependent variable (physician willingness to disclose medical error). However, there were no significant relationships between fear of disclosure as well as image consequences and the dependent variable (physician willingness to disclose medical error). The results have concluded that 4 out of 5 independent variables were statistically significant. However, one independent variable (fear of disclosure) was not statistically significant.

Chapter 5 focused on the interpretation of the findings. The chapter also discussed the study's limitations, recommendations and implications for social change. Finally, the section ended with recommendations for future research and professional practice.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

In this cross-sectional study, I intended to evaluate barriers affecting physicians' willingness to report medical errors. Errors frequently occur and at a high rate in healthcare settings (Bonney, 2014; D'Errico et al., 2015; Guillod, 2013). Unfortunately, when these mistakes happen, the majority of physicians who recognize error disclosure as an ethical duty fail to report them. Despite the Joint Commission mandate and the American Medical Association Code of Ethics urging doctors to report mistakes, they were still reluctant to comply with these directives (AMA, 2016; Anwer & Abu-Zaid, 2014; D'Errico et al., 2015; Kachalia & Bates, 2014). For this reason, I proposed to test the hypothesis that fear of disclosure, organizational culture toward patient safety, apology, professional ethics and transparency, and patient and physician education are associated with physician readiness to report a medical error. Therefore, I performed a statistical test using SPSS. I ran multiple linear regression analyses to analyze the correlation between the independent and the dependent variables. Furthermore, I performed descriptive statistics to summarize the data. The findings showed that organizational culture toward patient safety, professional ethics and transparency, physician apology, and patient and physician education were the primary barriers impacting doctors' willingness to report medical errors. In the following discussion, I describe the findings and compared them with what has been found in the literature review, and finally analyze them in the context of the theoretical frameworks.

Interpretation of Findings

The study examined how fear of disclosure and physician image consequence, organizational culture toward patient safety, apology, professional ethics and transparency, and patient and physician education could be used as predictors of physicians' readiness to disclose major medical errors. Studies have been done on the barriers affecting doctors' willingness to disclose errors. However, focusing on perceived barriers at the individual level was lacking.

I found that there were barriers to medical mistakes disclosure. These barriers that were significant included organizational culture toward patient safety, physician apology, professional ethics and transparency, and patient and physicians' education. I found that a lack of an organizational culture that did not emphasize transparency and patient safety hinder doctor's ability to report medical mistakes This finding was consistent with Kagan and Barnoy (2013), who found that the absence of a culture of safety in a healthcare organization culture could cause underreporting of errors. Lee et al. (2015) also found that the lack of a culture of safety that is part of a hospital culture could hinder implementation of patient safety mechanisms and as a result discourage physicians' reporting. Moreover, the finding was consistent with Ammouri et al. (2015) who contended that patient safety was central to healthcare quality because a good organizational culture could lead to a safer environment. Thus, achieving patient safety required healthcare leaders to move from a punitive culture to patient safety culture that facilitated openness (Ulrich & Kear, 2014).

I also discovered that apology impacted doctors' ability to report errors. Dahan, Ducard, and Caeymaex (2017) found that apologies were difficult to express and admitting and apologizing for errors increased the prospect of malpractice suits. Many physicians fear that apologizing for medical errors could be an admission of wrongdoing (Nazione & Pace, 2015). Although some states enacted apology laws, doctors still felt unprotected and preferred to retract to avoid being sued (Nazione & Pace, 2015). Apology was a barrier to error reporting because physicians lacked formal training in error disclosure and apology (Deawar, Parkash, Forrow, & Truog, 2014).

Furthermore, there was an association between physicians' readiness to report a medical error and professional ethics and transparency. Theofanidis et al. (2013) said that physicians need ethics and must rely on ethical principles to make a decision regarding medical mistakes.

Moreover, I discovered that physicians lack of adequate education affected doctors' ability to disclose errors. When doctors lacked the appropriate training and skills to handle medical errors, reporting them would be a difficult task. This was consistent with Nabilou et al. (2015) findings that demonstrated that the lack of expertise in handling error reporting held physicians back. Without adequate training, doctors could not be effective in reporting medical errors.

Finally, the study showed there was no correlation between fear of disclosure consequences and physicians' willingness to report mistakes. While doctors did not fear that error reporting could affect their reputation and relationship with patients, the results

showed that physicians could disclose errors if some conditions such as appropriate training, positive organizational culture, and apology knowledge were met.

I also found that fear of disclosure was not related to physicians' reporting of medical errors. Barriers inhibiting physicians' errors reporting included fear of legal action, loss of trust, and loss of position. Zaghloul et al. (2015) concluded that fear of litigation coupled with other factors were the biggest hurdles limiting doctors ability to disclose mistakes. In addition, while barriers to errors disclosure were various, this study showed that organizational culture toward patient safety, physician apology, professional ethics and transparency, and patient and physician education remained the dominant barriers affecting doctors disposition to report medical errors.

The study extended knowledge in health sciences through the discovery that barriers to physicians' willingness to report medical errors are various. It also showed that doctors in Illinois and Iowa are affected by these barriers in dealing with errors disclosure. Healthcare organizations need to adopt policies that promote transparency and full disclosure, and provide adequate reporting training to physicians to overcome these barriers

Findings in Relation to Theories

Kant's deontological theory emphasized moral actions motivated by observance of organizational rules, regulations, and norms (Al Arbeed & Al Hakim, 2015; Pinar & Peksoy, 2016; Chakrabarty & Bass, 2015). The TPB was developed to predict and explain individual's behaviors and intentions. The model is an extension of the theory of reasoned action (Ajzen, 1991; Finke et al., 2015). The model held that definite attitudes

toward a behavior could predict that behavior. The theory suggested that a person's intention to engage in behavior was determined by three predictors: Attitude toward the behavior, subjective norm, and perceived behavior control (Ajzen, 1991; Finke et al., 2015).

Many factors impact doctors' ability to report medical errors. The TPB as applied to this study allowed to understand physicians' behaviors and intentions regarding medical errors disclosure. The lack of organizational culture toward patient safety, apology, professional ethics and transparency, and patient and physician education negatively influenced doctors' reporting behavior. A work environment that lack effective ethical standards and where punitive culture is the rule did not facilitate or encourage error disclosure. Therefore, physicians' perception of barriers that impede medical errors reporting along with the subjective power of these factors determined doctors' self-perceived aptitude to disclose mistakes.

Kant's deontological theory emphasizes the "obligation of an individual to adhere to universal moral rules, principles to determine moral behavior" (Xu & Ma, 2016, p. 538). I observed that a lack of professional ethics that constituted a barrier to error reporting could make it harder for physicians to adhere to a rule of principle which would facilitate error disclosure. In the absence of professional ethics and other factors, physicians did not feel abide by any rule to speak up when errors occurred. As doctors must tell the truth per Kant, it's up to hospitals to implement rules that allow physicians to disclose mistakes.

TPB and Kant deontological theory helped to analyze and interpret the study findings. However, it is evident that they were not a good fit. For future studies, it may be important to use theories that best explain the issue.

Limitations of the Study

The study has some limitations that need to be considered when interpreting its results. Due to the online survey method via Survey Monkey, there may be technical errors as well as participant respondent errors. For example, there may be difference in how the survey displayed across devices. This could influence in an understated way how physicians interpreted the questions. Furthermore, due to the nature of the paper survey method, the survey instrument was delivered to physician's work addresses. There may be problems regarding the delivery or mailing process. Some physicians who were participants may not have received the survey instrument. The fact that the survey was not presented in face-to-face to participants might lead to different interpretations of the questions. Besides, there may be inaccurate reporting of responses or biases in respondent answers as it is a self-reported survey.

Participants surveyed in this study were only physicians. Thus, they did not represent a sample of all healthcare professionals affected by medical errors reporting issue in the United States. The sample might be expanded to include physician assistants, nurse-practitioner, and nurse-midwife.

Generalizability

To ensure generalizability of the study, participants were randomly selected from three different hospitals operating both in Illinois and Iowa. Additionally, participants

were chosen among twenty different specialties. Therefore, the study can be generalized to other healthcare professionals in the U.S.

Validity

The study has both external and internal validity. The validity was due to the implementation of the study regarding strict IRB protocols, utilization of study instruments, data collection process, data entry process, and data analysis. The data was entered two times to ensure data results accuracy.

Recommendations

In this study, I used a cross-sectional quantitative methodology to examine the association between the independent variables of fear of disclosure, patient safety, physician apology, professional ethics and transparency, and physician education and the dependent variable of physician' readiness to disclose major medical error. The results showed that the association was statistically significant for four out of five hypotheses. For future studies, a longitudinal design should be used to evaluate barriers affecting physicians' readiness to report medical errors. A longitudinal method can be used to detect and follow change over time in physician's attitude regarding error disclosure

To have an in-depth understanding of barriers impacting doctors' ability to disclose errors, I would recommend qualitative research. Through face-to-face interviews and focus group, researchers can be able to explore physicians' perception as to how factors such as organizational culture toward patient safety, physician apology, professional ethics influence their reporting behavior.

Researchers should also examine the association between physicians' error reporting training and physicians' readiness to report medical errors across U.S. hospitals and clinics. Given my findings, I recommend that the medical field focus in awareness education regarding medical errors disclosure among physicians and doctors. Moreover, more research is needed to confirm the results of this study.

Implications for Social Change

This study filled the gap in identifying and understanding barriers affecting physicians' willingness to report medical errors. It helped hospitals raising doctors' awareness regarding major medical errors disclosure. Moreover, it helped to advance patient safety practice by categorizing factors that impede error reporting. In addition, the study may help hospitals in implementing regulations that replace the blame culture by a culture of safety. Creating a culture of safety that prohibits punitive culture, may make physicians more comfortable in disclosing errors while sustaining professional accountability (Abdi et al., 2015).

Methodological Implications

This study used a cross-sectional method with the capability to evaluate perceived barriers impacting physicians' readiness to report medical errors. This approach may be a reference for future researchers, healthcare organizations, and health professionals to advance in that field. Furthermore, hospitals and researchers can use data collected for future studies that would elucidate the issue.

Theoretical Implications

The research was guided by the theory of planned behavior (TPB) and Kant deontological theory. I used these theories to explain doctors' behaviors regarding medical mistakes reporting and the ethical implications of their decision. TPB and Kant theory provided evidence to interpret the study findings. As such, these theories can serve as frameworks for future studies.

Implications for Practice

Study findings have some implications for professional practice. Healthcare leaders can use the results to design strategies aiming at improving errors reporting. The results can also be useful in tailoring physicians medical error disclosure training.

The results of this study point to the future direction in which doctors were affected by various concerns. Therefore, it is important for health leaders to use the findings to address physicians' concerns. Through this healthcare leaders can get a better idea of how to implement strategies to create an organizational culture that enhances patient safety.

Conclusion

Medical errors were serious threats to patient safety. Across the world and in the United States, medical mistakes frequently occurred at a high rate in hospitals, nursing homes, and other healthcare settings. These mistakes should be reported when they happened. However, physicians chose to go against their professional obligation and the Joint Commission mandate. Thus, the necessity arose to study the issue by determining perceived barriers affecting doctors' ability to report medical errors.

To understand the problem, I conducted a cross-sectional study. Data were collected and analyzed using SPSS. Statistical analyses showed that four out of five factors organizational culture toward patient safety, apology, professional ethics and transparency, and patient and physician education, were significant. They were primary barriers impacting physicians' willingness to report errors. Fear of disclosure and physician image consequences was not significant. The findings were consistent with the literature that lack of a culture of safety, apology knowledge, and adequate training impeded physicians' ability to report (Hannawa et al., 2016; Alsafi et al., 2015; Nabilou et al., 2015).

The research findings provided evidence that healthcare leaders need to take actions to mitigate effects of these barriers on doctors' aptitude to disclose medical mistakes. Healthcare leaders can use the results to design mechanism facilitating error disclosure. The results can also serve as the basis for creating an organizational culture that predominantly favors safety culture. Implementing safety culture policies would open the door to physicians to speak up. Through error reporting, doctors may contribute to enhancing patient safety.

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Appendix A: Copyright Permission to Use First Questionnaire

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Sep 11, 2016

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Appendix B: First Questionnaire

The purpose of the survey is to seek physicians' perspectives on the issues of medical errors disclosure. Please, indicate your agreement or disagreement with each of the above statement. For this survey, medical error is defined as mistakes committed by physicians that can have severe consequences such as harm or death to the patient. Medical error disclosure is defined according to the questionnaire developers as "communication between a health care provider and a patient, family members, or the patient's proxy that acknowledges the occurrence of an error, discusses what happened, and describes the link between the error and outcomes in a manner that is meaningful to the patient."

Demographic Characteristics

Age

- <40 y
- ≥40 y

Sex

- Male
- Female

Position

- Physician
- Nurse

Education

- Bachelor's Degree
- Postgraduate Degree

Experience

- <10 y
- ≥10 y

Items	SD	D	N	A	SA
1. I accept the responsibility for the interventions when the outcome has a serious effect on the patient's health					
2. When a mistake occurs, I feel an obligation to make it clear that what happened was a mistake					
3. It is important to tell the patient about the error I have made because that is the way I would like to be treated if I were in the patient's place					
4. If I made a mistake, disclosing the error would alleviate my feeling of guilt					
5. The decision to disclose the error depends on whether the information would help the patient					
6. If disclosing medical error was not related to malpractice risks and being blamed by the organization and society, it would be easier to tell the patient about the mistake when it occurs					
7. Official reporting of medical errors is important to prevent future incidents					
8. Disclosure of medical errors committed by me will affect my reputation					
9. I will not disclose errors because of my fear of possible lawsuits					
10. Disclosing medical errors will make me lose my colleagues' respect					
11. Disclosing errors will make me lose the trust of my organization					

12. Disclosing errors will make me lose my patients' trust	⬭	⬭	⬭	⬭	⬭
13. I'm afraid that I will be blamed by the patient for all health outcomes if the error was disclosed regardless of the initial patient disease prognosis	⬭	⬭	⬭	⬭	⬭
14. I'm afraid that the patient and his/her family will be severely angry and aggressive after the disclosure	⬭	⬭	⬭	⬭	⬭
15. I'm known as being perfect in whatever I do, so disclosing an error committed by me will affect my career	⬭	⬭	⬭	⬭	⬭
16. The lack of supportive forums and policies regarding medical error disclosure prevents me from disclosing an error	⬭	⬭	⬭	⬭	⬭
17. It is very humiliating to me if I am to admit a mistake	⬭	⬭	⬭	⬭	⬭
18. Apologizing for errors will reduce the risk for possible legal actions from a patient's family	⬭	⬭	⬭	⬭	⬭
19. The patient's family will feel better if the error has been disclosed and apologized for	⬭	⬭	⬭	⬭	⬭
20. An apology for the error will make one feel less guilty about the outcome	⬭	⬭	⬭	⬭	⬭
21. It is the patient's and his/her family's right to have an official apology from the one who committed the mistake and the organization regardless of the victim's reaction	⬭	⬭	⬭	⬭	⬭
22. Creating a policy for disclosure and apology will help the health care provider to better communicate an error to the patient and his/her family	⬭	⬭	⬭	⬭	⬭
23. Providing the health care providers with training programs for disclosure and apology will better help them communicate the error in an empathetic manner	⬭	⬭	⬭	⬭	⬭

SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree

Appendix C: Permission to Use Second Questionnaire

Re: Permission to use your questionnaire

GL

G.E. Linthorst <g.e.linthorst@amc.uva.nl>

Reply all

Sun 9/10/2017, 5:26 AM

Jean-Pierre Folligah

Inbox

You forwarded this message on 9/23/2017 12:17 AM

Dear colleague,
Dear Jean-Pierre,

Of course. Feel free to adapt where needed/required. Good luck with your effort.

Gabor

Gabor (GE) Linthorst MD, PhD
Internist – endocrinoloog
Hoofd Epicurus.

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Op 10 sep. 2017, om 06:16 heeft Jean-Pierre Folligah <jean-pierre.folligah@waldenu.edu> het volgende geschreven:

Appendix D: Second Questionnaire

Internists Willingness to Disclose Medical Errors Questionnaire

Willingness to report a major error	**Probably Not**	**Probably**	**Certainly**	**Certainly Not**
1. I would report to a colleague	⬭	⬭	⬭	⬭
2. I would report to head of ward	⬭	⬭	⬭	⬭
3. I would report to hospital committee of errors and near misses	⬭	⬭	⬭	⬭
4. I would report to the patient or his/her family	⬭	⬭	⬭	⬭

1 = Probably Not

2 = Probably

3 = Certainly

4 = Certainly Not

Appendix E: NIH Training Certificate

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Jean-Pierre Folligah** successfully completed the NIH Web-based training course “Protecting Human Research Participants”.

Date of completion: 09/14/2014

Certification Number: 1557544