The role of information security learning and individual factors in disclosing patients' health information

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ABSTRACT

One of the most vulnerable stakeholders that may violate health information privacy prescribed in HIPAA (Health Insurance Portability and Accountability Act) are nursing students who have some limited access to EMR systems to retrieve health records while freely communicating with patients and relevant stakeholders. However, limited attention has been given to nursing students' deviant behaviors. To fill this gap, this study develops a research model of a nursing student's behavior of disclosing health information by identifying the deterrent effects of health information security awareness (HISA) nurtured by nursing schools and personal values such as personal norms and self-control.

Our study empirically tests the model and found that three learning components ((1) general information security awareness, (2) health information security regulation awareness, and (3) punishment severity awareness) are significantly important to develop HISA. We find that HISA significantly affects personal norms and self-control which play as deterrence against the intention to disclose patients' health information.

As the importance of complying with HIPAA regulations and information security policies by employees who work in health care industry increases, our findings shed new light on the role of HISA and personal values in nursing education and the health care industry's efforts to protect patients' health information.

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1. Introduction

Protecting health information privacy has been a significant concern to healthcare stakeholders. These healthcare stakeholders are those who have interests in the management of healthcare and healthcare information. They include: patients, working professionals in the health industry, and educators (e.g., Bansal and Gefen, 2010, Cantor, 2001, Gastin, 1994, van Deursen et al., 2013, Wimberley et al., 2005). One of the most vulnerable stakeholders that can violate health information privacy prescribed in Health Insurance Portability

and Accountability Act (HIPAA) are nursing students (Cannon and Caldwell, 2016; Kuiper, 2010; Skiba, 2011; Thompson and Bell, 2007; Wimberley et al., 2005). The OCR (Office for Civil Rights) "recognizes students in health care educational programs as covered by HIPAA; students are viewed as providers who have a right to use health care information in the delivery of care and as part of their educational process" (Wimberley et al., 2005, p. 489).

Nursing students are inexperienced (Cowen et al., 2016; Harding and Petrick, 2008) and are still developing (not fully developed) personal values and beliefs on the importance of health information privacy and the understanding of the impact

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of violations (Erdil and Korkmaz, 2009). They begin to form health information privacy awareness through contact with nursing curriculum (Denker, 2002; Wimberley et al., 2005). During their clinical practices at hospitals, there are many opportunities to disclose protected health information to the stakeholders of interests (e.g., family members, marketing personnel in health industry, etc.) due to an unawareness, or an incomplete awareness of regulations and sanctions, or mistakes (Skiba, 2011; Song et al., 2016; Thompson and Bell, 2007; Wimberley et al., 2005). Nursing students' security awareness education can have a significant impact on the protection of patients' health information (Song et al., 2016). In addition, nursing students' personal value systems may affect the relationship between their security awareness and subsequent violations. However few studies in this area have been conducted (Song et al., 2016).

To fill this research gap, our study investigates nursing students' behavior of disclosing protected health information by identifying the deterrent effects of health information security awareness methods offered by nursing schools in relation to individuals' personal values. By doing so, we attempt to address the following three questions:

(1) What are the components of health information security awareness?
(2) What is the role of health information security awareness in influencing personal values (personal norms and self-control)?
(3) What is the role of personal values in dissuading an intention to disclose health information?

The contributions of our study are (1) to conceptualize a new concept of health information security awareness (HISA) and to identify the components of HISA, (2) to identify the relationships among HISA and personal values, (3) to identify the relationship between individuals' personal values, such as, personal norms and self-control, and intention to disclose health information, and (4) to organize HISA pedagogical methodology for the improvement of nursing education.

The remainder of the paper is organized as follows: we first review prior literature on general deterrence theory and security awareness program approaches. Based on these findings, we develop our research model and hypotheses. Next we describe the research methodology and report the results of our study. Finally, we discuss the implications of our findings for research and practice, limitations, and future directions.

2. Theoretical background and hypothesis development

2.1. General deterrence theory and security awareness program approaches

General deterrence theory views that individuals' deviant behaviors can be inhibited by education, training, and sanctions associated with the behaviors (Straub and Welke, 1998). The theory provides theoretical support to develop our research model and hypotheses shown at Fig. 1. Many IS security studies have successfully used the general deterrence theory (e.g., D'Arcy et al., 2009, Herath and Rao, 2009a, Herath and Rao, 2009b, Straub, 1990, Straub and Welke, 1998). Based on this theory, the basic assumption of the present study is that appropriate nursing education and trainings can develop nursing students' awareness of the significance for health information security, health regulations, and sanction severity, help to dissuade them from committing potential violations of protected health information security.

Karjalainen and Siponen (2011) review research on IS security trainings and categorize them into several IS security training approaches. One of them is named "security awareness program approach." The security awareness program approach serves as a tool to improve employees' compliance behaviors on security policies in a workplace (Karjalainen and Siponen, 2011). A good example of this approach is Straub and Welke's (1998) study. Based on the general deterrence theory, their study uses information systems (IS) security awareness training as a tool to deter deviant behaviors by emphasizing sanctions against violations and developing employees' security policy compliance behaviors (Puhakainen and Siponen, 2010). The health information security awareness in our
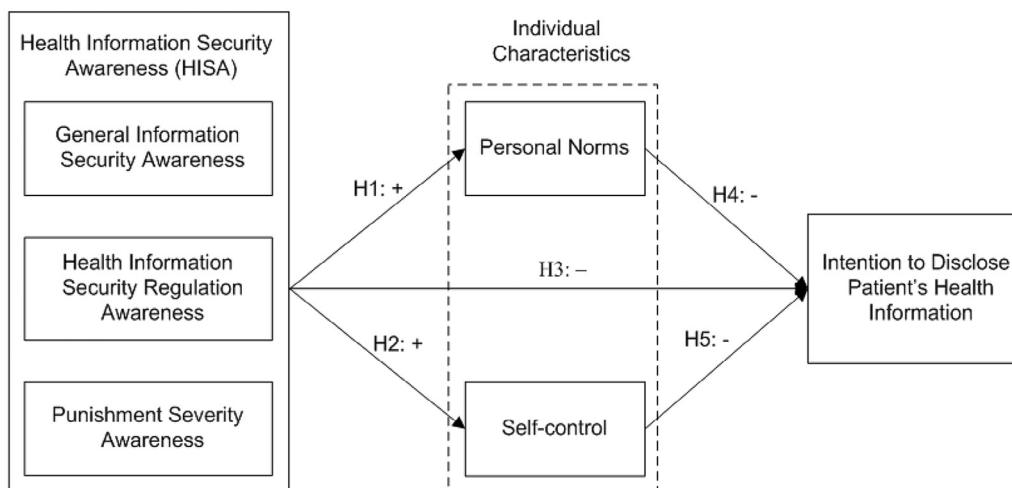

Fig. 1 – Research model.