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# Association Between Work-Related Safety and Work-Related Injuries Among Home Health Care Providers

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Walden University
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Abstract

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MA, King Saud University, 1995

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Home care nurses (HCNs) have reported a high rate of exposure to work-related injuries (WRIs). Nurses are challenged by the multidimensional problems associated with home care safety. These contextual risk factors increase the physical and social health problems of health care workers and of community suffering as a whole. This quantitative, cross-sectional study was designed to examine the relationship between the organization-related factors (ORFs) and the environment-related factors (ERFs) and their influences on safety behaviors (SBs) and the WRIs of HCNs. The PRECEDE framework was used to guide the study. Self-reported data were obtained from 74 home health care (HHC) nurses using the Safety Home Care Nursing questionnaire. A linear regression model was applied to determine the nature of the association between the independent variables and dependents variables. Findings showed the ORFs demonstrate a stronger effect on the SBs than the impact of the ERFs. The management commitment and the home-based care significantly affected the SBs. The supervisory support and safety access to a client's home were decreasing the WRIs. Therefore, the integration of efforts: The management and leadership of the health organization, the health care providers, and the clients' family would improve safety of HHC. This study is expected to help develop safety strategies for home care and thus attempt to minimize WRIs among HCNs. Nurses free of injuries are able to provide a quality of care and improve patients' health outcomes that in turn have an effect on reducing community suffering and financial costs.

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Dedication

This dissertation is dedicated with love to my family. To my mother, my words would not be enough, as your patience and prayer is endless. To my sisters, your encouragement inspired me to continue my journey towards a PhD. To my daughter, the joy of my life.

*"May Allah bless you with peace and happiness and all the success in your life and hereafter".*

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Table of Contents

List of Tables

List of Figures

# Chapter 1: Introduction to the Study

## Introduction

While home-based care has proven its effectiveness and has significantly improved patient health outcomes, there are potential risks to the health and safety of the health care providers (Gershon et al., 2012; Lang et al., 2015; Quinn et al., 2016). In this respect, home care nurses (HCNs) are especially challenged; they confront the highest rate of work-related risks associated with HHC (American Federation of Labor and Congress of Industrial Organizations [AFL-CIO], 2015). The issue of safety in HHC has been raised to ensure that nurses in particular are practicing in an environment in which the risk factors for work-related hazards are kept to a minimum (Kieft, De Brouwer, Francke, & Delnoij, 2014; Royal College of Nursing [RCN], 2014). This study examined the organizational and environmental factors associated with HHC safety and their relationship with the safety behaviors (SBs) of HHC nurses (HHCNs) and their experience of work-related injuries (WRIs). The information gleaned from this study may improve clients' quality of care and outcomes by strengthening existing safety standards for those receiving care in their homes.

This chapter represents a detailed description of the background of the study. It clearly presents the problem statement, purpose of the study, research questions, and the hypothesis of the study. I provided a concise explanation of the conceptual framework and the nature of the study. The definition of terms related to HHC safety, the assumptions, the scope and delimitation of the study, and limitations for a possible

generalization of findings are presented. Finally, the potential implications for positive social change in the community are discussed.

## Background of the Study

Workplace safety issues have been given priority in industries and health care organizations due to the existence of considerable risks of injuries (Burt, Williams, & Wallis, 2011; Gomaa et al., 2015; NSW Nurses & Midwives' Association [NSWNMA], 2013; Occupational Safety and Health Administration [OSHA], 2012; Tucker & Turner, 2011; Vinodkumar & Bhasi, 2009; Wringhtson & Lincoln, 2013). ). Over 59 million healthcare workers are exposed to a variety of work-related hazards, including biological, physical, ergonomic, environmental, and psychosocial (World Health Organization [WHO], 2016). International statistics revealed that there is one in five nonfatal occupational injuries occurred among healthcare workers (Gomaa et al., 2015). Thus, a safer workplace could greatly benefit health care providers and clients.

The safety of the work environment is a global concern and has been investigated in community health institutions, particularly in the HHC industry (Gershon et al., 2012; Huang et al., 2014: Khatutsky, Wiener, Anderson, & Porell, 2012; Lang et al., 2015; Leiss, 2014; Polivka et al., 2015; Quinn et al., 2016; Terry, Lê, Nguyen, & Hoang, 2015). The concerns for safety in HHC were attributed to several reasons, including the increased acuity and complexity of home care, the nature of the environment (client' home), and the nature of the HHC workers' job. Previous studies proposed a wide range of theories and approaches to address safety conditions and behaviors associated with HHC. Some studies showed a significant relationship between workplace safety and

WRIs, and the performance of health care workers (Leiss, 2014; Polivka et al., 2015; Quinn et al., 2016).

Moreover, safety studies in HHC revealed that despite the uncontrollable nature of the work environment and the presence of situational risks associated with the community and home care nursing, emergent threats are preventable and manageable (Gershon et al., 2012; Huang et al., 2014: Lang et al., 2015; Leiss, 2014; OSHA, 2013; Quinn et al., 2016). Craven, Byrne, Sims-Gould, and Martin-Matthews (2012) considered the safety issues in the home care environment as a multidimensional problem that is affected by physical, interpersonal, and psychosocial factors. Other studies determined employees' behaviors in home care and their effects on the safety climate (Kieft et al., 2014; Larsson, Karlqvist, Westerberg, & Gard, 2013; Leiss, 2014; Polivka et al., 2015; Quinn et al., 2016).

Amongst all safety-related factors (SRFs), safety researchers are largely focused on the management performance. According to Chen, Wang, Yang, and Zheng (2015), safety management has a significant impact on employee behaviors. They identified the management factors that were related to policies and systems, safety supervision, and communication. Management performance has been acknowledged and used as an essential indicator for evaluation of safety purposes (Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2012; Fugas, Silva, & Meliác, 2012; Huang et al., 2014; Vinodkumar & Bhasi, 2009). While the "safety climate" is a commonly used concept in assessment, management performance is a key element for workplace safety measurement. Previous studies revealed the necessity of management roles in improving workplace safety.

Examining the internal environment of an organization revealed a positive association between organizational support and the safety performance of workers (Richter, McAlearney, & Pennell, 2016; Salminen, Gyekye, & Ojajarvi, 2013). In these studies, organization-related factors (ORFs), such as supervisor support, teamwork, and communication, were used as predictors of safety. The safety assessment used organizational dimensions, such as management support, availability of resources, and safety training, to predict safety. Organizational safety climate is concerned with the perception of the employee about the top management and organizational performance as a whole (Richter et al., 2016). In short, the safety ORFs in the study referred to the management performance in HHC, such as management commitment, supervisor behaviors, and safety policies.

Employee behaviors have been examined in numerous safety studies (Fugas et al., 2012; Huang et al., 2014; Larsson et al., 2013; Singer et al., 2012; Vinodkumar & Bhasi, 2009). Measurement of safety behaviors included multiple dimensions, such as attitude towards safety, safety communication between coworkers, commitment and safety compliance. Several studies focused on the association between management and safety process, such as workers' behavior and outcomes, such as WRIs (Gershon et al., 2012; Leiss, 2014; Quinn et al., 2016). In fact, HHC safety is insufficiently assessed without taking into account the home conditions and the surrounding environment (Albert, 2010; Noh, Kwon, Yoon, & Hwang, 2011).

The client's home and the external environment have been examined as contributing factors to home care safety and hazards (Health and Safety Authority [HSA],

2011; Jones, 2015; Lang et al., 2015; Polivka et al., 2015; Terry et al., 2015). Furthermore, a considerable attention was given to examining the impact of environment-related factors (ERFs) associated with home care settings, including the physical and social conditions of clients' home settings (Jones, 2015), characteristics of the clients and family caregivers and their behaviors (Lang et al., 2015), hazards within clients' homes (Polivka, 2015), and risks among community nurses (Terry et al., 2015). A study of the psychosocial aspects of home care safety indicated the critical role of family caregivers in this issue (Lang et al., 2015). In addition, targeting the ergonomic and psychosocial factors was found to be important to control musculoskeletal work-related injuries (Arlinghaus, Caban-Martinez, Marino, & Reme, 2013). Thus, failure to emphasize safety in the home environment could certainly contribute to the occurrence of work incidents (Berland, Holm, Gundersen, & Bentsen, 2012). Given the significant risks associated with the home care environment, Stevenson, Lang, Macdonald, Archer, and Berlanda (2012) suggested developing safety strategies based on a home care risk assessment.

As a result, the nature and characteristics of community and home care environment have been found to influence employee well-being and satisfaction (Curtis & Glacken, 2014; Larsson et al., 2012; McCaughey et al., 2012; Tourangeau et al., 2014; Weerdt & Baratta, 2014). In particular, WRIs have been associated with physical and emotional impact on workers and their families. In this respect, WRIs are positively associated with turnover intention and job dissatisfaction among HCNs (McCaughey et al., 2014; Tourangeau et al., 2014). However, an improvement in home care nursing environment would optimize patient outcomes (Jarrín, Flynn, Lake, & Aiken, 2014).

Despite the challenges experienced by HHC workers, evidence of workplace safety and risks, in particular among HCNs, have been insufficiently investigated (Balize, Bousso, Spineli, Silva, & Poles, 2012; Gershon et al., 2009; Lang et al., 2015; Miller, 2013; Terry et al., 2015). In this respect, perception of nurses with regard HHC safety is not yet known in the kingdom of Saudi Arabia (KSA). Moreover, the current research expanded the focus of home care safety to include multiple dimensions in relation to management actions and environmental factors related to client's homes and the community at large, as well as nurses' behaviors and their experience with WRIs. The results of the study may improve workplace safety and have a direct impact on reducing work-related risks and illness (Kieft et al., 2014; RCN, 2014). Thus, safety in the workplace would enhance workers' satisfaction and performance as well as improve patients' health outcomes (McCaughey et al., 2014; Terry et al., 2015).

## Problem Statement

The nursing industry reported the highest cases of nonfatal workplace-related injuries with incidence rate 13.7 per 100 workers (Gomaa et al., 2015). Nearly 35.7% of HCNs experienced at least one sharp injury **(**Shibuya, 2013)**,** and 29.9% of public health nurses encountered workplace violence (Fute, Mengesha, Wakgari, & Tessema, 2015). About one third of home nurse aides experienced musculoskeletal injuries as a result of patient lifting (Quinn et al., 2016). Several contributing factors are associated with home care injuries, including organizational climate and employee safety behaviors (Gershon et al., 2012; Kieft et al., 2014; Larsson et al., 2013). Other studies highlighted the significance of environmental factors, such as geographical location, working in

isolation, and driving issues (HSA, 2011; Terry et al., 2015). Arlinghaus et al. (2013) examined the association between the ergonomic and psychosocial aspects, and musculoskeletal injuries among home care workers. In many respects, unsafe working conditions such as commute between patients' homes, inadequate transitional care, and working alone were reported (HSA, 2011; Smith & Alexander, 2012; Terry et al., 2015). Despite of these facts, the social aspects of patients and family caregivers were not taken into account in home care situations (Donovan, Williams, Stajduhar, Brazil, & Marshall, 2011). Wrightson and Lincoln (2013) discussed the issue of unprotected health workers due to limited safety regulations. A further concern is that the lack of workplace safety has led to high staff turnover, frequent sick leave, and work dissatisfaction among community nurses. These are adversely impacted patient health outcomes (Hasson & Arnetz, 2011; Kieft et al., 2014; McCaughey et al., 2012; Terry et al., 2015).

In the KSA, HHC programs grew more rapidly during the last decade (Ministry of Health [MOH], 2012; MOH, 2013). A few published studies in the industry examined the perception of clients and family caregivers (Alghamdi & Johnson, 2014; Aljameely, 2011; Al-Khashan, Mishriky, Selim, El Sheikh, & BinSaeed, 2011) and assessed the effect of home care on hospital readmissions, length of stay (LOS), and emergency department (ED) visits (Hafiz, Fahmy, Ibrahim, & Saleh, 2014; Hafiz, Samy, Fahmy, Ibrahim, & Mesailhi, 2010). Yet, scant research has focused on nursing-related aspects of the working environment and safety issues in home care. Several studies alluded to the fact that there are insufficient studies examining the view of nurses about HHC safety (Balize et al., 2012; Lang et al., 2015; Miller, 2013). Hence, nurses play a pivotal role in

a home care environment (Canadian Nurses Association [CNA], 2013; Hasson & Arnetz, 2010; Kieft et al., 2014), it is important that their concerns and experience should be taken into account. In the KSA, no studies have been published on the working condition experienced by HCNs, a fact which represents a legitimate gap in the existing literature. Thus, there is a need to identify the safety-related factors (SRFs) associated with HHC and their relationships with SBs and WRIs among HCNs.

## Purpose of the Study

This quantitative, cross-sectional study was designed to examine the relationship between organization and environment-related safety factors in HHC with SBs and experience of WRIs among HCNs working in governmental hospitals in the Makkah Region, KSA. I focused on determining the nature of the relationship between the ORFs (management commitment, supervisory support, safety policies) and ERFs (access to a patient's home, home condition, home based care) as independent variables (IVs) and the dependent variables; nurses' behaviors (compliance to safety, attitude towards safety, safety participation) and their experience of WRIs during the last 12 months. In addition, a prediction of significant factors related to SBs and WRIs was explored.

Workplace safety not only poses a serious concern for HCNs due to the lack of safeguards commonly found in acute care settings, but it also compromises patients' health outcomes (McCaughey et al., 2012; NSWNMA, 2013; RCN, 2014). The premise of this study was that HCNs are the most appropriate source for gaining a deeper understanding of workplace hazards, since they are the primary health care providers in

home care nursing and play a major role in the planning, coordination, and follow-up of care (CNA, 2013; King Abdul-Aziz Hospital [KAUH], 2011).

## Research Questions and Hypotheses

This quantitative study was designed to explore whether there was a significant relationship between the ORFs and ERFs, and SBs and WRIs among nurses employed in HHC programs. To address the purpose of the study, I answered three research questions (RQs) and their corresponding null ($H_0$) and alternate ($H_a$) hypotheses.

RQ1: Is there a relationship between organizational-related factors associated with home healthcare and safety behaviors experienced by HCNs?

$H_0$1: There is no significant relationship between the perceived organizational factors and safety behaviors experienced by HCNs.

$H_a$1: There is a significant relationship between the perceived organizational factors and safety behaviors experienced by HCNs.

RQ2: Is there a relationship between the environmental related factors, associated with home healthcare and safety behaviors experienced by HCNs?

$H_0$2: There is no significant relationship between the perceived environment factors associated with home healthcare and safety behaviors experienced by HCNs.

$H_a$2: There is a significant relationship between the perceived environment factors associated with home healthcare and safety behaviors experienced by HCNs.

RQ3: Is there a relationship between work-related safety factors associated with home health care and work-related injuries experienced by HCNs?

$H_0$3: There is no significant relationship between work-related safety factors associated with home health care and work-related injuries experienced by HCNs.

$H_a$3: There is a significant relationship between work-related safety factors associated with home health care and work-related injuries experienced by HCNs.

## Theoretical Framework

This study was based on PRECEDE-PROCEED model, introduced by Green in the 1970s and known as a the PRECEDE model (Green & Kreuter, 2005). Since 1980, the model has been further developed; the latest version has been acknowledged as an ecological approach and is known as the PRECEDE-PROCEED model (Green & Kreuter, 2005). PRECEDE is an acronym for Predisposing, Reinforcing, and Enabling Constructs in Educational/Environmental Diagnosis and Evaluation. The acronym PROCEED stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development (Community Tool Box, 2017). Internationally, the Green and Kreuter's health promotion model is widely used as a framework for community needs assessment and evaluation of the effectiveess of health interventions in the public health arena (Aldiabat & Le Navenec, 2013; Binkley & Johnson, 2013; Bryant, Bonevski, Paul, O'Brien, & Oakes, 2011; Ekhtiari, Shojaeizadeh, Foroushani, Ghofranipour, & Ahmadi, 2013; Liebel, Powers, Friedman, & Watson, 2011; Tramm, McCarthy, & Yates, 2012).

The new version of the PRECEDE-PROCEED is a multidimensional model (Philips, Rolley, & Davidson, 2012). It includes individual and environmental influences to assess health behaviors. It involves educational and ecological diagnosis in the assessment and planning phases. The components of the PRECEDE portion of the model can be used as a structure for conducting a comprehensive identification and analysis of a problem, and identification of organizational and environmental risk factors that are associated with health behaviors (Ekhtiari et al., 2013; Philips et al., 2012). Ekhtiari et al. (2013) used the PRECEDE portion of the PRECEDE-PROCEED model, which includes social, epidemiological, behavioral, environmental, and administrative assessments to identify factors related to a health intervention. Tramm et al. (2011) related the social circumstances, discomforts and risks, and environmental factors with the participants' health behaviors. Therefore, the available studies and their applications of the PRECEDE components have provided a guide for adopting the elements of the model for tool development and analysis of the relationship among variables.

The current study used the PRECEDE portion of the PRECEDE-PROCEED model. It is comprised of four major components, including the social assessment, the epidemiological assessment, the behavioral and environmental assessment, and the administrative and policy assessment. These components were used as a structure for identifying the health behaviors and conditions associated with home healthcare, taking into account the context in which HCNs are working. The constructs associated with the PRECEDE portion of the model are explained more fully in Chapter 2.

The social assessment was used to identify data related to personal attributes of HCNs, such as age, gender, and years of experience (Philips et al., 2012). The behavioral assessment identified safety-related behaviors associated with HHC such as nurses' compliance with safety, attitude towards safety, and safety participation in the workplace, as well as nurses' experience of WRIs (Vinodkumar & Bhasi, 2009). The environmental assessment determined the ERFs associated with HHC, including physical and social environments, such as home conditions, access to a patient's home, and interpersonal relationships between nurse-patient and family member (Tramm et al., 2011). The administrative and policy assessment identified factors related to organizational climate, including administrative regulations and policies, facilities, supervisory behaviors, and management performance associated with HHC (Ekhtiari et al., 2013; Fugas et al., 2011; Vinodkumar & Bhasi, 2009). Therefore, the safety indicators of the current Safety Home Care Nursing (SHCN) tool relied on these components. A more detailed analysis of the interrelation of the PRECEDE components is presented in Chapter 2.

## Nature of the Study

The study used a quantitative, cross-sectional design to examine the associations between the organization and environment-related factors of HHC with SBs and WRIs among HCNs. The significant predictors of SBs and WRIs in relation to workplace safety-related factors were identified.

The dependent and independent variables in the three questions were measured based on the scales used in previous studies (Fernandez-Muñiz et al., 2012; Larsson et al., 2013; Lu & Tsai., 2010; Vinodkumar & Bhasi, 2009; Zlateva et al., 2015). The

relationship between the safety-related factors and SBs and self-reported WRIs were identified and quantified using the linear aggression model as in published studies (Fernandez-Muñiz et al., 2012; Lu & Tsai., 2010; Vinodkumar & Bhasi, 2009). The independent variables (IVs) in the current study consisted of measurements of work safety-related factors, namely the ORFs (management commitment, supervisory support, safety policy) and the ERFs (access to a patient's home, home condition, and home-based care) associated with HHC nursing. The ORFs were assessed using the Lu and Tsai (2010) scale. The ERFs were assessed by using items from several scales (HSA, 2011; Larsson et al., 2013; Leiss, 2014; Polivka et al., 2015). The dependent variable (DV) involved measurement of SBs, including safety compliance, attitude towards safety, and safety participation, using the Safety Climate Scale of Vinodkumar and Bhasi (2009). The other dependent variable was WRIs as experienced by HCNs. The numerical values of the WRIs experienced by HCNs were assessed in relation to ORFs and ERFs. The other factors affecting the WRIs, such as age, gender, and years of experience were treated as covariate variables.

A cross-sectional study was conducted in HHC programs adopted by governmental hospitals in the Makkah Region, KSA. A cross-sectional design assesses the frequency of particular variables in a population as well as describing the conditions and potential risk factors of an identified issue (Barker, Rose, & Coggen, 2003). This design was used to provide quantitative measurement of safety-related behaviors and conditions associated with HHC. In addition, a cross-sectional survey was conducted to elicit nurses' perceptions of workplace safety and risks over a short period. While the

cross-sectional design examines the relationship between the chosen dependent and independent variables in a defined population, , it is not designed to draw valid results in terms of causality (Cherry, 2015). In conclusion, the cross-sectional design was the most helpful and appropriate method for describing and interpreting the relationship between safety-related factors and WRIs over a short period.

Data were obtained from HCNs using the Safety Home Care Nursing (SHCN) questionnaire to quantitatively measure the degree to which the organization and environment-related factors were perceived their relation to employees' SBs and their experience of WRIs among nurses. A non random convenience sampling of HCNs was applied to the selection of the study participants. The SHCN questionnaire consisted of 58 items chosen from multiple valid and reliable scales that have been developed and used in areas related to workplace safety, healthcare worker safety, and home care safety (HSA, 2011; Leiss, 2014; McGuire-Wolfe, 2013; Polivka et al., 2015; Quinn et al., 2016; Tucker & Turner, 2011; Vinodkumar & Bhasi, 2009). However, the items related to environmental factors needed further examination and testing to establish their validity. Based on the PRECEDE components, the SHCN questionnaire encompassed a variety of items related to four factors, namely social, behavioral, environmental, and administrative and policy. The SHCN questionnaire consisted of a demographic information sheet and a structured questionnaire. The demographic information sheet was used to elicit the personal data of the participants and frequency of WRIs in the past 12 months. The structured questionnaire measured the safety-related behaviors and conditions related to organizational climate, clients and community environment, and employee behaviors

(HSA, 2011; Leiss, 2014; Polivka et al., 2015; Tucker, & Turner, 2011; Vinodkumar & Bhasi, 2009; Zlateva et al., 2015). Items of the questionnaire were rated on a 5-point likert scale to measure the participants' perceptions of HHC safety.

The data of the study were analyzed using the Statistical Package for the Social Science (SPSS) version 21. Descriptive and inferential tests were performed. A descriptive analysis was used to describe demographic characteristics and to identify the overall distribution of the study participants. Inferential tests were used to measure the relationship between ORFs and ERFs, and SBs and WRIs with control over the effects of covariate variables, such as sex, age, and years of experience. A linear regression model was used to assess the existence of significant associations between the ORFs (management commitment, supervisory support, safety policy) and ERFs (access to a patient's home, home condition, home-based care) with SBs (compliance to safety, attitude towards safety, safety participation) and WRIs among HHC nurses. A linear multiple regression was used to determine the significant predictors of SBs and WRIs. For the purpose of regression analysis, the total number of WRIs was computed as continuous values (McCaughey et al., 2012).

## Definitions

For the purpose of examining the association of workplace safety with employee behaviors and work-related injuries, the following key terms are defined.

*Safety-related factor: Is* operationally defined as the organizational-related factors and environmental-related factors associated with HHC and may cause work injuries. safety studies on work environment examined the internal and external factors of an

organization that are influencing the safety, health, and well-being of employees (Gershon et al., 2012; Polivka et al., 2015; Vinodkumar & Bhasi, 2009; Quinn et al., 2016). Workplace safety is controlled by policies and regulations that act as standards for workers to comply with it. Safety studies included the organizational performance and values, managers support and communication, and employee behaviors as contributing factors of WRIs among workers. Safety associated with HHC examined potential risks, working conditions, employee behaviors and attitude, and WRIs (Gershon et al., 2012; Larsson et al., 2013)

*Home health care r*efers to a formal program in which health care is provided within a patient's home by licensed health care providers (RCN, 2014). In this study, Home Medical Care (HMC) Program is used interchangeably with HHC as they contribute to provide attainable HHC services in the KSA (MOH, 2012). The multidisciplinary health care providers, includes nurses, physicians, physiotherapists, and others providing a wide range of healthcare services such as physical and psychosocial care for prevention, treatment, and rehabilitation purposes (KAUH, 2011; RCN, 2014; WHO, 2015).

*Home care nurse* refers to registered nurses who are employed in a HHC program and responsible for providing patient care by visiting patients' homes. HCN provides direct care, teaches patients and family caregivers, and evaluates patients' conditions (CNA, 2013; Home Care Ontario, 2014; KAUH, 2011). HCN is committed to providing a specialized HHC, aligning with the clients' needs and taking into account the contextual factors affecting their health and safety (CNA, 2013). HCNs are used interchangeably

with HHC nurses (HHCNs).

*Safety behavior*: The current study focused on the nurses' compliance to safety, attitude towards safety, and safety participation in their workplaces. Safety studies focused on identifying the human behaviors such as personality traits or attitude which is associated with safety and workplace injuries (Fugas et al., 2012; Vinodkumar & Bhasi, 2010). Fugus et al. (2012) identified employees' safety-related work behaviors as they are related to their compliance, participation, and communication of safety in a workplace. Tucker and Turner (2011) presented safety behaviors as workers' response to work-related risk events.

*Organization-related factor* identified the workplace safety behaviors and conditions that focus on the management commitment, supervisory support, and safety policies associated with HHC program. Safety studies focused on the management performance, rather than on an individual, as organization members in the workplace (Yammarino & Dansereau, 2011). Organizational factors refer to the risks and safety factors in the context of health care settings that focus on the structure and functions of the institutions and their effect on the performance of the organization (Tucker, Heisler, & Janisse, 2013). The administrative and policy issues in the PRECEDE model refer to internal organizational factors that affect the intervention such as policies, resources, communication, and leadership behavior (Binkley & Johnson, 2014; Community Tool Box, 2017).

*Environment-related factor* included safety related factors in areas external to the clients' home and within the home setting, including patients and caregivers personal

attributes. Safety environmental factors focused on an access to a patient's home, home condition, and home-based care. Environment refers to natural, physical, and social environmental factors associated with a particular issue (Community Tool Box, 2017). The surrounding environment includes work areas and facilities (Hussain, 2013). The National Institute for Occupational Safety and Health [NIOSH] (2013) identified factors such as chemical hazards, physical home environment, and psychological factors as important to ensure a safety environment in home care. Terry et al. (2014) identified travel demands and access to homes as the physical work environment in home care.

*Work-related injury* refers to nonfatal injuries that have resulted from events or exposures occurring in the workplace in which the workers are employed during the course of her or his work (Houston, Young, & Fitzgerald, 2013). The exposure of healthcare workers to nonfatal injuries that are caused by an external force or an agent in the workplace, including the physical conditions of the workplace, equipment, and materials used by the employee (Kim et al., 2014). The nonfatal work injury has an acute impact on employee's health (Czuba, Sommerich, & Lavender, 2012). WRIs have multiple contributing factors, regardless of their causes, the current study focused on number of nonfatal physical injuries or illnesses experienced by HHC nurses during their working hours in the last 12 months.

## Assumptions

This quantitative, cross-sectional study examined the association between the ORFs and ERFs and SBs. The relationship between the WRIs and SRFs was also predicted. The functional paradigm of the quantitative mode of inquiry is based on the

researcher's first assumption, which was that the home care safety is an objective reality in which the identified variables can be measured and quantified objectively, and that nurses' experiences would provide reliable and significant knowledge through careful measurement (Simon, 2011). The second assumption was that the nature of theoretical background and formulated hypothesis can be verified empirically in order to develop understanding of the scientific inquiry in relation to factors related to the home care context. A quantitative design enables the researcher to predict and interpret the association of variables in concern (Creswell, 2009). Thus, this quantitative design is based on objective measurements throughout the stages of the research process rather than based on personal values, biases, and subjective references. The third assumption was that HCNs would provide truthful and accurate responses to the items in the questionnaire in a way that reflected a real situation in the healthcare organization. This is to avoid response bias that has a great effect on the validity of the results.

## Scope and Delimitations

Safety issues in the HHC context are described as a multidimensional (Craven et al., 2012). Safety studies have determined the association between employee behaviors in home care with management performance (Leiss, 2014; Polivka et al., 2015; Quinn et al., 2016); others studies have related WRIs with the safety climate (Leiss, 2014; Quinn et al., 2009). Lang et al. (2012) and Jones (2015) broadened insight into safety in home care by acknowledging the perceptions of healthcare providers about their challenges and experiences rather than focus just on managers. According to Albert (2010) and Noh et al. (2011), home care cannot be assessed in isolation without considering community

threats, such as driving to homes and working alone. Failure to include the contextual constraints associated with home care would render judgments about safety as insufficient (Stevenson et al., 2012). Moreover, emerging risks in HHC services required reliable home safety measures. Therefore, the study considered ORFs, ERFs, and SBs in order to ensure safety.

This cross-sectional study focused on examining the impact of HHC safety-related factors, including the effect of ORFs and ERFs on SBs of HHCNs and their experience of WRIs. In this respect, I interpreted the nature of the association between ORFs and employees' SBs and WRIs associated with HHC. A significant association between ERFs of HHC and SBs and WRIs were also determined. Amongst all SRFs, the significant predictors for SBs and WRIs were identified. While, the current local studies in HHC have not yet examined safety issues, this study provided insight into the risk factors and the nature of associations considering the contextual factors. Such information is significant for stakeholders in order to act against potential threats.

The study was conducted in HHC programs adopted by the governmental hospitals in the Makkah Region. These study settings were chosen because of difficulty for the researcher to obtain access to participants in other HHC institutions. The convenience sampling included all registered nurses working in HHC, regardless of their ages, gender, background, and years of experience in nursing. I focused on nurses to close the gap in the literature with regard the lack of nurses' perceptions towards the work environment in Home care. I excluded HHCNs who had worked for less than a year in the home care services to ensure that nurses had adequately exposed to the workplace

safety issues in the settings they were working for. Nurses who had not participated in home visits in the last 12 months and nurses who were working in a supervisory position were excluded too.

A non-random sampling strategy was used for selecting the participants and settings. Data were obtained only from nurses employed in HHC programs in the Makkah Region, which did not represent the whole population of HHCNs in the KSA. The constraints on the selection technique would affect the size of the participants (Leard Dissertation, 2012). The relatively small size of the participants and failure to obtain a representative sample significantly limited the generalizability of the findings, which are applicable only to the selected HHC programs.

Moreover, I chose the PRECEDE components as a theoretical foundation of the study after careful consideration was given to other theories and models that are frequently used in community needs and behavioral change theory, such as ecological theory, system theory, and theory of planned behavior. Although these models and theories were also concerned with community assessment and behavioral change, they do not provide the dimensions emphasized in this study, including multiple factors related to social characteristics, behavior assessment, environmental factors, and organizational climate associated with home care safety.

Injuries and illness in the workplace are classified into fatal or nonfatal (AFL-CIO, 2015). The self-reported illness in the last 12 months included physical injuries, stress, and depression (HSE, 2010). While the harmful consequences of psychosocial illness are not less than the physical injuries, the current study focused on physical

injuries. Thus, the WRIs were delimited to assess the physical, nonfatal illness and injuries experienced by HCNs in the past 12 months. Emotional and psychosocial illness were not included.

## Limitations

The limitations emerged in the study were resulted from the nature of cross-sectional design that was carried out in a natural setting in a single point in time, the use of a relatively small convenience sample, and the diversity of the study settings in which participants were employed. While the cross-sectional design could predict associations between the dependent variables and independent variables, the major limitation of this approach was that the cause and effect could not be inferred because it was captured at only one point in time (Cherry, 2015). As a result, a careful interpretation should be considered in terms of causality.

Selection bias resulted from the convenience sampling in which the participants may not be representative of the population in Saudi Arabia, and thus findings may not be generalizable to other HHC programs. Despite this limitation, the study uncovered safety issues in HHC that can be guided in the future. Therefore, such limitation of convenience sampling can be addressed in the future research through a random selection method of HHC programs.

In the presence of a relatively small sample size, the threat of nonresponse bias needed to be considered (Beaujean, 2014; Frankfort-Nachmias & Nachmias, 2008). The nonresponse bias was reduced by determining the sample size and setting an anticipated response rate. In addition, all attempts to gain the cooperation of participants and to

obtain a good response rate such as appropriate time for data collection, a brief explanation of the study, obtaining a consent, and maintaining confidentiality and protection of information were carried out. I also contacted the settings prior to data collection and the questionnaires were handed out in person.

## Significance of the Study

This study addressed the need to determine the relationships between the workplace safety-related factors and SBs and WRIs among HHCNs working in the Makkah Region, KSA. Taking into account the views of health care workers about an emerging healthcare program could enhance the viability of the care field (Marsteller et al., 2009). The findings of this study may have benefits to home care providers, managers, patients, caregivers, and HHC programs, as well as healthcare systems by providing new insights and perspectives concerning the nature of workplace safety and risks that could serve as facilitators or barriers to an effective HHC.

This study may positively make social changes by enhancing the knowledge of public health care workers in relation to health and safety issues of the workplace, including the potential risks on the health and productivity of health workers, safety actions to minimize negative effects, and improvements required. The best way to ensure positive social change was to establish training programs for healthcare leaders in areas of knowledge gaps in safety related issues. This was particularly important as this care delivery model grew steadily in popularity within the KSA. In addition, positive social changes imply through policy setting and development for long-term care institutions. By understanding the multidimensional limitations of home care safety and the sources of

potential hazards, public health care managers may act collaboratively with concerned community stakeholders to develop safety strategies to facilitate a safe climate. Since home conditions and family caregivers play an important part in home care safety; informing the public about such influences could motivate their participation and cooperation toward safety. Preparing knowledgeable community health care workers and family members about the safety issue can increase employee productivity, quality of patient care, and family caregiver's satisfaction. Maintaining a safe work climate could decrease the rate of WRIs and illnesses among public health workers as well as reduce financial cost and suffering among families and the community. Finally, this study could serve as a catalyst for future research focused on the HHC delivery model used in Saudi Arabia.

## Summary

This quantitative cross-sectional study was designed to examine the relationship between the organization and environmental safety factors, and the SBs of HHCNs and their experience of WRIs. The significant predictors of SBs and WRIs in relation to workplace safety-related factors were determined. The published safety studies indicated that the workplace safety and employee behaviors are associated with job injuries. In addition, the home care threats cannot be resolved without considering the contextual factors, such as home and community conditions. Despite safety concerns, information on HHC nursing is limited at the national and international level. However, this study is expected to broaden insight into the potential risks associated with HHC nursing. The

findings may create positive social change by improving the safety of health care providers and, subsequently, HHC services.

In Chapter 2, I cover the following topics: A comprehensive review of available local and international studies relevant to the research problem and purpose of the study; overview of the literature research strategy; an explanation of the PRECEDE-PROCEED model propositions and their applications to the concepts and measurement in the research questions; the results of the studies related to workplace safety, safety behaviors, and work-related risks in HHC. Chapter 3 includes a detailed description of the methodology of the current study. Chapter 4 covers the descriptive and analytical results with needed tables and figures. The Chapter 5 provides: A detailed interpretation of findings, limitations of the study, recommendations,and implications, and conclusion.

# Chapter 2: Literature Review

## Introduction

Despite the value of safety and protective strategies for HHC services, nurses and nurse assistants reported the highest incident rates of nonfatal WRIs, accounting for 13.7 per 100 full-time workers in 2016 in the U.S. care facilities (Bureau of Labor Statistics, 2017). Studies indicated that there is a relationship between WRIs and safety issues in HHC worldwide (Canadian Patient Safety Institute [CPSI], 2013; Gershon et al., 2012; Larsson et al., 2013; McCaughey et al., 2013). In the Kingdom of Saudi Arabia (KSA), HHC studies focused on care effectiveness and patient satisfaction (Algamdi & Johnson, 2014; Al-Hazmi & Kurashi, 2006; Aljameely, 2011; Baharoon et al., 2011), yet, information related to WRIs and their association with workplace safety is limited. Thus, this study predicted the relationships between the organization and environmental factors associated with HHC, and safety behaviors (SBs) of HCNs and the impact of SRFs on the nurses' experience of WRIs.

The multidimensional aspects of home care safety have created a challenging workplace,in particular for health care workers and nurses. Safety studies are mainly concerned with factors related to safety management performance (Bailey, Dollard, McLinton, & Richards, 2015; Berland et al., 2012; Fernández-Muñiz et al., 2012; Flin, Burns, Mearns, Yule, & Robertson, 2006; Fugas et al., 2012; Huang et al., 2014; Kathy, 2012; Lee, 2012; Singer et al., 2012; Vinodkumar & Bhasi, 2009; Westerberg & Tafvelin, 2014), and safety environmental factors associated with HHC, such as community conditions, and the physical and social aspects of clients' homes (Gershon et

al., 2012; HSA, 2011; Jones, 2015; Lang et al., 2015; Polivka et al., 2015; Tao, Ellenbecker, Chen, Zhan, & Dalton, 2012; Terry et al., 2015; Zlateva et al., 2015), as well as employee behaviors (Arcury et al., 2015; Craven et al., 2012; Kieft et al., 2014; Lang et al., 2015; Larsson et al., 2013; Leiss, 2014; Quinn et al., 2013; Vu & De Cieri, 2016). These studies also examined the relationship between the perceived management performance and safety behaviors, as well as assessed the WRIs and their association with workplace safety. Despite the fact that considerable attention was given to risk factors of physical injuries among home healthcare workers (HHCWs), Davis & Kotowski, 2015; Guest, Kable, Boggess, & Friedewald, 2014; Houston et al., 2013; Markkanen et al., 2014; Shang, Ma, Poghosyan, Dowding, & Stone, 2014; Weerdt & Baratta, 2015), the perspective of health care providers in relation to safety issues of long-term care is not well understood (Lang et al., 2015). Consequently, insufficient management of potential risks could be threats to workplace safety.

This chapter describes the search strategy for the literature review in terms of types of published studies and sources of information. It provides a detailed explanation of the PRECEDE-PROCEDE model, including its origin, propositions, rationale for its selection, and its application as a structure for the current study. This chapter also discusses the publications that have addressed the issues of organizational and environmental factors in HHC as they relate to safety behaviors and injuries among healthcare workers and nurses in particular. It also describes various methodological approaches and their strengths and limitations. Finally, this section presents what is known and what remains to be studied in relation to the research questions.

## Literature Search Strategy

My extensive literature search is based mainly on electronic resources. The searches were conducted using EBSCOhost, CINAHL, MEDLINE, ProQuest, Psyc TESTS, Google E-book, ProQuest Digital Dissertations, Eric, Cochrane Database of Systematic Reviews, and the Saudi Digital Library. I used peer-reviewed articles, online books, governmental reports and documents, newspapers, and published presentations, as well as published and unpublished dissertations. In addition, searching information included the local and international websites such as, AAHomecare, United States Department of Labor, Centers for Disease Control and Prevention, American Nurses Association, World Health Organization (WHO), Ministry of Health (MOH), Royal College of Nursing, and the Canadian Association for Nurses (CAN). The broader review included quantitative and qualitative studies with the majority being quantitative designs related to the topics of interest. Searching results were restricted to published studies in English or Arabic languages and focused on full-text articles. The majority were published in the period from 2011 to 2016 and peer-reviewed materials. These articles represented a basis for this literature review that provided information sufficient to have a broad insight into the HHC safety and related factors focusing on workers working in this industry.

For searching, I used the following key phrases and Medical Subject Heading (MeSH) terms: *safety, home care, workplace safety, workplace hazards or injuries, occupational safety, workers safety, healthcare workers safety, healthcare workers, home care workers, work-related risk or injuries, home healthcare, home care nurse,*

*community health nurses, community health hazards/injuries, home care hazards/ injuries/ incidents, safety climate, safety behaviors, organizational safety, home care environment, organizational climate, organizational factors, safety leadership, safety performance, safety management, and home visiting, elderly home care.* A series of key words were developed in relation to previous key words and MeSH terms such as (safety or risks or injuries or incidents) and (workplace or climate or home care), (safety and workers and injuries), (home care and workers and safety), (Occupational injuries and health care workers or nurses and home care), and (Organizational climate and safety behaviors and home care).

The database searches resulted in a total of 288 articles, of these, 24 national researches, 42 correctional designs, and 10 qualitative studies. Selection of articles was based on the following criteria; all quantitative studies, cross-sectional survey design, investigating the association between organizational, environmental, and safety behavior with WRIs were eligible for inclusion. Studies examining; factors contribute to workplace safety in healthcare settings, community and HHC safety and risks, and healthcare worker safety and hazards were included also. All articles examining safety management performance and employee safety behaviors/ attitude in industries and health care settings were included too. Articles focusing on physical WRIs were delimited to social and healthcare industries, unless the injuries were correlated with safety variables of the current study. The participants in the selected studies were mainly adults, including workers in companies, healthcare settings, and HHC, as well as nurses working in community health care services. All national studies related to HHC in Saudi

Arabia were selected for inclusion regardless date. Furthermore, my advanced searching was focused on quantitative correlation designs, using multiple linear regression, and concerning with the current study variables.

The exclusion criteria included all qualitative studies except those using phenomenological approach and examining employees' perceptions in HHC. Studies that focused on different forms of safety, such as motor and road traffic safety, specific safety procedures such as administration of medication and other nursing procedures, and safety emergency system were excluded. In addition, studies focusing on patient safety were not included, unless they were related to health care workers' safety. Studies focused on specific types of participants such as people from racial or ethnic groups, minorities or particular cultures, migrant workers as well as drivers, home workers, children, and students were excluded from the literature review. In addition, studies focused on examining the psychological and mental safety and hazards were excluded

## Theoretical Framework

### PRECEDE-PROCEED Model

The PRECEDE-PROCEED model is an ecological approach to health promotion issues (Glanz, Rimer, & Viswanath, 2008). It is an adaptable model for a variety of health-related community interventions (Community Tool Box, 2017). The model has been used globally as a framework in public health, community nursing, and social sciences in areas related to disease diagnosis and prevention, assessment of population needs, identification of risk factors, and more specifically HHC issues (Ekhtiari et al., 2013; Ezeonwu & Berkowitz, 2014;Tramm et al., 2012; Philips et al., 2012). It is a very

much appropriate framework for community assessment, health promotion planning, implementation, and evaluation (Crosby & Noar, 2011; Matlo, 2012).

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Originally, the PRECEDE model was first developed in the late 1960s by Lawrence Green and colleagues in the field of health education and promotion (Green & Kreuter, 1991). In 1991, Green and Kreuter introduced and added the PROCEED to the model in recognition of the critical need of health education and health promotion interventions to change unhealthy behaviors. And in 2005, a new version of the PRECEDE-PROCEED model was initiated and reflected its social, ecological, and environmental approaches (Glanz et al., 2008; kline, 2015). It is a form of a logical model and can be used to identify determinants of outcome (Glanz et al., 2005). While, the five phases of PRECEDE move logically and backward from the desired end results, attained through the diagnostic process, and to the assessment process, the PROCEED phases work forward to cover the implementation and evaluation parts of an intervention. The

model uses a step by step method to develop an understanding of community needs and threats (Diem & Moyer, 2015).

The underlying premise of the PRECEDE-PROCEED model is that the health behaviors are multidimensional (Community Tool Box, 2017). It is a flexible model that can provide comprehensive assessment of public health problems in any community (Matlo, 2012). In this respect, the model provides a systematic approach to assess health behaviors and surrounding environments, and interrelates the social, physical, ecological, and organizational factors together with their impact on health outcomes (Glanz et al., 2008). An additional benefit of the model is that it permits a thorough assessment of the factors associated with the problems of concern for the purpose of enhancing the health status of the community as a whole. The model can be used a guide for community health assessment, promoting issues, and identifying methods to meet its needs (Matlo, 2012). The model is based on the principle of participation, which permits the target population to be active participants in defining their own health behaviors. For these reasons, the PRECEDE-PROCEED model has been chosen as a structure for determining the safety and risk-related factors associated with HHC conditions and behaviors for the current study.

The PRECEDE portion of the model represents the diagnostic and assessment stage that precedes intervention formation, and the PROCEED portion is designed for the implementation and evaluation stages of a community intervention. In the model, PRECEDE and PROCEED components interact to provide a series of eight phases in the planning, implementing, and evaluating health promotion programs (Glanz et al., 2008).

The PRECEDE portion consists of four phases: (a) social assessment, (b) epidemiological assessment, including behavioral and environmental assessment, (c) educational and ecological assessment, and (d) administrative and policy assessments. The PROCEED portion includes (a) implementation, (b) process evaluation, (c) impact evaluation, and (d) outcome evaluation (Ekhtiari et al., 2013).

The needs assessment of the PRECEDE model includes identification of; health problems, behavioral and environmental risk factors, and organizational issues (Ezeonwu & Berkowitz, 2014; Li et al., 2009). Ezeonwu and Berkowitz (2014) used the four diagnostic phases of the PRECEDE model to identify the health problems and their contributing factors. Accordingly, the study applied the four components of the PRECEDE portion to assess HHC by identifying the safety related factors and its impact on nurses' behaviors. Thus, the PRECEDE portion of the model is an appropriate one, since my study focuses on a community-based intervention.

The PRECEDE portion is very suitable for population health studies that require a community needs assessment to determine the relevant risks among different social groups within a community (Ekhtiari et al., 2013; Li et al., 2009). It has been applied to a wide variety of situations to identify contributory factors to a community problem and to understand the behavior and environmental factors influencing the health status, such as workplace safety, long-term care, and HHC (Binkley & Johnson, 2014; Ekhtiari et al., 2013; Li et al., 2009; Philip et al., 2012). Ekhtiari et al. (2013) applied the first four phases of the PRECEDE portion for identifying the relevant risk factors associated with domestic violence. Li et al. (2009) conducted a study to understand the scope of the

community's health problems and health determinants affecting the behaviors of the target population. Philip et al. (2012) also applied the PRECEDE phases to identify health behaviors for determining an effective palliative care for the elderly population in the community. In addition, Tramm et al. (2011) focused on studying health behaviors of people with breast cancer. Castellanos and Abrahamsen-Borer (2013) concluded that the PRECEDE-PRPCEED model was a useful guide for development of study tools and gathering data that are culturally appropriate for the identified population. These studies demonstrated the feasibility of the PRECEDE model for contextual analysis of community health problems. Tramm et al. (2011) also confirmed that the PRECEDE-PROCEED model is a strong framework for health-promoting nursing studies.

Based on the propositions; that the health behaviors are multifactorial and that behaviors are influenced by the behavioral, environmental, and social determinants, Ekhtiari et al. (2013), Li et al. (2009), and Philip et al. (2012) provided a comprehensive description of the practical use of PRECEDE components for community needs assessment. According to Li et al. (2009), health needs assessment includes identification of health problems of a target population, identification of behavioral and environmental risk factors, and analysis of community resources for promoting health programs. Li et al. (2009) concluded that the PRECEDE portion has provided a strong framework for understanding the behaviors and factors affecting the Chinese population with the cardiovascular diseases.

In terms of social assessment, Tramm et al. (2011) identified the social indicators as they related to the social circumstances, desires, and needs of the participants. Philip et

al. (2012) used both social and epidemiological assessments for addressing the unmet social needs that have an impact on the health status of their target population. Frye (2013) used a survey to provide a social assessment of the target community in relation to nutritional behaviors among children.

Based on Ekhtiari et al. (2013) and Tramm et al. (2011) studies, epidemiological assessment focused on quantifying the vital indicators of physical health such as morbidity and discomfort. The epidemiological assessment identifies the magnitude and nature of health determinants and their effect on the participants' health and behaviors. While Ekhtiari et al. (2013) determined the prevalence rate of domestic violence. Li et al. (2009) identified cardiovascular disease as a priority health problem among the Chinese community. And Frye (2013) determined the prevalence and severity of malnutrition among school children.

With regards to behaviors and environmental factors, Tramm et al. (2011) discussed the interrelation between the people's health behaviors and their environment. Ekhtiari et al. (2013) identified multiple factors that affect health behaviors, including the access to places, person's behaviors, and educational materials associated with violence. While compliance and coping, physical and cognitive issues, and preventing actions were viewed as behavioral indicators in Binkley and Johnson's study (2012), in Philip et al. (2012) study, the behavioral and environmental assessment involved living alone, caregiver burden, and educational programs. Li et al. (2009) put more emphasis on culture as it plays a key role in affecting behavior and lifestyle of the target population.

Considering the previous works, the benefit of this model is that it takes into account all relevant environmental factors that can act as facilitators or barriers to safety practices.

In terms of administrative and policy assessment, studies focused on identifying resources, budget, policies, and facilities required for implementation of an intervention (Binkley &Johnson, 2014; Ekhtiari et al., 2013). Li et al. (2009) presented a detailed analysis of resources and circumstances that facilitate or interfere with the development of a health intervention. In addition, the need for local and regional health policies for community health promotion was suggested. While the lack of an active health promoter interfered with the implementation of health promotion programs, Philips et al. (2012) included time constraints, management changes, and staff shortages as organizational hindering factors.

In general, analyses of previous studies indicated that the PRECEDE constructs can be used for diagnosis and systematic classification of a wide range of behaviors and environmental factors related to health. Moreover, the PRECEDE components have a potential to identify a range of relevant factors that shape the health behaviors through a systematic and critical analysis of the surrounding factors. Given that a strong rationale for the applicability of the PRECEDE portion to an examination of workplace safety and to nursing research that must identify a multitude of factors related to health issues.

**Application of the PRECEDE Components**

Studies using the PRECEDE-PROCEED model have provided a guide for the use of PRECEDE components as a basis for determining the safety and risk factors associated with HHC (Binkley &Johnson, 2014; Ekhtiari et al., 2013; Li et al. (2009). In addition, the PRECEDE model is a strong theoretical framework for the development of a community based intervention in accordance with the identified risk factors (Agaba, 2010; Aldiabat & Le Navenec, 2013). This indicated that the use of the PRECEDE portion of the model is applicable here.

Phase (a) is the social assessment that provides insights into the social circumstances and personal attributes of the participants (Green & Kreuter 2005). It provides information about the characteristics of the population in the target community (Lange, 2012). The social assessment includes the social barriers and facilitators to health outcomes among a particular population (Dolye, Ward, & Oamen-early, 2010; Snelling, 2014). These indicators could be influencing factors such as workplace, social status, income, education, living conditions, and support systems. In the study, social assessment refers to the characteristics of HHCNs, including their age, gender, years of experience, nationalities, and level of education.

The phase (b), the epidemiological assessment focuses on the quantifiable factors that affect health (Tramm et al., 2012). It refers to the available epidemiological data, assessment of risk factors, factors that link individual health to ecological facts, and behavioral factors amenable to change in the community. Tramm et al. (2012) quantified the vital indicators of physical health such as morbidity, discomfort, and physical risk

factors in terms of distribution, frequency, and incidence. In addition, the epidemiological assessment is used to determine the degree and nature of risk related factors, and the way of affecting people's health (Glanz et al., 2008). In this study, the epidemiological data refer to the exposure of HCNs to non-fatal, physical WRIs, including the frequency of injuries during the last year.

The phase (c) involves behavioral and environmental assessments related to health problems and their effects on health behaviors. In this phase, attention is given to assessing the behavioral factors associated with health problems. In workplace safety, this component explores behavioral indicators such as compliance to safety practice, coping and taking preventive actions, and safety participation (Aboumatar et al., 2012; Vinodkumar & Bhasi, 2009). The environmental safety involves factors beyond the control of an individual, however, it can be modified to support behavior or influence health outcomes. Environment refers to social, physical, and community related factors that potentially affect the health behaviors (Green & Kreuter 2005). Thus, this phase highlights on the interaction between physical, social, and environmental factors. According to Binkley and Johnson (2014), the behavioral and environmental assessment phase of the PRECEDE portion demonstrates the extent of interaction between the physical health of a target group and its interrelation with the behaviors and environment. In the study, an access to client's home, home condition, and home-based care were identified as ERFs.

Phase (d) is the administrative and policy diagnosis. It is defined as an analysis of policies, resources, and organizational situation associated with health outcomes (Green

& Kreuter, 2005). It determines the resources available to make changes, the organizational values and beliefs, and supervisory actions (Lange, 2012). In the current study, I identified and described the organization-related factors (ORFs) that affect HHC outcomes. The ORFs included the management performance, the supervisors' behaviors and support, and the healthcare safety policies.

In summary, this study focused on four phases of the PRECEDE model in which the questionnaire was adapted to address a variety of factors related to HHC context. Social assessment involved identifying social characteristics that could have an effect on the health and behaviors of the target population. The epidemiological assessment focused on specific health problems associated with behaviors. It involved the injuries that result from work- related factors. It also helped to identify behavioral and environmental factors related to the selected issues. Behavioral and environmental diagnosis dealt with identification of: safety behaviors, factors within the patient's home, and external factors in the community that associated with HHC. Administrative and policy diagnosis focused on the management performance to achieve the goals of safety in the workplace. Thus, the PRECEDE model permitted for comprehensive assessment and descriptions of factors related to HHC safety among HCNs.

## Why the Home Care Environment

Shifting of health services from acute care settings to community-based care has become a key objective in many health care systems worldwide (Home Care Ontario, 2014; Naham & Mack, 2013; RCN, 2012). The rationale for moving toward more home-based care and the increasing demands for its utilization have been fairly consistent

across countries, based on increasing health care costs, increasing patients' choices and satisfaction with home care, the importance of addressing the health needs of ageing populations, as well as the increasing numbers of people with chronic diseases and functional impairments (Home Care Ontario. 2014; Naham & Mack, 2013; Rauch, 2013; Rostai, 2015; Seegert, 2013). In addition, home care has become a preferred setting for continuous medical treatment, as well as end-of-life care and death (Shih et al., 2015).

Over the previous decades, there has been growth in the preference for home and community-based services (Björnsdóttir, Ceci, & Purkis, 2015; Care Quality Commission [CQC], 2013; Gomes, Calanzani, Gysels, Hall, & Higginson, 2013). The number of beneficiaries received HHC increased by 16% in 2012 in Canada (CQC, 2013). In the United States, 80 % of elderly receiving home-based care are with functional limitations in Activities of Daily Living (Family Caregiver Alliance, 2015). The needs of home care patients have become more complex, given the increasing numbers of patients with chronic diseases, advanced cancer, and mental disabilities (Björnsdóttir et al., 2015; Congressional Budget Office, 2013).

Previous studies demonstrated home as a significant place for care (Gomes et al. 2013; Shih et al. 2015). Shih et al. (2015) indicated that home care was a preferred place of care at the end-of-life: about 60.6% of patients expressed their wishes to receive care at home and 66.5% preferred home as a place to die. In line with this, Gomes et al. (2013) conducted a systematic review of 130 studies examining preferences for where to receive care and where to die among terminally ill patients. In one-third of these studies, more than 70% of participants expressed their preferences for dying at home. Despite the

prevalence of preferences to stay and die in their homes, yet, 64.8% of Thai patients receiving palliative care died at the hospital (Nagaviroj & Anothaisintawee, 2016). In this study, a significant association between death at home and home visits was predicted. Patients who received a multidisciplinary home care visits had a 6.57 chance of dying at home. Nagaviroj and Anothaisintawee (2016) suggested promoting community palliative care.

Home care is a place to promote healing and can provide benefits for patients and family member as well (Woodman, Baillie, & Sivell, 2015). With home care, patient care is brought into a familiar environment in which patients feel closer to family members and friends, and it is better suited to ensuring that patients receive culturally sensitive care at the end of life (health 24, 2013; Rhode Island Partnership for Home Care, 2015). In addition, home is the best alternative for integrated physical and social health care as reported by care providers, patients, and family caregivers (Gomes et al., 2013; Oliveira, Quintana, Budó, Kruse, & Beuter, 2012). From the aspect of psychosocial care, home was described as a comfortable habitat where patients felt more freedom and comfort, interacted socially with others, and fulfilled their spiritual needs and concerns (Healy-Ogden, 2014; Oliveira et al., 2012).

The support of family caregivers is crucial in facilitating home care (Woodman et al., 2015). Woodman et al. (2015) examined the perceptions of family caregivers towards home care using a systematic review. Findings indicated that the majority of family caregivers perceived home as a preferred place of care, despite the difficulties and barriers. For some family members, caring for patients in home environment is an

invasion of privacy and interruption to daily scheduled activities that can result in feelings of loss of control; however, such feeling is often based on the dynamics of family relationship and the way an ill person or family member feels about the home spaces (Healy-Ogden, 2014; Oliveira et al. 2012). Krug, Miksch, Peters-Klimm, Engeser, and Szecsenyi (2016) predicted a relationship between the feeling of burden among family caregivers and the health status of their patients.

HHC is perceived as a means to achieve optimal health outcomes for many patients (Jones, Harris-Kojetin, & Valverde, 2012; Maliakkal & Sun, 2014; Tappenden, Campbell, Rawdin, Wong, & Kalita, 2012). In this respect, nurses perceived health care in the patient's home setting as more personalized due to the emotional connection with patients and the feeling of obligation on the part of care providers (Woodman et al., 2015). Beside the psychosocial benefits of home care, Kouli et al. (2013) indicated that the cost of care of the patient's home demonstrated a lower cost and a higher benefits comparing to care associated with hospitalization.

In contrast to viewing HHC as cost-effective and ideal place for care, home care environment was also viewed as risky with multidimensional safety concerns and potential threats to health care providers' safety (Craven et al., 2012; Stevenson, et al., 2012). The management of safety at home and in a community care environment is challenging for several reasons. First, the demands on HHC services as well as the complexity of some cases require more advanced home care skills (Gershon et al., 2012). Second, the home environment is unpredictable, much less structured, and not easy for health care providers to control and regulate. The home care conditions may have an

impact on the wellbeing of health care providers. Third, often HHCWs are working in isolated areas and far away from their support resources (Ellenbecker, Samia, Cushman, & Alster, 2008). Fourth, home care adds more pressures and burdens on the family members, caregivers, and health care providers (Stevenson et al., 2012). Fifth, security risks arise when community health care workers travel to and from clients' homes (Terry et al., 2015). All these situations may create serious safety issues for health care providers.

## HHC in the Kingdom of Saudi Arabia

In 2014, the Saudi population was 29,650 million and the estimated projection of population is 36 million in 2020 (MOH, 2014). The KSA is described as a young society in which the population is characterized by a large percentage of youths under 15 years old, which presents 29.5 %. Meanwhile, 60 % of the population is below the age of 34. The proportion of people aged 60 or more in 2014 was 2.9 %. The anticipated number of people aged 60 and more in 2020 is 2 million which presents 6.9 % of the Saudi population. These figures are much less than the15-17 % in developed countries in 2014 (Administration on Aging, 2014; World Bank Group, 2016), however, the Gulf Cooperation Countries (GCC) declared that there is an increasing demand for HHC services as the ageing population rises in these countries (Saudi Gazette, 2016). The GCC will spend an estimated amount of $3.4-4.8 million to meet the growing demand for HHC services by 2020.

Despite the slowly aging society in Saudi Arabia, there is a rapid growing of population with high occurrence of lifestyle-related diseases such as diabetes, obesity,

cancer, and cardiovascular diseases (Memish et al., 2014; WHO, 2014). This results in a high occupancy of hospital beds by patients with chronic diseases who may need long-term care and rehabilitation services. This also creates a vast new demand for HHC services in KSA (Saudi Gazette, 2016). During the last two decades, the health care providers have voiced the need for formal community healthcare facilities and long-term care institutions in order to reduce the great pressures on hospitals and to ensure continuity of care (Al-Hazmi & Kurashi, 2006; Qari, 2000). In responding to the demands of long-term care, HHC was first established in the late 1980s, as an attached service to an emergency department at the Green Crescent Hospital in Riyadh, the capital of Saudi Arabia (Al-Hazmi & AlKurashi, 2006). Between 1991and 1997, five HHC programs were operated by governmental affiliated hospitals around the kingdom, namely King Faisal Specialist Hospital in Alqassim, King Fahad National Guard Hospital and Military Hospital in Riyadh, and King Khalid National Guard Hospital in Jeddah (Alghamdi, 2010). In 2009, the General Administration of Home Medical Program was established to run HHC programs all over the country (MOH, 2013).

National studies revealed that the majority of long stay patients were elderly with at least two co-morbidities and functional disabilities and needed long-term care and rehabilitation services rather than active treatment (Al-Shammari et al., 1997; Qari, 2000). From socio-cultural aspects, family caregivers preferred caring at home rather than institutional care for their elderly patients (Al-Hazmi & AlKurashi, 2006). Mufti (2000) and AlGhamdi (2010) indicated that unity of the families in Saudi society and their strong Islamic faith were reasons for their preferences for care at home. It is a

religious duty for a son or daughter to take care of their parents when they are getting old (Al-Munajjid, 2008). This is stated in Quran, the Islamic religious book: “Thy Lord hath decreed that ye worship none but Him, and that ye be kind to parents, Whether one or both of them attain old age in thy life” (Surah Al-Isra, 23) (Islam question & answer, 2017). Almobarak (2014) discussed the religious perspective of home-based palliative care and end-of-life care. He indicated that Islamic culture is an important factor for a strong social connection among family members and preference of patients to die at home. AlHeeti study (2007) revealed that nursing homes were insufficient in meeting the needs of elderly Muslim people in the United States. AlHeeti (2007) discussed the need to provide long-term care that is appropriate for Islamic culture. A similar suggestion was put forth in order to provide long-term health care services that are cost effective and able to prevent socially adverse outcomes (Al-Shammari et al.,1995).

After the MOH announcement in 2009, the total number of health care setting established HHC programs has been increased from 180 in 2013 to 192 hospitals in 2014 (MOH, 2014). The total numbers of HHC beneficiaries increased from 100 in 2009 to 24,149 patients in 2014 (MOH, 2014). In Makkah province, the Western region of Saudi Arabia, more than 48000 patients reported in need of HHC services in 2011. In 2030, the number of beneficiaries is expected to increase by 12% in Makkah province alone (Al-Jassem, 2011). With regard the HHC services, 1509 health care workers divided into 216 teams were employed to provide care (MOH, 2014). The accumulative home visits in Jeddah alone were 7000 visits to more than 3000 patients from 2010 to 2013. These figures indicate that there is a great transformation of health care that can be manifested

in the expansion of HHC facilities, increasing the number of beneficiaries, and increasing in health manpower. This type of services would facilitate shifting of healthcare and medical treatment to community and rather than to outpatient medical facilities only (Ahmed & Damrah, 2012). However, many challenges were reported in relation to home-based care (Alanazi, 2014; AL-Arfaj, 2010; Alghamdi & Johnson, 2014; Al-Shammari, 1997; Al-Shammari, Jarallah, & Felimban, 1997; Hafiz et al., 2014; Qari, 2000).

The previous studies were conducted to provide more insight into the need for an alternative for long-term care. Accordingly, health care organizations have adopted reforms to support this shift to community care, while others have strengthened their community sectors at a regional, provincial, and state level (Almalki, Fitzgerald, & Clark, 2011). The long-term care and HHC services have been established by different ministries, namely the Ministry of Social Affairs, the Ministry of National Guard, and the Ministry of Defense. The system of health care services differs in their affiliations, methods of funding, and ways of delivering health and social care services.

The HHC programs in MOH began in 2009. The HHC program, or Home Medical Program as it is called in some health care settings, is a formal health service that provides care at home settings and is delivered by a variety of health care providers, including nurses, physicians, physiotherapist, home care aids, social workers and others (Al Shammari, 1997). The HHC program aims to assist patients to stay at home, to maintain the stability of health status (Alghamdi & Johnson, 2014), and to enhance family participation in taking care and follow up their patients. According to Alhelali (2016), nursing care is the cornerstone of these services.

In I997, the National Home Healthcare Charity Foundation (NHHCF) was established to assist in providing home-based care resources and materials for those patients with terminal illnesses and in need of health care at home (Home Healthcare Forum, 2005). NHHCF is a non-governmental, nonprofit organization and a national charity for HHC. The main activity of the NHHCF is to respond to the psycho-social needs of patients and their family caregivers. It provides patients with the necessary medical equipment and consumable materials to ensure that safe home care can be carried out. The NHHCF has started its services in the capital Riyadh, and later, it has been expanded to include the Western Region of the KSA. Currently, it operates in partnership with several HHC programs across the regions in the KSA to respond to patients' and caregivers' needs within home environments (Redazione, 2016).

In the last twenty years, among the HHC studies which were conducted and published, a few were related to assessment of, length of stay (LOS), and perceptions towards HHC and home visits (Al-Hazmi & Kurashi, 2006; Al Shammari, 1997; Al-Shammari et al., 1997; Qari, 2000). The majority of these studies voiced the great demand for an alternative to acute hospital care and suggested initiating care at patients' home. Al-Shammari et al. (1997) provided a description of the clinical conditions of patients with a long stay in the hospital, indicating that 43% of elderly patients needed routine basic care. While 67.5% of family caregivers preferred institutional care facilities, patients' preferences were contradicted (al-Shammari et al., 1997). As a result, the need for establishing a home visitation program was raised and that home visits should include a variety of healthcare providers. Later, Al-Hazmi and Kurashi (2006) and Qari (2000)

strongly indicated the need for HHC programs for patients who need basic long-term care in order to maintain hospital beds for acute cases, and eventually hospital-based HHC programs in Saudi Arabia were initiated.

Consistent with the previous results, Al-Hazmi and Kurashi (2006) also confirmed that 57.2% of inpatients in a governmental hospital did not need active medical treatment and the care could be shifted into the home. In 2004, Jastaniah, Al-Tayyeb, and Bin Sadeq conducted a cross-sectional study to measure the effectiveness of HHC services in relation to hospital readmission and LOS. The patients who received HHC reported less readmission to hospital and LOS compared to those who received no HHC (Jastaniah et al., 2004). In 2006, a study of Al-Hazmi and Al-Kurashi indicated that 45.5 % of the hospital directors had good knowledge compared to directors of primary health care centers. Physicians and nurses of the study showed little knowledge about HHC services, accounting for 54.6 % and 62.8 % respectively. Most of the information was obtained from the hospital working experiences and journals. Previous studies revealed the crucial need for HHC programs to reduce unnecessary LOS patients and provide an effective home-based care. Therefore, home care in Saudi Arabia has been established as an important part of the health care system (MOH, 2013). Even though the programs may differ, all aims are to provide HHC services to homebound patients, and to provide the necessary medical and supportive services such as equipment and materials required to meet patients' health needs.

After 2009, the year when the MOH setup HHC programs, the development of home care programs has become an integral part in improving the efficiency of the health

care system in Saudi Arabia. The MOH has established HHC programs to provide care and follow up of patients in their places of residence with maintaining the sense of security and dignity of the patients and their families (MOH, 2013). In 2011, 5665 home care beneficiaries were located in the larger cities such as, the capital Riyadh, Jeddah, Makkah and Almadinah, Alqassim and Asser in the middle Northern Region. According to the MOH figures (Rasooldeen, 2012), the majority had chronic diseases accounting for 777, followed by 576 with mental illness, 448 with neurological illness, and 369 patients had geriatric disorders. According to Al-Modeer, Hassanien, and Jabloun (2013), 89% of home care elderly patients had more than two chronic diseases.

From 2010 to date, there are a number of published studies in HHC that examined the perceived needs and concerns of clients and family caregivers (Al-Anazi, 2014; Al-Arfaj, 2010; Alghamdi & Johnson, 2014; Aljameely, 2011; Al-Khashan, Mishriky, Selim, El Sheikh, & BinSaeed, 2011; Hafiz, Fahmy et al., 2014). The majorities of these studies were cross-sectional and showed high client satisfaction with home care services. Al-Khashan et al. (2011) conducted a cross-sectional study and used an interview method to obtain information from 240 family caregivers of patients registered in HHC at a governmental hospital. The average level of satisfaction among participants was 90%, and this result was attributed to the frequent home visits. Despite this satisfaction, there were yet areas for improvement, including training of caregivers in caring for their patients, and improving the other health services such as social services, as well as the transitional care services from hospital to home based care (Khashan et al. 2011). Moreover, Baharoon et al. (2011) conducted a quantitative study in a tertiary care

hospital to assess the effectiveness of home care based intravenous antibiotic program. A total of 152 patients were participated, of those 13(8.5%) were readmitted during the duration of taking the therapy. The overall complication was 1.6 per1000 catheters, which was lower than the reported rate for a similar program in North America. The total cost of the HHC-based IV antibiotic program was (839, 627, 48 Saudi Riyals [SAR]) which was much less than the in-patient cost (1,368,750,68 SAR). A retrospective review of patients' charts revealed that a home based IV program was safe and less associated with acquired infection (Baharoon et al., 2011).

Two published studies in HHC assessed the effectiveness of psychiatric home care in relation to hospital readmissions, LOS, and ED visits (Hafiz et al., 2014; Hafiz, Samy, Fahmy, Ibrahim, & Mesailhi, 2010). Hafiz et al. (2010) and Hafiz et al. (2014) indicated that the psychiatric patients who received HHC reported a significantly less visits to the ER ($M$ = 0.62±1.3) compared to ($M$ = 1.69± 2.45) for those patients who received outpatient appointments only. AL-Arfaj (2010) study recorded a significant reduction in the rate of re-admission from 1.51 to 0.83 at $p < .05$ for home care patients. Al-Marzrooa (2010) addressed the shortage of nursing staff in carrying out health services at patients' homes. A HHC training program was introduced for training 60 registered nurses to be able to act effectively during home visits (Al-Marzrooa, 2010). AL-Arfaj (2010) also found that the lack of satisfaction among health care providers because of the work environment and workload.

Despite the previous HHC studies revealed the effectiveness of providing services, these studies indicated several areas for improvement such as the skills of the

HHC employees, workplace climate, transitional care, and resources and supplies required for patient care. Yet, only a scant amount of researches has focused on the needs and concerns of nurses, in particular on aspects related to the nature of the working environment and safety issues in HHC. According to Senthil et al. (2015) staff perception is significant to facilitate risk management actions. With the growing demand for HHC in Saudi community and to be able to continue providing safe health care services to homebound patients, it is imperative to find out the challenges the nurses face in the workplace safety. At the national level, little is known about safety related behaviors and conditions associated with providing HHC services and the potential risks among HHCNs.

## Health Care Workers' Safety and Patients' Safety

Despite differences in perception towards home safety, client's safety, health care providers' safety, and caregivers' safety are intertwined (Stevenson et al., 2012). Caregiving at home is often associated with a physical and psychological burden on family caregivers which in turn affect patient health. Health care providers also face challenges as HHC has become more demanding and occur in unpredictable environments. Threats which affect home care workers (HCWs) safety may also influence patients directly or indirectly (Stevenson et al., 2012). The existence of potential risks in the workplace may result in WRIs or illness for both HCWs and patients. According to OSHA (2013), "Workplace safety is inextricably linked to patient safety." Moreover, the worker and patient safety cannot be isolated from organizational safety (OSHA, 2013). WRIs among HCWs have a heavy impact on workers' health and

productivity as they also affect their families, Caregiving, and patient safety. An analytical qualitative study indicated that the lack of safety and protection of HHC providers was perceived as a barrier to delivering of an effective home care (Heydari, Shahsavari, Hazini, & Nasrabadi., 2016). Moreover, the safety practice of HHC is linked with the quality of patient care (ACE Risk Group, 2015).

HHC can be a rewarding experience for HCWs. Lang et al. (2013) viewed home care safety as a sharing of perspectives between clients and care providers. With proper attention to safety and potential risks, nurses can make a difference in health outcomes for themselves as well as patients. Thus, a positive work environment is an important factor for optimizing patient outcomes (Jarrín et al., 2014). Furthermore, a positive safety climate is significantly associated with low WRIs among HCWs. Safety climate relies on safety management performance, safety communication, and employee behaviors to mitigate the risks and WRIs. Thus, safety management plays a pivotal role in minimizing unsafe conditions and behaviors.

## HHC Workers

The demand for home and community health care workers is continuing to increase in several developed countries (RCN, 2013; AFL-CIO, 2015). In the U.S. the annual increase of HCWs is 2.6%, and the expected growth in HHC employment is estimated to be more than 20% from 2012 to 2022 (Torpay, 2014). Despite the greater demand for district nurses in the UK, there has been a reported 47% drop in their numbers during the last 10 years (Campbell, McCoy, Burg, & Hoffman, 2013). In the presence of a worldwide shortage of 7,200 million HCWs in 2013, the expected shortage

is 12,900 million workers by 2035 (WHO, 2013), added to these facts, the WHO (2016) reported that over 59 million workers were exposed to a variety of work-related hazards. With these challenges, a greater shortage, higher work dissatisfaction, and higher turnover are expected to occur (McCaughey et al., 2012).

The UK surveillance of occupational exposures reported a total of 4830 injuries between 2004 and 2013 (Owusu, Wellington, Rice, Gill, & Ncube, 2014). Of these, 4735 injuries were experienced by HCWs, among all injuries, 3396 (71%) was a percutaneous injuries. Over a 10 years period, 81% of doctors, nurses and healthcare assistants suffered from injuries (Owusu et al., 2014). The presented figures and percentages of workplace exposures to injuries provide insight on the challenges faced by healthcare settings, HCWs, and nurses in particular.

Despite the availability of laws, policies, and effective interventions to prevent risks and injuries, and to promote health in the workplace, there are yet existing gaps with regard to the health status of workers and their exposure to workplace hazards (WHO, 2013). The majority of the workforces has no access to safety interventions in the workplace. In 2013, estimated death from occupational diseases was 53,000 resulting in a loss of 150 workers each day from workplace hazards in the U.S. alone (AFL-CIO, 2015). Worldwide, nearly 3,800 million WRIs and illness per year were reported. Despite of reporting, the real estimated figures of injuries per year exceed the recorded number by two to three times. However, workplace injuries are a public health problem in other nations too.

HHCWs provide care to vulnerable groups in a context that has been described as harder to control (Healy-Ogden, 2014). HHCWs can be vulnerable to work-related risks as they experience an unprotected and unpredictable environment in the community home settings (NIOSH, 2013). The job of those workers is described as physically demanding and often associated with performing risky manual tasks (Weerdt & Baratta, 2015). In addition, HHC providers are often working alone, lacking of help when needed (Beer et al., 2014).

Moreover, home care includes a wide range of tasks and is no longer just about giving basic care. Home care patients have become more critically ill, as they are discharged earlier from hospitals, and sent back into the community (Gomes et al., 2013). Health care for homebound patients has been expanded to include more complex and advance care, such as palliative care and hospital at home (Adlbrecht et al., 2011; Gomes et al., 2013). These facts present some reasons for the increasing interest in home care safety. Thus, today, HHC nursing presents challenges and opportunities for nurses.

## HHC Nursing

HHC nursing (HHCN) today is concerned with patients and family caregivers in patients' own homes (Olin, 2012). HCNs are important members of the HHC team who often work independently and make decision related to patient care (CNA, 2013; Chicoine & Aselton, 2015). Nursing associations put a greater emphasis on the need for knowledgeable and skillful HCNs because of the increased complexity of patient care at home (CNA, 2013; ONA, 2015; RCN, 2012; Utens et al., 2013). Nurses perform a wide variety of physical and emotional care tasks in patients' homes based on their needs.

They also promote health with great emphasis on the psychosocial, environmental, and personal health factors affecting clients' health outcomes (CNA, 2013). In addition, community nurses may have to intervene to offer resources for appropriate care (De Vliegher, Aertgeerts, Declercq, & Moons, 2015).

Moving patients to home-based care entails a broad range of activities in an environment with potential risks for vulnerable patients (Beer, McBride, Mitzner, & Rogers, 2014). In this respect, nurses plan and coordinate the transition of care between hospital and home-based care to ensure patients' safety (Zlateva et al., 2015). Low et al. (2015) demonstrated that an effective transitional home care program had a significant reduction in hospital readmissions (51.6 % and 52.8 %) in three and six months, respectively. Moreover, health care providers perceived that helping patients with self-care management follow up of care, and use of information technology in the documentation were significant as a part of effective transitional care (Zlateva et al., 2015).

One challenge HCNs face; is providing care in an environment where patients and family caregivers often make decisions about care that are not always congruent with the care provider's plans. Nurses should be able to provide health education and suggestions for patients and their families, but ultimately the patients decide, with respect to their values and dignity (Zlateva et al., 2015).

Risks to HHCWs associated with the delivery of care were identified by a risk assessment survey of 1561 workers (Geroshan et al., 2012). The descriptive analysis showed that the unsanitary conditions (32.8%), violence (27.9%), and threatening

families and patients (38.1%) were the most significant threats to home care workers. However, protection of HHC providers could be done through a training of home assessment.

While quantitative studies provided significant figures regarding safety issues in home care, qualitative studies have provided some insights also. Several qualitative studies examining safety of home care has focused on the HHCWs, nurses' experiences, and their challenges (Berland et al., 2012; Flöjt, Hir, & Rosengren, 2014; Jones, 2015; Lang et al., 2015; Tong, Sims-Gould, & Martin-Matthews, 2016). Despite increasing the complexity and multidimentionality of home care safety, the perception of health care providers were not sufficiently understood in this issue (Lang et al., 2015). Based on four dimensions of safety; the physical, emotional, social, and functional, Lang et al. (2015) explored the main risks for patients and caregivers in home care, included mismatching between equipment and home physical space, lacking of training of caregivers, and excluded caregivers from discussion with HHCWs. Finally, Lang et al. (2015) illustrated the inter-connectedness between the patient's safety and caregiver safety within the context of palliative home care. Furthermore, Lang et al. (2015) suggested that an achievement of home care safety involves the inter-relatedness of clients, caregivers, and health care providers. Another approach to understand patient safety in HHC context was conducted by Jones (2015). Jones (2015) used structure, process, and outcomes as a framework to examine factors contributing to safety home care. Community nurse managers identified their perceptions towards the physical environment and patient behaviors as having great influence on health outcomes and safety. This finding implied

that community nurses experienced challenges with regards to patient noncompliance with the advice of health care providers, and that required safety training in empowering the patient to act safely. While the previous two studies focused on the patient safety, Craven et al. (2012) explored the types and pattern of home safety as concerned by home care workers of elderly clients. The most safety concerns were related to of physical aspects, such as heavy lifting and followed by spatial concern such as home space. The temporal and interpersonal concerns were least reported. While safety policies of an organization and positive characteristics of family and client minimized the seriousness of the safety concerns, inadequate training and unresponsive families and clients were reported as intensifying factors. Craven et al. (2012) indicated that unsafe situations in the work environment have potential threat to patients as well as workers. These risks have also represented hazards for HHCWs.

Despite the significant contribution of phenomenological qualitative studies to the knowledge of safety factors associated with HHC, yet, the highly subjectivity of data collection that based on recalling of past information and inability to produce generalization of the results were considered limitations to such approach (Craven et al., 2012; Creswell, 2009). The descriptive nature phenomenological study would not allow researchers to understand the relationship between the emerged factors.

To enhance a safe home care, patients and HHCWs agreed upon the necessity of care measures related to, planning of patient care, patient-health provider communication, and adequate transitional care coordination in home care (Zlateva et al., 2015). In this regards, nurses play a valuable role in the continuity of care, communication, and

coordination of transitional care to home care in order to reduce adverse outcomes (CAN, 2013; Gjevjone, Romqren, Kjqs, & Hellesqr, 2013)

With regards promotion of home care safety, nurse managers are the link between direct patient care and the organization strategies (Gjevjone et al., 2013). Management plays a significant role in providing good working condition for nursing staff and that leadership behaviors contribute greatly to nurses' compliance with safety rules (Gjevjone et al., 2013). Haycock-Stuart and Kean (2012) implied that nurse leaders have to continually engage with the community nurses to address safety issues.

Moreover, home visiting nurses experienced more challenges because of their travelling among patients' homes and caring for their patients in an unregulated home environment as Ontario Nurses' Association (2015) revealed. Consistent with this view, the phenomenological study of Terry et al. (2013) and Craven et al. (2012) identified potential risks associated with home visiting. These factors were related to driving for long distances and working in isolation for long periods. Nurses also experienced unpleasant clients and caregiver behaviors, poor home conditions, violent behaviors, and work-related distress. Furthermore, exposure to WRIs among HCNs has been over reported (Fute et al., 2015; Gomaa et al., 2015; Shibuya, 2013).

## Work-Related Injuries

Many studies showed the benefits of HHC, but numerous challenges and barriers have been identified, including WRIs (Gershon et al., 2012; OSHA, 2013; Quinn et al., 2016). WRIs have been classified into fatal and nonfatal (Gonzalez-Delgado et al., 2015). Researchers in HHC safety have quantified the physical nonfatal WRIs that are

experienced by HCWs, over a period of 12 months (Agnew, Flin, & Mearns, 2013; Gershon et al., 2012; Kieft et al., 2014; Larsson et al., 2013; Lee & Kwak, 2014; Polivka et al., 2015; Quinn et al., 2009). These quantitative assessments of potential risks are useful for providing an evidence base for policy setting and identifying strategies for increasing personal safety of HCWs who provide direct care, as well as for further development of educational preventive intervention to enhance knowledge of safety precautions. The main physical WRIs experienced by home visiting health care providers were sharp injuries, musculoskeletal injuries, infection, and injuries related violence and aggression (Bailey et al., 2013; Gershon et al., 2012; Hignetta, Otterb, & Keen, 2015; Quinn et al., 2009).

Researchers quantitatively identified safety behaviors and conditions associated with home care in terms of the identification of risk factors for injuries encountered by HHCWs (Davis & Kotowski, 2015; Gershon et al., 2012; Lang et al., 2015; Olsen, 2010; Quinn et al., 2016). Several indicators for home safety hazards were determined in relation to fall hazards and unsanitary conditions (Gershon et al., 2012). In another study, poor job preparation and inadequate time for delivering care were the main predictors for WRI (Khatutsky, Wiener, Anderson, & Porell, 2012).

Agnew et al. (2013) conducted a survey of 1566 clinical staff to measure a self-reported of workers' injuries in relation to safety climate and safety behaviors. For job injuries, 21% reported one to two incidents, and 4% of participants three or more incidents, meanwhile 75% experienced no injuries in the last 12 months. An analysis of types and causes of WRI was conducted by Khatutsky et al. (2012), who indicated that

57.9% of nurse aides reported non-minor injuries, and of those 65.8% had more than one injury in the last12 months. The nature of injuries was varied and resulted from several causes included lifting, handling residents, resident aggression, and accidents related equipment. Despite the significant contribution of previous studies, findings are limited to self-reported work injuries and their causes. Agnew et al. (2013) focused only on the employee behaviors and internal safety climate of the organization.

Risks for musculoskeletal pain and injuries are among the most common for HHCWs. A total of 132 studies worldwide was systematically reviewed, reporting the highest incidence of musculoskeletal pain and injuries among nurses and nursing aids compared to other HCWs (Davis & Kotowski, 2015). Quinn et al. (2016) conducted a cross-sectional survey of 1249 home care aides to assess the occupational hazards by types of injuries in the previous 12 months. As a result of 3484 home visits, about 10% of home care aids experienced some type of WRIs. A majority reported musculoskeletal injuries due to slips and falls during community home visits. The workplace hazards experienced by home care aides were found to be similar to those in health care settings and long-term care institutions. Similarly, the mixed methods study of Polivka et al. (2015) identified an average of 11 environmental hazards reported by HHC providers. Hazards associated with the trip, slip, and lift were the most common, reported by 88.9% of HHCWs. The highest prevalence of musculoskeletal injuries was found among nurses (55.5%) as compared with other health care providers **(**Yasobant & Rajkumar, 2014). D'Arcy, Sasai, and Stearns (2012) also examined the correlation between the nature of musculoskeletal injuries and the activities. Of those injured, 65.5% reported sustaining

their injuries while lifting, repositioning, and handling patients. Yasobant and Rajkumar (2014) further found a significant correlation between back pain and excessive handling of patients or equipment and back pain. D'Arcy et al. (2012) reported back injuries as the highest complaint. Thus, the availability of resources for lifting is significantly associated with reduction of injuries (D'Arcy et al., 2012).

Exposure to percutaneous injuries and body fluids pathogens are common hazards encountered by HCNs and aides (Gershon et al., 2009; Markkanen et al., 2015; Quinn et al., 2009). Quinn et al. (2009) assessed the frequency and risk factors associated with the use of sharp objects by using a questionnaire survey. Nurses were found at a higher risk of experiencing at least one sharp injury compared with aid workers (35% and 6.4% respectively). The rate of exposure to blood and body fluid was 15.1% and 6.7% in nurses and aides, respectively. The cross-sectional survey of Gershon et al. (2009) study identified the correlation between the exposure to percutaneous injuries and risk factors. A significant correlation between percutaneous injuries and noncompliance with standard precautions (*OR* 1.72, $p = 0.019$), and weak safety climate (*OR,* 1.88, $p = 0.004$). In addition, work duration was a significant predictor for sharp injuries as revealed by Zawilla and Ahmed (2013). Despite the relatively high of reported needle stick injuries (65%), 45.8% of percutaneous injuries were not formally reported by registered HHC nurses (Gershon et al., 2009).

Infection is another risk associated with home care services, due to the lack of availability of basic personal protective equipment (Geroshan et al., 2009). A survey was conducted among HHC clinicians, indicating 5.91 % of the participants had reported

acquired infection (Kenneley, 2012). The results showed that there was disagreement about the safety practices in terms of infection control. However, infection prevention practice needs to be considered since ≥ 17% of home care patients rehospitalized because of infections (Shang, Larson, Liu, & Stone, 2014; Shang, Ma, Poghosyan, Dowding, & Stone, 2014).

The threat of workplace violence is a concern of HCNs, too (Campbell, McCoy, Burg, & Hoffman, 2014; Josefsson & Ryhammar, 2010). A systematic review of 21 articles reflected that increased risk of violence is often found among lone workers who faced threats from community environment and clients (Campbell et al., 2014). According to Josefsson and Ryhammar (2010), the percentage of exposure to direct and indirect threats was ranged from 40% to 48 % which are higher than other causes of work injuries. The violence and aggression behaviors were linked to staff personal characteristics, social indicators of patients, and high crime community (Campbell et al., 2014). Risk assessment, policies, and procedures are necessary to reduce violence and aggression towards HCWs.

WRI rates were significantly related to the employee's perception of safety climate (McCaughey, DelliFraine, McGhan, & Bruning, 2013). A poor perception of safety climate is associated with a higher rate of injuries. The psychosocial factors such as organizational climate and work stress were predictors for work injury (Zontek, Isernhagen, & Ogle, 2009). Zontek et al. (2009) suggested that an organization's self-assessment capability and management's openness to feedback are critical elements in injury prevention.

More specifically, McCaughey et al. (2012) measured the number of injuries in the past 12 months in relation to training and its impact on the workers' outcomes. The cross-sectional survey results of 3,377 HHC aids showed 18.5% had experienced an injury in the last year; a multiple linear regression analysis revealed that the home care workers who perceived that job training had prepared them, had experienced less work injuries (3.05 times lower, $p$ value < .001) compared with those who viewed training as having" not prepared them". Lee and Kwak (2014) used regression analysis to determine the association between training and leadership model in relation to WRIs. An employee-focused model of training was found to be a moderately positive association with injuries ($r = 2.67$, $p < .01$). Leadership could play a critical role in maximizing the effectiveness of training for HHC aides.

Management factors greatly influenced the participants' responses to injuries in the workplace (Dyrkacz, Mak, & Heck, 2012). HHCWs who experienced three or more injuries rated their supervisor support as "poor" compared to those who have fewer WRIs **(**McCaughey et al., 2012). A multivariate regression analysis indicated that the HHWs who perceived poor support from supervisors were experienced significantly higher job injuries (3.1 times at $p < .001$) compared to those groups who rated their supervisory support as "good" (McCaughey et al., 2012). Supervisor safety behavior was strongly linked to nurses' compliance with safety behaviors (Subramaniam, Shamsudin, Mohd Zin, & Mad Lazim, 2013). Moreover, being less respected and reworded were significant predictors of WRIs (Khatutsky et al., 2012).

In conclusion, the leadership interaction along with the preventive training facilitates mitigation of WRIs. The stronger the leadership act in relation to training, the most significant reduction of WRIs reported (Lee & Kwak, 2014). Consequently, improving the training standard and work environment is necessary element in promoting the workers' outcomes and quality of health care (D'Arcy et al., 2013).

**Impact of Injuries**

The cost of WRIs is associated with lost workdays, medical treatment, and productivity. The WRIs negatively affect the employees' physical and psychosocial health outcomes. More specifically, McCaughey et al. (2012) revealed that the numbers of work injuries are negatively associated with job satisfaction and positively associated with turnover intention as reported by home health workers. However, intention to stay was affected by the work environment characteristics (McGilton, Tourangeau, Kavcic, & Wodchis, 2013). The coworker relationship was found to be strongly positively associated with intention to stay, but leadership support was not. Moreover, WRIs were negatively correlated with workplace safety climate, while they were positively correlated with job distressed and sick leave taken (Nantsupawat, Nantsupawat, Kulnaviktikul, & McHugh, 2015; Nixon et al., 2015).

Consequently, injuries among HCWs are negatively impacting the quality of care that the home care patient receives (McCaughey et al., 2013). As perceived by home care patients, the overall quality of care can be improved through skillful home care providers and maintaining the continuity of patient care (Gjevjon et al., 2016). Health care managers need to engage positively to improve safety in the workplace.

## Workplace Safety

Safety refers to avoiding short or long-term hazards to people resulting from unsafe actions and preventable adverse events (The Joint Commission, 2012). It is the concern of patients, their families, and health care workers within health care settings (Ekahau, 2015). Regardless of the targeted population, implementation of safety in the workplace is positively associated with health outcomes (Doyle, Lennox, & Bell, 2013).

The concept of safety in the workplace was introduced by several industries, health care organizations, and institutions stressing the importance of safety practices and their effect on productivity and reduction of cost (Burt et al., 2011; Ezeonwu & Berkowitz, 2014; HSA, 2011; HSE, 2013; Fugasa et al., 2012). Safety issues were related to internal organizational performance, management behaviors, employee attitude, and assessment of potential risk for work injuries. There has been growing concern in examining the beliefs and perceptions of employees with regard to workplace safety in a variety of industrial settings (Fernández-Muñiz et al., 2012; Huang et al, 2014; Tucker & Turner, 2011). Humans as opposed to machines have a strong role to play in identifying and resolving health and safety concerns (Labour Program, 2016).

Understanding HHCWs perceptions of workplace safety could benefit stakeholders regarding work effectiveness and to determine safety constraints. The results of employees' shared insights could help them to develop and identify courses of actions by which the employee behaviors are influenced. In quantitative studies, several factors have been used to assess the workers' perceptions about workplace safety (Huang et al., 2014; Gershon et al., 2012; Larsson et al., 2013; Leiss, 2014). Other studies discussed the

necessity of understanding the safety and risk factors that influence the health of the employees and their safety behaviors (Eklöf, Törner, & Pousette, 2014; Lang et al., 2015).

The concept of safety climate has been used more frequently in safety studies that reflect the employees' perceptions, knowledge, and attitude about risk and safety (Fernández-Muñiz et al., 2012; Vinodkumar & Bhasi, 2009; Westerberg & Tafvelin, 2014). Safety climate included constructs related to individuals, groups, and organizations. The safety climate constructs of Groshan et al. (2012) included senior management support, communication, and safety training.

According to Flin et al. (2006), management performance, safety system and reporting, safety behaviors and attitude, and organizational factors were reported as the essential dimensions of workplace safety in health care. In addition, OSHA (2013) suggested the action of management, workers' participation, availability of protective equipment, safety group norms, and socialization of new employees in terms of safety as contributing factors for safe work behaviors. Moreover, evidences indicated that there is a strong association between the safety climate and safety behaviors and occurrence of WRIs (Sparer, Murphy, Taylor, & Dennerlein, 2013). In the current study, the workplace safety was operationally defined as organizational and environmental factors associated with HHC.

**Organization-Related Factors**

While safety climate has been concerned with a wide variety of factors and the degree of safety at the individual and unit level (McCaughey et al., 2012), safety organization has been focused on the perception of the safety actions of top level management and the organization. Organizational climate refers to the shared perceptions of the organizational practices as a whole, focusing on leadership performance and norms (Stone et al., 2005). In the current study, ORFs focused on the management, supervisory support, and safety policy.

Engaging employees in organizational activities and measuring their perceptions can identify a course of safety action by which they can produce outcomes consistent with the organization's commitment to safety (Wachter & Yorio, 2014). According to Wachter and Yorio (2014), the management attitude of working safe versus working quickly had a strong influence on the workplace environment.

Safety studies acknowledged workers' perception of management of an organization, management behaviors or attitude towards safety, and supervisor-employee interaction (Burt et al., 2012; Tucker & Turner, 2011). Other studies suggested promoting proactive safety behaviors through management actions, and indicated that the management's negative attitudes are predictors for unsafe behaviors (Tucker & Turner, 2011). Wachter and Yorio (2014) indicated that the management behaviors and their attitude towards safety as predictors for safety behaviors.

Researchers who used PRECEDE components, have identified a variety of items underlying the administrative and policy assessment, which included resources and

factors required for intervention development, such as adequate staff, organizational barriers and facilitators, and policies, (Ekhtiari et al., 2013; Phillips et al., 2012). The WHO safety group (2009) identified senior or middle management and team work as organizational factors affect safety in healthcare organizations. Supervisor support, teamwork, and communication were used as predictors for organizational safety (Richter et al., 2016). Geldart, Smith, and Lohfeld (2010) focused on management roles and activities, the nature of the work, and interaction between manager and work in the organization as predictors for organizational safety.

Organizational safety climate has also been studied as a predictor of safety outcomes in the workplace (Brondino, Pasini, & De Silva, 2013; Fernández-Muñiz et al., 2012; Lu & Tsai, 2010; Tucker & Turner, 2011). Several crucial dimensions such as, management behaviors, safety policies, supervisor safety behaviors, safety communication, Job task demands, and training were used as organizational indicators for safety. Management commitment was used as an important factor for safety performance. Fernández-Muñiz et al. (2012) referred management commitment as managers' knowledge of existing problems and positive attitude towards safety. It was indicated that the communication is an important tool for management to improve and encourage safety behaviors. Brondino et al. (2013) and Lu and Tsai (2010) focused on supervision and management performance and safety policies as a measurement of safety in the organization. Results indicated that safety policies had a higher effect on safety management ($\beta = 0.638$ at $p < .05$), and management performance has a stronger effect on supervisor safety behavior ($\beta = 0.789$ at $p < .05$).

**Environment-Related Factors**

The environment refers to the physical and social aspects associated with HHC (Binkly & Johnson, 2013; Olson, 2010; Verulava, Adeishvili, & Maglakelidze, 2016; Tao et al., 2012). HSA (2011) identified the risk assessment indicators of community health care workers; the potential threats concerning transport, threats from persons and animals, and clients' homes and surrounding conditions.

Terry et al. (2015) used a phenomenological qualitative approach to describe the risk and safety factors influencing nurses' performance by identifying the geographical factors and physical environment of the community in which nurses are involved. The physical environment refers to home sanitation, organization, and presence of pets. The geographical environment concerns with the driving issues and lone working safety measures (Terry et al., 2015). This study identified safety themes as experienced by community nurses. Noh et al. (2011) defined community factors, as an external environmental affecting the performance of home visiting programs. Other studies also assessed the accessibility to clients'homes and limited access to transportation (Ezeonwu & Berkowitz, 2014; Phillips et al., 2013) as external community factors. With regard the social environment of HHC, several studies identified the interaction between health care providers, clients, and caregivers as factor improves the relationship and work morale (Binkly & Johnson, 2013; Verulava et al., 2016; Tao et al., 2012).

HHC evaluation studies have generated numerous of safety indicators to assess the environmental safety within the clients' homes (ACE Risk Group, 2015; Worksafe, 2009). Polivka et al. (2015) used the Modified-HHC Worker (M-HHCW) questionnaire,

to identify the household hazards by its types in the clients' homes. Among 21 potential home hazards, clutter rooms, dangerous floors and stairs, and indoor air pollution such as dust were the most reported risks. This study provided critical information for HHCWs on conducting a home hazard assessment. Being lone and traveling from and to clients' homes was often associated with unpredictable incidents (Terry et al, 2015; Worksafe, 2009). Coordinated care and interdisciplinary communication are important components to maintain a safe home care (Stevenson et al., 2012; Zlateva et al., 2015). Czuna et al. (2012) identified ergonomic risk factors associated with HHC activities as the major cause of musculoskeletal discomfort and injuries such as repetitive tasks of positioning and transferring patients, and handling heavy objects. Jones (2015) also revealed influencing of patients' behaviors and nurses' skills in home care safety.

Despite the impact of environmental risks, yet, there is scanty information of safety associated with social and physical aspects of the HHC. In the current study, the ERFs operationally included items related to home condition, access to a patient's home, and safe home-based care.

**Safety Behaviors**

Understanding how healthcare workers are responding to safety and risk events in the workplace is crucial to prevent injuries. Measurement of workers' safety behaviors is useful for implementing an effective safety management strategy as well as for evaluating the efficacy of safety intervention and how the workers respond to these interventions (Brondino et al., 2012; Huang et al., 2012; Fernández-Mu˜niz et al., 2012; Fogarty et al., 2009; Fugas et al., 2012; Tucker & Turner, 2011). There are a wide variety of constructs

used to assess safety behaviors, the common dimensions included safety participation, safety compliance, and safety attitude (Brondino et al., 2012; Huang et al., 2012; Larsson et al., 2013; Leiss, 2014; McGuire-Wolfe, 2013; Olson, 2010; Polivka et al., 2015; Tucker &Turner, 2011; Vinodkumar & Bhasi, 2009). This study operationally defined safety behaviors as they relate to safety compliance, attitude towards safety, and safety participation.

Vinodkumar and Bhasi (2009) conducted a survey among 2536 employees to find out the nature of the association between safety climate and WRIs in chemical industries. This study identified several items related to employee's safety, included communication, knowledge and attitude, compliance and safety participation. Vinodkumar and Bhasi (2009) suggested that the reliable and valid scale provided in their study can be used for evaluation of safety in an organization. However, safety climate in certain organization may not be valid in another due to cultural differences (Vinodkumar & Bhasi., 2009). Tucker and Turner (2011) identified safety-related attitudes using the exit, voice, loyalty, and neglect (EVLN) model for understanding how employees respond to unsafe work environments. These indicators were related to the intentions to quit, voice of safety concerns, adapting to a dangerous job, and neglect. Tucker and Turner (2011) provided EVLN scale that can be used for young workers between the age of 20-24 and that model is applicable for human behaviors only. Burt et al. (2012) focused on measurement of safety attitude among new recruits as they were more vulnerable to work injuries because of their unfamiliarity with workplace safety. These quantitative studies identified the

safety-related behaviors associated with HHC, which included risk assessment, potential work-related hazards, and actions to be taken to prevent and control risks.

**Safety Behaviors and Organization-Related Factors**

Organizational factors have been predicted to have a significant impact on safe behaviors (Salminen et al., 2013). According to Olson (2010), the higher level management is important for supporting safety and lower level supervisors. The association between management commitment, coworker support by supervisor, and safety training with safety behavior was confirmed by Liu et al. (2015). The safety supervision and management commitment are major factors directly and significantly related to safety behaviors (Liu et al., 2015). While Huang et al. (2012) predicted that safety training is significantly associated with management commitment, Liu et al. (2015) finding was contradictory to this. According to Liu et al. (2015) the safety training is mainly conducted for new employees. Other training activities were irregularly conducted and have little effects on safety behaviors.

Several studies indicated the association between the safety climate performance and employee safety behaviors (Kearney et al., 2015; Leiss, 2014). Both focused on the top management performance in relation to safety issues, such as a safety inspection, management support, and training. More specifically, Leiss (2014) examined the level of safety climate in relation to use of personnel protective equipment (PPE). In this study, the nurses who perceived a higher safety climate, their compliance to use PPE was two to three times greater than those who perceived a poor safety climate. Findings indicated that a strong safety climate was associated with a high percentage of PPE use. Fugas et al.

(2011) also showed that the organizational safety climate was significantly related to safety attitude and act as an indirect predictor of compliance behaviors. Regression analysis indicated that supervisor safety norms ($\beta = 0.24$, $p < .0001$) are significantly related to compliance to safety behaviors. Fugas et al. (2011) indicated that the supervisors play a crucial role in creating a social context that has an influence on the compliance with safety behaviors and the perceived behavioral control of the employees.

Guo, Yiu, and González (2016) determined the relationship between management safety commitment (MSC), supervision social support (SS), safety Knowledge (SK), Safety compliance (SC), and safety participation (SP). Findings indicated that MSC was positively related to SS ($\beta = 0.69$, $p < .001$) and SS had a significant effect on SK ($\beta = 0.45$, $p < 0.001$). While SK showed a significant effect on SP ($\beta = 0.41$, $p < 0.001$), but no significant effect on SC.

**Safety Behaviors and Environment-Related Factors**

Larsson et al. (2013) conducted a cross-sectional survey of 133 home care aides and nursing assistants that showed a significant need for a high skill level in caring clients and good psychosocial work conditions. Quinn et al. (2009) also indicated that HCNs' exposure to blood and body fluid was twice the risk exposure of aides (15.1% and 6.7%, respectively). The main factors associated with sharp injury exposures were frequent contact with body waste, use of sharp objects, and handling uncooperative patients. In addition, Wipfli et al. (2012) indicated the reasons for injuries among HCWs, that included moving heavy objects, inadequate tools for patient handling, and workload. These factors were items used as environmental risk factors in the current study. Overall,

there is scanty information on the environment-related factors associated with HHC, and its relation to safety behaviors.

### Work-Related Injuries and Work-Related Safety

Exposure to WRIs in home care may have indirect effects on worker health behaviors (Olson et al., 2014). According to Liu et al. (2015), compliance with safety practices, including the use of PPE was consistently associated with a lower percentage of WRIs. In addition, a strong negative association was confirmed between an intervention of a safety management system and illness rates, in which the management performance was a significant factor (Autenrieth et al., 2015). According to Vinodkumar and Bhasi (2009) workers' participation and commitment were negatively correlated with the self-reported accident rate, whereas attitude towards safety was not significant. Whereas in Fugas et al. (2011), the work injuries were negatively correlated with safety norms ($\beta = 0.89$, $p < .05$).

## Review Methods

Numerous of scales were designed and developed to measure safety climate, safety behaviors, and home care safety (Leiss, 2014; Lu & Tsai, 2010; Polivic et al., 2013; Vinodkumar & Bhasi, 2009; Worksafe, 2009; Zlateva et al., 2015). This section provides insight into the main scales used for the current study.

The Safety Climate Attribute (Lu & Tsai, 2010) was established and used to measure the safety climate and its correlation with the safety behaviors using participants from the port of Kaohsiung in Taiwan. A total of 2322 questionnaires was distributed, only 608 were completed with a 27.7% response rate. Two versions were produced, in

Chinese and English, with 22 safety climate attributes subdivided into three dimensions: safety management (10 items), supervisor safety behavior (seven items), and safety policies (five items). The items were rated on a 5-point rating scale ranging from the highest score 5 (strongly agree), 4 (agree), 3 (neutral), 2 (disagree), to the lowest score 1 (strongly disagree). The content validity of the Safety Climate Scale was confirmed by a literature review and interviews. The readability and accuracy of the translated scale into a Chinese language was further tested using 12 seafarers from Taiwan (Lu & Tsai, 2010). The established construct reliability showed a high intercorrelation among the all constructs (safety policy, perceived supervisor safety behavior, and safety management) with Cronbach's alpha ranged between 0.81 and 0.91. In addition, all constructs exceeded the reliability coefficient level of 0.70. Given that reliability, 14 items were derived from Lu and Tsai (2010) as ORFs in terms of safety.

The M-HHCW questionnaire was used for measurement of specific hazards and safety within the clients' homes as perceived by home health providers (Polivka et al., 2013). The instrument consists of 38 items, including demographic data, HHC tasks, work injuries by types and frequencies experienced in home care, household hazards, and ended with an open ended question to elicit the most severe hazards experienced during home care. Polivic et al. (2013) indicated that the M-HHCW has been validated for face and content validity as it has been adapted from Gershon's instrument. The other North Carolina Study of Home Care and Hospice Nurses Survey (Leiss, 2014) was designed for exploring the association between the safety climate and the use of PPE as experienced among home care / hospice nurses in North Carolina in the U.S. The scale

was divided into five categories to measure safety climate, personal protective equipment, having to rush, adverse conditions in the home, and safety devices. This scale was not validated as stated by Leiss (2014). However, a valid and reliable measurement scale for environmental factors associated with HHC is too scanty. Hence, several items in previous scales are relevant to the safety issue, 16 items were adapted to measure risk factors associated with the HHC environment with a plan to establishing validity and reliability.

The Safety Climate Scale (Vinodkumar & Bhasi, 2009) was used for prediction of correlation of safety climate with safety behaviors and work accidents in major chemical factories with more than 2,500 employees in Kerala state in India. Safety Climate Scale encompasses of 54 items grouped into eight dimensions, measuring management commitment, workers' knowledge and compliance, workers' attitudes towards safety, workers' participation and commitment, and emergency preparedness in the organization and other safety issues. Items were rated on a 5-point likert scale ranging from score 5 reflecting strongly agree to score 1 indicating strongly disagree. The content, construct, and predictive validity was established. The internal-scale reliability of the scales ranged between 0.61 and 0.95, which 0.60 was a minimum acceptable reliability coefficient level (Vinodkumar & Bhasi, 2009). The scale was also tested for predictive validity to maximize its power for predicting of the future figures of work injuries in relation to safety issues. The Pearson's correlation coefficients revealed a negative correlation between the safety climate factors and the self-reported accident rates (Vinodkumar & Bhasi., 2009). Because of established validity and reliability, 12

items were chosen from Vinodkumar and Bhasi (2009) scale for measurment of safety behaviors.

## Summary and Conclusions

The demands for HHC and the associated risks and injuries among home care workers have created a serious need for attending safety issues worldwide. Safety studies indicated the association of management performance, safety policies, and knowledge and attitude with the WRIs. Managing performance is significantly and directly correlated with the safety behaviors and is inversely associated with the work-related injuries. While, the environmental hazards within the patient homes have a significant impact on the health and HHC provider safety, yet, this issue is under-reported. WRIs adversely affect job satisfaction, stay on the job, and contribute to staff shortage. However, WRIs can be prevented and managed by training and educational development that have an impact on well-being of healthcare workers, which may result in safer and better quality patient care. Moreover, findings of this study may provide significant information to fill the gap in knowledge concerning safety of the home care nursing.

Chapter 3 describes and discusses the research design for conducting the current study. A sufficient explanation of the population and sampling procedure, recruitment of participants and data collection method, the pilot testing of the instrument, and plan for data management are presented. Further description of, the components of the study instrument, establishing its validity and reliability, and the threats to its internal and external validity are provided. The ethical procedures, including the IRB approval, permission for participation or withdrawal, and protection of information are discussed.

The last section provides a summary of Chapter 3 and followed by a transitional part to the next Chapter. Chapter 4 provides a detailed analysis of the study findings. Chapter 5 covers: The interpretation of the findings, limitations of the study, recommendations and implications to practice and future research, and conclusion.

# Chapter 3: Research Method

The purpose of this quantitative, cross-sectional study was to explore the association between the organization and environmental factors with the HHCNs' behaviors and their experiences of WRIs. The significant predictors of WRIs in relation to workplace safety factors were identified. Previous safety studies in HHC focused on the relationship between the safety climate and employee SBs and WRIs but gave little attention to the environmental conditions of homes and their surroundings (Arlinghaus et al., 2013; McCaughey et al., 2012; Ndejjo et al., 2015). This study sought to address a gap in the literature about HHC safety in the KSA in relation to employees' SBs and their experiences of WRIs as associated with ORFs and ERFs.

In this chapter, I cover the following topics: The methodology used to accomplish the purpose of the study, the research design in relation to the research questions, a detailed description of the participants of the study, the selection procedures, data collection method, pilot testing, the instrument of the study, a data analysis plan that includes the statistical procedures and methods of interpretations for hypotheses, the threats to internal and external validity, the actions to address these limitations, the ethical procedures presented by the Institutional Review Board (IRB) agreement and the ethical concerns about maintaining confidentiality and protecting of participants' information.

## Research Design and Rationale

This quantitative, cross-sectional design was used to find out whether there is an association between the dependent variables, nurses' safety behaviors and their experiences of WRIs, with the independent variables, the organization and the environmental factors associated with HHC. The significant predictors of SBs and WRIs in relation to workplace safety factors were determined.

The association between the DVs and IVs was assessed with control over the effects of covariate variables, such as age, gender, and years of experience. The cross-sectional design has the advantage of providing an explanation of the degree to which the variables are associated with the same population at one time point over a short period (Trochim, 2006). It is a commonly used method for estimating the prevalence of the outcomes of interest, in which data are obtained on individual characteristics and risk factors (Frankfort-Nachmias & Nachmias, 2008). For these reasons and to be consistent with the currently available cross-sectional safety studies, this study focused on gathering data across groups of people and explained the association between the identified variables (Kearney et al., 2015; Quinn et al., 2016). While this design can examine the association between the risk factors and health outcomes, the results obtained from this kind of analysis cannot prove a cause-and-effect relationship between the variables.

While qualitative studies have provided a broader perspective towards home care safety (Lang et al., 2015; Terry et al., 2015), quantitative design generates objective data that can numerically estimate and describe the relationship between variables (Creswell, 2009). This cross-sectional design obtained data from the registered HHCNs employed in

HHC programs in a short time. Thus, I prioritized finding participants all at the same time and finding them with the same characteristics based on the parameters of inclusion and exclusion criteria. A further advantage of this design is that it permits collecting information in a natural setting where the participants exist in their workplace without manipulating any variables and without making any interruption (Etikan, Musa, & Alkassim, 2016).

Self-reported data were collected directly from the HCNs using SHCN questionnaire. Self-report data are relatively easy to collect when access to participants is limited. It can be useful when a record of the actual data is difficult to access or unavailable (Etikan et al., 2016). The threats of response bias associated with self-reported data can be minimized by using a structured validated questionnaire to obtain responses and assuring voluntary participation.

In the current study, I determined if there is a significant relationship between the dependent variables including nurses' safety behaviors (compliance to safety, attitude towards safety, and safety participation) and WRIs, and the independent variables, including ORFs (management commitment, supervisory support, and safety policy) and ERFs (access to a patient's home, home condition, and home-based care). To provide answers to the research questions, a linear regression analysis was applied to produce an empirical data on how the variables in the study have influenced each other. The strength of the linear association between the IDs and a DV and prediction of the significant safety-related factors in relation to WRIs were identified and quantified using a multiple linear regression model. Considering the previous analysis, the relationship between the

SBs (DV) and the environment and organization-related factors (IDs) were measured by the correlation coefficient to determine the strength and direction of the linear association between the variables (Mukaka, 2016). As a result, it would be assumed that, the negative correlation coefficient would exist, if the WRIs among nurses are increasing, the workplace SRFs are decreasing. A positive correlation between the ORFs and ERFs, and SBs demonstrates the more the safety workplace the employee perceives, the more safe behavior is anticipated. These findings are expected to be consistent with previous studies in which the safety behaviors and safety climate are associated with lowering the rate of injuries in the work environment (Arcury et al., 2015; Lee & Kwak, 2014; McCaughey et al., 2013).

## Methodology

### Population

The target population included registered nurses currently working in HHC programs adopted by the governmental hospital settings in Makkah Region, KSA. These health care settings were selected because they are located in Jeddah and Makkah cities, the region of my residence. Saudi Arabia is divided into 13 regions and 118 governors. Jeddah and Makkah cities are located in the Western region of the kingdom of Saudi Arabia. Jeddah is a part of Makkah Region and located on the Western coast of the kingdom. According to the MOH report (2014), HHC programs employed 79 health workers and serving 1880 beneficiaries in Jeddah alone. Because of the small population of the HHC nurses have employed in MOH health care settings in Jeddah, the sample was chosen from all HHC programs exist in Jeddah and Makkah cities, and adopted by the

governmental hospitals. These settings were selected because I could have access to participants as well as to ensure the adequacy of sample size.

Data were obtained from nursing workforce who represents the largest sector of manpower employed in HHC programs and plays a major role in safety issues. In this respect, HHC nurses in particular, are known to be a highly vulnerable group for exposure to WRIs (Jong et al., 2014). Nurses are members of a multi-disciplinary team who provide direct care to clients, and who facilitates communication between the patients, family, and the physician. In addition, nurses in home care are actively involved in coordinating care transitions from hospital to patients' homes, visiting homes, teaching patients and their caregivers, and follow up of care (CAN, 2013; RCN, 2013). Given these responsibilities, taking into consideration the nurses' perception is crucial for any change in policy to improve patient care (Kieft et al., 2014).

In conclusion, the selected health care settings differ in their capacities and healthcare systems. The approximate total number of the target population is 119 nurses in the selected HHC programs. All registered nurses of different categories and level of education were included in the study, excluding other HHC providers.

**Sampling Procedures**

I employed a non-probability, a convenience sampling technique that considers all available subjects as a part of the sample. The convenience sampling was used because of in close proximity to the target population and an easy access to them. An access to the subjects in the other HHC programs was relatively difficult. While the sample responses may not accurately reflect the view of the whole population, this technique is useful for

detecting a relationship among variables (Etikan et al., 2016). The study sample included all registered HCNs regardless of their age, gender, nationality, education, and years of experience. Nurses who are working in HHC services for less than a year and not performing home visits were excluded. This was to ensure that participants have sufficient knowledge and exposure to safety practices that are to be assessed in this study. In conclusion, HCNs were drawn from nine HHC services provided by the governmental hospitals in the Makkah Region with at least one year of experience in their current settings and have participated in home visits in the last 12 months.

Determining the appropriate sample size is an important component in sampling procedure to assure an adequate power for detecting the significance of differences in a population (Suresh & Chandrashekara, 2012). I used power analysis for estimating the sample size that relies on the four parameters: the probability level, the number of predictors, effect size, and statistical power level (Cohen, 1988; Cohen, Cohen, West, & Aiken, 2003). With regard the effect size, Lu and Tsai (2010) revealed the significant association between the safety management and safety behavior was ($r = 0.789$ at $p < .05$, two-tailed test), and the supervisor behavior and safety behavior were ($r = 0.262$ at $p < .05$). Meanwhile, Fernandez-Muñiz et al. (2012) demonstrated a significant correlation between management commitment and safety behaviors ($r = 0.492$ at $p < .01$). For the current study, the anticipated parameters are: the power level is 0.80, the number of predictors is three, and the alpha level ($\alpha$) is $\leq .05$. The alpha level ($\alpha$) of $\leq .01$ or .05 is commonly used in detecting a significant difference in a study. The alpha level of 5% would make a lesser chance for an error of rejecting the null hypothesis compared to a

probability of 10% chance of error (alpha level 0.1). Moreover, a study with a significance $\alpha = .01$ requires a higher number of participants than a study with $\alpha = .05$ (Suresh & Chandrashekara, 2012). With regard the desired statistical power, the findings should have less than a 20 % probability for making a Type II error (Ellis, 2010). The confidence level for the current study was chosen to be 80%, which means that 80 percent of the participants has a chance of a true result. According to Ellis (2010), the larger the sample size, the greater the statistical power of the results is.

Based on the previous assumptions, I identified the sample size using the sample size table based on the multiple regression (StatsToDo, 2016). As a result, if ($r$) = 0.26, the anticipated size is 113 participants. Meanwhile, if ($r$) = 0.79, the anticipated size is ten participants. Considering the previous data, the average expected sample size is 62 HCNs. According to Fernandez-Muñiz et al. (2012) results ($r = 0.492$ at $p < .01$), the sample size of 60 nurses was acceptable as revealed by the StatsToDo (2016) Table. As a result, the total available potential participants in the selected settings were taken, which exceeded the estimated sample size, considering the chance of missing data and the unavailability of some participants for any reasons. The attempt to estimate an adequate sample size in the current study was to avoid both: The inability to estimate the effect values due to the use of a small number of participants, or wasting of the researcher's time and resources due to the use of an unnecessary large sample size (Beaujean, 2014). However, it has been suggested that the available participants should be 20% exceeded the actual sample size taking into account the expected losses (Zignol, 2011). In order to

capture the anticipated sample, participants were selected from the all available HHC settings in the Makkah Region.

**Recruitment**

Approval for conducting data collection from the Walden University IRB was obtained to assure full protection of participants (IRB Approval No. 0512170286195). To ensure full access to the selected settings and participants, approval letters and permissions from the local ethical committees and administrations were also obtained. For the MOH hospitals, the permission was obtained from the MOH main office, the General Directorate of the Research and Studies Department in the capital Riyadh, because I included settings from two cities, Makkah and Jeddah, KSA. The permissions were also obtained from the Directorate of the Regional Health Affairs from Jeddah and Makkah cities. The agreements of the hospital administration of the selected settings were also obtained to ensure full access to the potential participants in HHC units. When the permissions were confirmed, visits to HHC settings were planned and arranged based on their locations and geographical areas. Further arrangements for the HHC visits were coordinated with the managers of the health care settings. The visiting days and times were scheduled that were convenient for the potential participants in the HHC units and should not be interfering with their work responsibilities. On the day I visited the HHC unit, with the assistance of the unit manager, the participants who met the inclusion and exclusion criteria were identified.

**Inclusion and Exclusion Criteria**

The inclusion criteria for the current study included all available registered HCNs regardless of their age, nationality, and years of experience. Nurses should be eligible health care workers in the HHC programs for the last 12 months and have participated in home visiting in the last 12 months too. Nurses who have worked in the HHC for less than 12 months as well as those who have not been involved in home care visits for the same period were excluded from participation. To ensure the participants met the inclusion criteria, information about the nurses who have employed in HHC and have participated in home visits for the last 12 months were obtained from the unit supervisor. In addition, nurses were asked: "Have you involved in home visits in the last 12 months." Nurses with negative responses (no), were excluded from the study. While those with positive responses (yes), were included in the study.

**Instrumentation and Operationalization of Constructs**

For the current study, SHCN questionnaire was used for obtaining data regarding the perception of safety from the nurses employed in HHC services affiliated with the governmental hospitals. The SHCN questionnaire encompasses of four sections including the demographic data and the three structured scales related to organization, environment, and safety behaviors. The demographic data sheet was used to gather information about the personal characteristics of nurses and the number of WRIs experienced by nurses during the last 12 months. The questionnaire scale was designed to measure the degree of deviation from safety as perceived by the study participants. The SHCN questionnaire items were derived from several valid and reliable scales related to safety behaviors,

safety climate, and HHC safety that have been used in previous studies (HSA, 2011; Larsson et al., 2013; Leiss, 2014; Lu &Tsai., 2010; McGuire-Wolfe, 2013; Polivka, et al., 2015; Quinn et al., 2013; Vinodkumar & Bhasi, 2009; Zlateva et al., 2015).

The first section of the SHCN questionnaire was the demographic data, consisting of 11 items related to personal characteristics of nurses, such as age, gender, nationality, level of education, years of experience, language spoken, safety training program attended in the last 12 months, and the number of home visits per week. The last question was to ask participants about the number of WRIs experienced in the last 12 months. More questions regarding the name of the current position, years of working in nursing, and years working in HHC services were included to confirm that nurses met the inclusion criteria. The second, third, and fourth sections were the structured scales, consisted of 53 items on 5-point Likert responses, and grouped under three dimensions as ORFs, ERF, and SBs.

**Organization-Related Factors**

The second section of the SHCN questionnaire focused on ORFs using 14 items from Safety Climate Scale developed by Lu and Tsai (2010). The ORF scale measures the degree to which the HCNs perceive the organization safety factors in relation to the top management commitment, supervisory support, and safety policies. The Safety Climate Scale (Lu & Tsai, 2010) was designed to measure the degree of association between the safety climate and the safety behaviors as perceived by the Seafarers ship company. The face and content validity was confirmed through previous studies and interview with the seafarers. The questionnaire was further assessed for its reliability and

readability by12 safety experts from Taiwan. This scale also showed a high intercorrelation among the all constructs with Cronbach's alpha ranged between 0.81 and 0.91. The permission to use Lu and Tsai (2010) tool and adapt items if required was obtained from the authors. The permission letter is attached to Appendix A.

In the current study, the ORF scale gathered information on the following three categories:

1. *Management commitment* consisted of five items adopted from the Safety Climate Scale (Lu & Tsai, 2010). This variable represents the top management activities and hospital performance concerning the safety values and acts in the workplace. The HHC nurses were asked to identify the degree to which their top managers and hospital are committed to safety issues in the health care settings. Examples of these items included: the management value of safety "Top management has given the safety issue a high priority." the safety inspection "Top management conducts safety inspections and assessment regularly." and the safety training program ″Safety training helps the employee to assess workplace hazards."
2. *Supervisory support* contained seven items adopted from Safety Climate Scale developed by Lu and Tsai (2010). The seven items represented the supervisor's activities and performance concerning support to workers, safety communication, and corrective actions. It referred to the verbal and nonverbal communication between the employee and manager that reduces uncertainty about the workplace (Guo et al., 2016). HCNs were asked to respond to the

degree to which the supervisor safety support is provided. Examples of these items included: ″My supervisor praises compliance to safety policy.” ″My supervisor likes to consult their employees on safety issues.” and ″My supervisor strictly enforces safety procedures.”

3. *Safety policy* consisted of two items adopted from the Safety Climate Scale developed by Lu and Tsai (2010). This scale represented the hospital policies in relation to reporting of safety issues and following safety procedures. It also involved acts and strategies for maintaining a safety climate (Lu & Tsai, 2010). Examples of these items included: ″Safety policy and procedure are loosely followed safety in my workplace.″ and ″My management encourages all people to raise safety concerns.″

In order to ensure whether or not the selected items were appropriate for measuring the selected variables of the current study, modifications were made to several statements. ″My company/ my ship.″ was changed to ″My workplace/ top management/ employee.″ reflecting the workplace or persons identified in the study. The statement ″My company carries out a safety audit periodically.″ was changed to ″Management conduct safety rounds and assessment regularly.″ to ensure simplicity and clarity of the wards, and ″My company encourages all people to raise safety concerns.″ was modified to ″My management encourages all people to raise safety concerns.″ Several items were changed to negative statements to avoid response biases (Sonderen, Sanderman, & Coyne, 2013), such as: ″My supervisor pays no attention when the worker’s safety is at risk.″ instead of ″My supervisor halts operations when the crew’s safety is at risk.″,

″Safety training programs in my workplace are ineffective.″ instead of ″The safety training programs on my ship are useful.″, and ″Safety policy and procedures are loosely followed in my workplace.″ instead of ″Safety rules and procedures need to be followed to get the job done.″ All items on the ORF scale were rated between 1 (*strongly disagree*) and 5 (*strongly agree*), with higher scores indicating greater perception of safety.

**Environmental-Related Factors**

The third section focused on the ERFs consisting of 28 items to measure the degree to which the nurses perceived the internal and external factors associated with HHC safety. Nurses' responses were related to the physical environment of patients' homes and surroundings as well as the nature of home-based care tasks. The ERF scale, subdivided into three categories: Access to a patient's home, home condition, and home-based care. The items were selected from several scales and literatures (Leiss, 2014; Polivka et al., 2013; Vinodkumar & Bhasi, 2009; Zlateva et al., 2015). Of these 28 items, 15 items were chosen and adapted from the Modified–HHC Worker (M-HHCW) questionnaire (Polivka et al., 2013) and North Carolina Study of Home Care and Hospice Nurses scale (Leiss, 2014) with modifications as permitted. The permission to use their scales and possible adaptation was provided (Appendix A)

The M-HHCW questionnaire (Polivka et al. 2013) was used for measurement of environmental health and safety hazards as perceived by home health providers. The instrument consists of 38 items, including demographic data, HHC tasks, work injuries by types and frequencies experienced in home care, and open ended questions. Polivka et al. (2013) indicated that the M-HHCW has been validated for face and content validity as

it was adapted from Gershon's instrument. The second used scale was Medical Home Care Coordination Survey (MHCCS) was developed and tested for its reliability and validity by Zlateva et al. (2015). This scale was developed to identify the core domains of care coordination with community patients by the primary health care team workers involved in medical home care. The MHCCS-H for health care team consisted of 25 items, structured in a 5-point Likert scale format, and grouped under eight domains related to care coordination of community patients. The content validity of The MHCCS-H has been established by a ten of experts using a web-based Delphi Technique. The survey was tested for its reliability using health care workers from more than 11 community health centers. The internal consistencies for all MHCCS-H domains are over 0.70 (Cronbach alphas = 0.803 - 0.903). The other North Carolina Study of Home Care and Hospice Nurses Survey (Leiss, 2014) was used for exploring the association between the safety climate and the use of PPE as experienced among home care / hospice nurses in North Carolina in the U.S. This scale has not been validated as stated by Leiss (2014). Since the previous scale was not adequately validated and the internal consistencies were not mentioned, and several adaptations were made to the original scales, the scale for measurement of ERFs has been validated through a panel of experts in the field. In addition, the reliability of the scale was tested for internal consistency. However, a valid and reliable measurement scale for environmental factors associated with HHC is too scanty.

In the current study, the ERF scale gathered information on the following three categories:

1. *Access to a patient's home*: The five items measured the condition of surrounding areas of the patient's home and barriers associated with the access of health care providers to patients' homes using items from the North Carolina Study of Home Care and Hospice Nurses survey (Leiss, 2014) and the M-HHCW (Polivka et al., 2013) with modifications to be relevant to the current study. This part asked the participants how frequently do they experience the following safe or unsafe conditions in relation to: Location and building of the patient's home, risks for traffic accidents, and availability and accessibility to parking area. Examples of items that measured access to a patient's home, included the following: ″Patient's home is allocated in an unsafe area″, ″Exposure to physical or verbal abuse″, and ″Network coverage is insufficient to make calls.″
2. *Home condition* consisted of six items to measure the characteristics of the physical environment of working areas within the patients' homes, including spacing for patient care, safe stairs and surfaces, and patient 's room ventilation and cleanliness. These items derived from the North Carolina Study of Home Care and Hospice Nurses survey (Leiss, 2014) and M-HHCW Questionnaire (Polivka et al., 2013) and adapted to suit the selected issues of the current study. This part asked the participants how frequently did they experience the following safe or unsafe conditions in relation to: Space for patient care, patient's room, stairs or floor conditions, and presence insects and rodents in the patient's home. Examples of items that measured home

condition, included the following: "Space for patient care is adequate″, "Patient's care area is untidy and messy″, and "Poorly ventilated patient's room.″

3. *Home-based care* measured the activities of HHC services towards the safety of HHCWs and their experience of home care safety. The 10 items were derived from several scales (Polivka et al., 2013; Vinodkumar & Bhasi, 2009; Zlateva et al., 2015). This part asked participants how frequently did they perceive the following conditions and behaviors in relation to: Safety communication (three items) adapted from Zlateva et al. (2015), personal safety (two items) adapted from Polivka et al. (2013), safety training (two items) and safety materials derived from Vinodkumar and Bhasi (2009). Examples of items that measured a safe home care, included the following: "I have adequate information about the safety hazards at the clients' homes prior to home visits", "I provide information on safety, according to the level of understanding of the family caregivers", "Family members are cooperative to improve the safety of working space within the patient's home", and ″Personal protective equipments such as gloves, masks, and protective apron are adequate to carry out procedures safely.″

All items in the three variables (access to a client's home, home condition, home-based care) were scored in a 5-point Likert scale; the lowest score was (1) indicating never, 2 = rare, 3 = sometimes, 4 = often, and the highest score was (5) reflecting always. The higher responses in ″access to a patient's home″ and ″home condition″ variables

indicated greater perceived unsafe conditions, meanwhile the higher score in "home-based care" variable represented a greater safe home-based care. The scale included negative and positive statements to avoid response bias. Moreover, the Items in the environmental section were tested for face validity using a panel of experts in nursing with backgrounds in community health nursing, nursing management, and HHC.

**Safety Behavior**

The fourth section focused on safety behaviors and included 12 items, derived from Safety Climate Scale (Vinodkumar & Bhasi, 2009) to measure the degree to which the nurses perceived safety behavior in relation to compliance to safety, attitudes towards safety, and safety participation. The Safety Climate Scale of Vinodkumar and Bhasi (2009) was used for prediction of relationship of safety climate with safety behaviors and work accidents. This scale was assessed for face and content validity using a group of experts who are senior in safety and management studies. The questionnaire was pilot tested for item clarity and correlation analysis. The internal-scale reliability showed a high degree of reliability, ranging between 0.91 and 0.89 which are above the acceptable value 0.60 (Vinodkumar & Bhasi, 2009). In addition, the predictive validity of the questionnaire was assessed and indicated that the scale was able to predict the future work injuries in relation to safety climate. The permission to use their scales and possible adaptation was obtained (Appendix A).

In the current study, the safety behavior scale gathered information on the following three categories:

1. *Compliance to safety* represented three items concerning about the employees' compliance behaviors to procedure and practices to ensure self-protection (Vinodkumar & Bhasi, 2009). The items were rated on a 5-point scale ranging from strongly disagree (1) to strongly agree (5), higher scores representing more compliance to safety action. Examples of items that measured a compliance to safety were included the following: "I use all necessary safety (protective) equipment to do my job", "I carry out my work in a safe manner", and "I deviate from correct safety rules and procedures to get the job done."
2. *Attitude towards safety* included five items related to employees' feeling and values of safety in workplace. The items were rated on a 5-point rating scale ranging from strongly disagree (1) to strongly agree (5), higher scores representing more positive attitudes towards safety. Examples of items that measured attitude towards safety were included the following: ″I feel, it is necessary to put efforts to reduce incidents at workplace", and "I feel, it is important to promote safety programs", and ″I feel it is impractical to maintain safety at all times.″
3. *Safety participation* included five items focusing on employees' participation in safety issues to promote coworkers and workplace safety. The items were rated on a 5-point rating scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), higher scores representing a greater safety participation. Examples of items that measured safety participation, included the following: "I ensure the highest levels of safety when I carry out my job", ″for me,

putting extra effort to improve the safety of the workplace is useless″, and "I encourage my coworkers to work safely."

The wording of several items in the scale was changed into negative statements to avoid acquiescent response bias. The three statements ″I feel that it is important to maintain safety at all times″ and ″I follow correct safety rules and procedures while carrying out my job″ were modified to negative statements: ″I feel, it is impractical to maintain safety at all times″, ″I deviate from safe policies to get the job done″ respectively. For further ensuring the reliability of the current scale, a measure of internal consistency was carried out after pilot testing. An item that has Cronbach's alpha ($\alpha$) > 0.70 is considered reliable.

With regard to the interpretation of safety in relation to the scale values, the mean scores of perceived safety that were less than 3.00, were interpreted as negative responses to safety conditions or behaviors, while the score means that were 3.00 and higher, were interpreted as positive responses to safety conditions or behaviors (Ooshaksaraie & Azadehdel, 2014).

In conclusion, to ensure the validity of the SHCN questionnaire, a panel of experts in the field of management and community health nursing involved in establishing the content and face validity and to determine the overall relevancy of the questionnaire items in measuring the identified constructs. The panel also reviewed and provided feedback on the translated Arabic version of SHCN questionnaire. In addition, a pilot test was conducted to ensure the clarity and readability of SCHN questionnaire.

**Validity and Reliability of the Instrument**

The validity of an instrument refers to a degree of accuracy of the measurement to answer the study question (Frankfort-Nachmias & Nachmias, 2008). The significance of developing a valid scale lies in its ability to measure what intends to measure. The content and face validity of questionnaire was tested for content and face validity following the protocol of Zlateva et al. (2015) except that the instrument sent through ordinary emails or handed in person. A written and oral feedback was received from those who responded to the invitation for participation in assessing the study tool. At the beginning, I identified a number of experts in the field of nursing with backgrounds in nursing management, community health nursing, home health care, and safety issues based on their academic education practical experiences and their national or international publications. The selected candidates were invited to assess the proposed instrument of the study and to ensure the degree to which the scale items match with the study objectives. Six out of 13 persons responded to the invitation for tool assessment. All are PhD holders from the KSA, four from a governmental university and the other two were from a healthcare organization. The candidates were also competent in understanding both Arabic and English languages.

The establishment of content validity has passed through several rounds (Zlateva et al., 2015). The first round was to assess the environmental factors scale (English version) against several criteria, including relevancy (statement reflects the content characteristics), essentiality (extremely important or not important), redundancy (repeated meaning), and clarity (readable statement). In this round, each member of the panel

received an email to assess the first draft (English version) of items related to environmental factors associated with HHC. These initial items were subdivided into three categories (Accessibility, Home condition, and Caregiving). The panel feedback and suggestions on the scale were received through emails, phone calls, and face to face discussion. Based on the panel comments, the scale was revised and several modifications were made. The first draft of the ERFs scale and the panel feedback is attached to the Appendix C.

The second round of assessing the validity of the ERFs scale was that, each statement of ERFs scale (the English) was assessed for appropriateness (inappropriate or appropriate) in relation to relevancy, clarity, and redundancy. The panel suggested adding negative statements to the questionnaire to enhance its validity. Further changes and corrections were performed in terms of clarity and understandability of the statements.

As a result, the expert opinions and consensus regarding each item were reviewed and any further comments regarding the scales and format were considered. The necessary modifications to improve the scale were done accordingly. The items that received 80% or more as appropriate were taken as it is, meanwhile the item that got 50% or more as inappropriate were excluded or modified to ensure clarity (Zlateva et al., 2015).

In the third round, I translated the English version of the SHCN questionnaire into an Arabic language with assistance of a bilingual (Arabic-English) person. The initial translated Arabic SHCN questionnaire is attached to Appendix D. Then, I asked the panel to comment on the Arabic version of the SHCN questionnaire in terms of its appropriate

translation and readability. Finally, I revised the back-translation of the Arabic scale to ensure the similar meanings were used in both Arabic and English scale as suggested by (Colina, Marrone, Ingram, Sánchez, 2017). Furthermore, the Arabic version was reviewed by an Arabic teacher for its readability and clarity. Accordingly, further additional corrections and modifications were made. The final English and Arabic version was validated by the panel. The revised Arabic SHCN scale by the panel is attached to the Appendix E.

The reliability of an instrument is a degree of consistency and accuracy of a measurement scale that can be approved by producing similar results on repeated trials (Frankfort-Nachmias & Nachmias, 2008). For establishing a reliability of the measurement scale, a plan for conducting a pilot testing was carried out in order to assess the internal consistency of the instrument's items using Cronbach's alpha ($\alpha$). A Cronbach coefficient of 0.70 and higher is considered an acceptable reliability (Fugas et al., 2012; Lu & Tsai, 2010). However, an alpha score of 0.60 is generally acceptable (Fernandez-Muñiz et al., 2011). Moreover, the pilot testing procedure was performed using strategies that were similar to the anticipated date collection procedure from the target population. More detailed information of the pilot testing is mentioned in the next section.

**Pilot Testing**

Pilot testing was conducted to assess the questionnaire for its readability and clarity (Hazzi & Maldaon, 2015; Fugas et al., 2012). Conelly (2008) suggested that the sample size for pilot testing is10% of the study participants. Pilot testing was expected to

be conducted in a HHC program of the in Makkah city, 70 Kilometers away from Jeddah city. This HHC program has similar characteristics of the HHC programs of the selected study settings. The seven HHC nurses who should meet the inclusion criteria were invited to complete the SHCN questionnaire, leaving the whole available sample in HHC programs in Jeddah city as potential participants for the study. The steps of recruiting participants and completing the questionnaire were similar to the actual recruitment and data collection method of the study. The participants were asked to respond to each instruction and question and they should feel free to ask any questions regarding the study. The participants were asked to rate each item on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree), the score 5 is the highest degree and score 1 is the lowest degree. I observed and recorded respondents' reactions, comments and questions concerning wordings and statements, and time required for completing the questionnaires. Although pilot testing is often under-reported and under-used, the results of pilot testing are used to assess the feasibility of data collection procedure and allow for maximizing the validity and reliability of the study instrument (Hazzi & Maldaon, 2015). Accordingly, the results of piloting were used for refining and improvement of the SHCN questionnaire. All feedbacks were considered for maximizing the tool validity.

**Data Collection**

Nurses who met the inclusion criteria were invited to participate. In the initial meeting with the participants, I provided a brief introduction of the study using an invitation sheet and information of the informed consent, including the purpose of the

study, the procedure for obtaining data, and the benefits of their participation with emphasis on voluntary participation and procedures for maintaining the confidentiality of information. The information on the consent form provided clear and concise information about: the researcher's background, the purpose of the study, how to obtain data and answer the questionnaire, voluntarily participation, risks and benefits of participation, compensation for being in the study, how to maintain privacy and confidentiality of data, and obtaining an implied consent. The contact number of the principle researcher and the Walden University Representative included in the informed consent for any participant to call and ask any questions about the study. A copy of the invitation sheet is attached to Appendix B. The initial meeting was held at the end of the unit meeting where the potential participants received a brief information about the study and what was expected from them with regard data collection. By the end of the meeting, a time was given for those who attended to ask any questions related to study. Then, each nurse received an enclosed envelope, included the consent form and SHCN questionnaire. Nurses were asked to take the envelope with them and complete the questionnaire and return it back if she/he decided to participate. I also explained that completing and returning the questionnaire implied the participant's consent. The nurse who did not want to participate, was simply discard the questionnaire. This was to ensure that the potential participants were away from any external influences or distractions. The participants were also given adequate time to ask any questions to ensure their full satisfaction for participation. The participants may keep a consent form.

Further explanation to fill up the questionnaire was provided. The potential participants were asked to complete the SHCN questionnaire anonymity, including the demographic sheet. The participants were also asked to rate each item in the questionnaire on a 5-point Likert scale from a maximum score 5 (strongly agree/ always) to a minimum score 1 (strongly disagree/ rare) based on her/his perception. In addition, the SHCN questionnaire was printed in both Arabic and English versions to ensure that the participants are able to understand and answer the items correctly based on their speaking languages.

The enclosed envelope was handed out and collected in person to ensure a higher response rate. Participants were asked to drop the enclosed envelopes in a cardboard box that was wrapped and kept in a secured place in the unit as it was agreed by the unit' supervisor and the participants. The participants were informed that the cardboard box would be collected two days after the questionnaire had been distributed.

In addition, I stressed on the participant's right to discontinue participation at any time and discontinuing has no negative impact on the participant or their access to services. I politely asked nurses to answer all questions because only fully completed questionnaire can be used. In addition, I made it clear that the participants may discontinue participation, if there are questions he/she does not want to answer. Finally, each answer paper was assigned to a sequential study code number for analysis purpose.

## Data Analysis Plan

The SPSS program version 21 software package was used for data analysis. Prior to data entry, the questionnaires and participants' responses were checked for any missing

data. Incomplete questionnaires were excluded from the study sample. The data set was checked that the data is valid. Data were screened for its accuracy by double checking for any type of error such as incorrect numeric or character values, duplicated data, and missing data prior to analysis (Broeck, Cunningham, Eeckels & Herbst, 2005). In addition, the study variables were checked for correct coding and the dichotomous variables were checked for correct (1and 2) codes. A correction was made accordingly and an original dataset document was created, coded, and stored in my personal computer. Moreover, I applied a frequency analysis on the dataset using SPSS program version 21 to detect any missing data points as suggested by Tabachnick and Fidell (2007). As a result, the total number of data was accurate.

Data analysis was performed to answer the three questions and hypotheses:

RQ1: Is there a relationship between organizational-related factors associated with home healthcare and safety behaviors experienced by HCNs?

$H_0$1: There is no significant relationship between the perceived organizational factors and safety behaviors experienced by HCNs.

$H_a$1: There is a significant relationship between the perceived organizational factors and safety behaviors experienced by HCNs.

RQ2: Is there a relationship between the environmental related factors, associated with home healthcare and safety behaviors experienced by HCNs?

$H_0$2: There is no significant relationship between the perceived environment factors associated with home healthcare and safety behaviors experienced by HCNs.

$H_a2$: There is a significant relationship between the perceived environment factors associated with home healthcare and safety behaviors experienced by HCNs.

RQ3: Is there a relationship between work-related safety factors associated with home health care and work-related injuries experienced by HCNs?

$H_0 3$: There is no significant relationship between work-related safety factors associated with home health care and work-related injuries experienced by HCNs.

$H_a 3$: There is a significant relationship between work-related safety factors associated with home health care and work-related injuries experienced by HCNs.

I used descriptive analysis to summarize and describe the personal characteristics of the participants. The demographic data such as age, gender, qualification and years of experiences, and nationality were analyzed using frequency, percentages, means, and standard deviations (Frankfort-Nachmias & Nachmias, 2008).

For the inferential statistical analysis, a linear regression (LR) model was employed to accept or reject the hypotheses (Mukaka, 2012; Velazquez, 2012). A multi-linear regression (MLR) was applied to further predict the outcomes in relation to multiple factors. In the current study, a MLR analysis was employed to identify the significant predictors of the WRI and SBs in relation to safety-related factors. Thus, MLR analysis allows quantifying the impact of multiple factors upon a single dependent variable. Since the linear regression deals with linear parameters, the continuous DVs and IVs were checked for: linear relationship, normally distributed, measured without error,

and homoscedasticity (Frankfort-Nachmias & Nachmias, 2008). The direction of the relationship between the two variables was explained in terms of positively associated, negatively associated, and non-associated variables (Tabachnick & Fidell, 2007). A correlation coefficient (*r*) test was used to determine whether there is a significant linear correlation or not between the identified variables. The *r* score -1 indicates a negative correlation, whereas +1 signifies a positive correlation. A zero score means there is no correlation between the variables (Tabachnick & Fidell, 2007).

**Testing Assumptions of Linear Regression**

Prior to Linear regression analysis, the four assumptions for LR analysis were tested to ensure there were no violations to linearity, normality, independence, and homoscedasticity. These assumptions checked were using the scatter-plots, Q-Q plots and histograms. Testing for linearity requires that the relationship between DVs and IVs is linear. I used scatter plot to test whether or not the relationship between the independent and dependent variables are linear. Testing for normality requires all variables to be normally distributed. This was detected with a histogram and a fitted normal curve or a Q-Q-Plot. The assumption of homoscedasticity refers to constant variation. The variability in the DV is the same at all levels of the IVs. A scatter plot was used to detect whether or not the data are homoscedastic.

**Linear Regression Analysis**

The research question one (RQ1) examined whether there is a relationship between ORFs as IV and SBs as DVs or not. Given that all variables were continuous, normally distributed, with no outlier, homoscedastic, and the hypotheses seek to assess

the relationship, a linear regression model was performed to answer the RQ1, $H_0$1, and $H_a$1 (Frankfort-Nachmias & Nachmias, 2008). The Pearson correlation coefficient ($r$) was noted to quantify the direction and the strength of association between the independent variables (management commitment, supervisory support, and safety policy) and dependent variables (compliance to safety, attitude towards safety, and safety participation). The anticipated strength between the two variables is presented by a positive value indicating a positive linear correlation, meanwhile a negative value denotes a negative linear correlation (Frankfort-Nachmias & Naghmias, 2008; Laerd Dissertation, 2013). A significant correlation was examined at $p$-value less than .05 or .01 at two tailed test. The null hypothesis (there is no significant relationship) was rejected and the alternative hypothesis (there is a significant relationship) was accepted based on the result of LR test. A MLR analysis was employed to determine the significant ORFs that influenced safety behaviors.

The research question two (RQ2) examined whether there is a significant association between ERFs as IV and SBs as DV or not. Given that all variables were continuous, normally distributed, with no outlier, homoscedastic, and the hypotheses seek to assess the relationship, a linear regression model was applied to answer the RQ2 and its hypotheses. A correlation coefficient ($r$) analysis was assessed to quantify the strength of association between the independent variables (access to a patient's home, home condition, home-based care) and dependent variables (compliance to safety, attitude towards safety, and safety participation). The anticipated strength between the two variables is presented by a positive value indicating a positive linear correlation,

meanwhile a negative value denotes a negative linear correlation. A significant linear association was examined at *p*-value less than .05 or .01 and two tailed test. The null hypothesis (there is no significant relationship) was rejected and the alternative hypothesis (there is a significant relationship) was accepted based on the result of LR analysis. A MLR was applied to determine the significant ERFs that influenced safety behaviors.

The research question three (RQ3) examined the relationship between the dependent variable (WRIs) and the independent variables (ORFs and ERFs). WRIs in the last 12 months were identified as continuous values for the purpose of using a linear regression analysis. Given that all variables were continuous, normally distributed, with no outlier, homoscedastic, and the hypotheses seek to assess the relationship, a multiple linear regression model was applied to answer RQ3 and to accept or reject the hypotheses. The significant relationship was determined at $p < .05$ or $p < .01$. A MLR was also employed to predict the significant factors effect WRIs in relation to ORFs and ERFs.

The strength and direction of the linear correlation between variables were interpreted according to Cohen's (1988) conventions of effect size. A correlation coefficient of 0.10 and 0.30 represents a weak positive linear association and a moderate positive linear correlation, respectively. A correlation coefficient of $\geq 0.50$ reflects a strong positive linear correlation. In data analysis, the potential covariates were considered because these factors may have an effect on the outcome variables. Factors such as age and years of experience showed significant relationships to safety perception

and exposure to risks (Vinodkumar & Bhasi, 2009; Thamrin, Pisaniello, & Stewart, 2010). Therefore, the effect of the confounders on the results can be controlled using an appropriate statistical analysis in SPSS (Frankfort-Nachmias & Nachmias, 2008).

## Threats to Validity

### External Validity

Threats to external validity are concerned with confidence that the findings could be applicable to other groups or context. In this cross-sectional survey, the anticipated threats to external validity may relate to sample, time, and context (Frankfort-Nachmias, & Nachmias, knowledge base, 2006). Several approaches were suggested to minimize the threats to the validity of the final results: assuring adequate sample size for the study, using of proximal similarity of the groups and contexts, and shortening the duration for data collection from all settings. In the current study, data were obtained from all HCNs who have employed in the selected settings in order to address the threats of sampling procedure and sample size to validity. The sample size should be not less than the minimally required participants, taking into account the threat of excluding some of the questionnaire due to missing data or receiving a lower response rate. Moreover, to prevent a low response rate, data were collected in person with follow-up and assistance of the unit supervisor.

Because of the heterogeneity in the characteristics of HHC programs, the threats of extraneous variables cannot be avoided as it may compete with the independent variables in explaining the results (Laerd Dissertation, 2012; Simon, 2011). In the current study, despite the participants were taken from different health care systems and hospital

settings, the participants were all registered nurses working in HHC services adopted by the governmental hospitals that provide free of charge health care services. In addition, regardless age, gender, level of education, and nationality, the criteria for inclusion and exclusion the participants enhanced the possibility that nurses are representative of the larger population by ensuring a degree of similarity between the participants and contexts. Furthermore, to minimize the threat of time on the validity of results; the time frame for data collection was shortened, and a similar introduction was presented prior to answering the questionnaire. These actions may support the representativeness of the sample and for possible generalization of findings.

The self-reporting survey could be another threat to the validity of the results. According to Tourangeau and Yan (2007), mis-reporting of information is associated with highly sensitive questions. Since the mis-reporting of non-sensitive questions is limited, the threat of self-reported information can be minimized by using a structured validated questionnaire for obtaining responses as well as ensuring a voluntary participation.

**Internal Validity**

The internal validity entails that the indicators used for safety measurement associated with HHC can really answer the research and hypothesis of the current study. In addition, internal validity ensures that the changes in dependent variables really resulted from the influences of independent variables. The anticipated threat to the internal validity in the current study was mostly related to the instrumentation. The study

instrument is a combined of several instruments that were sufficiently tested for face, content, and construct validity as well as the internal consistencies.

Despite, the current measurement scale was based on reliable and valid instruments that have been developed and used by the previous studies, many items were adapted with permission to suit the current study. The ORF and SB scales were derived from used scales and tested for validity and reliability. The modifications were done to enhance the scale clarity and readability. The ERFs were derived from several used scales with limitations in establishing their validity and reliability. However, the current scale was assessed by a panel of experts in safety issues in order to maximize the content and construct validity. In addition, a pilot testing was planned to be conducted on a sample of HCNs not included in the study (Arain, Campbell, Cooper, & Lancaster, 2010). A pilot test was carried out to assess the feasibility of conducting the study as well as the accuracy and readability of the English of the study instrument. Furthermore the reliability Cronbach's alpha for each items of the scale was assessed post data collection.

**Ethical Procedures**

Research with human participants required full protection of the privacy of subjects, confidentiality of information, and freedom from potential risks (American Psychological Association, 2016). A conditional approval from the Walden University IRB was obtained. The approval number for this study was 07-24-12-0041020.

Prior to obtaining data from participants, permissions to access to the HHC units were obtained from the local ethical committes and the health administration of the identified health care settings, followed by the final confirmation letter from the Walden

IRB for conducting data collection. Then, recruitment of potential participants in HHC was arranged with the local health care managers. To ensure voluntary participations of nurses, I explained briefly the nature of the study and the way of protection of their information. The potential participants have to read the informed consent prior to take part of the study.

The Informed consent for the current study provided a concise and clear explanation of the nature of the study, confidentiality of information, voluntary participation, and the ability to discontinue participation at any time. The consent also explained that discontinuing from participation would not negatively impact the participant's relationship or the participant's access to services. To ensure a voluntary participation, the potential participants were given sufficient time to decide whether to take part in the study or not. They also have the contact number and email of the researcher for any more questions they want to ask. The potential participants were informed that their informed consent was implied upon completion and return of the questionnaire. Further assurance of participants' protection was achieved through the anonymity of responses and securing of the collected data. The completed questionnaires were gathered in person and were identified by codes for the purpose of analysis. Each setting was given a code that known by the researcher only. The participant response materials were stored and kept in my personal locked drawer to which only the researcher has an access. All electronic data were kept confidential and secured. It was stored in my personal computer and secured with a password for further protection. Any information provided to public will present no indication of the names of health care settings or

participants. The information is safely stored for a period of five years in a secured place, then it can be shredded and destroyed. Moreover, the personal phone numbers and official number of Walden university representative were provided for any anticipated questions from participants.

## Summary and Transition

This cross-sectional survey was designed to explore the nature of the association between the ORFs, ERFs, and employees' SBs and to quantify the influence of work SRFs on WRIs in home care nursing. The study instrument, SHCN questionnaire was tested for face and content validity. A pilot testing was planned to be conducted to ensure readability of the questionnaire. A self-reported questionnaire was used to obtain responses from HCNs working in governmental hospitals adopted HHC programs in the Makkah Region, the KSA. A linear regression analysis will be applied to determine the direction and strengths of linear association between the organization and environmental factors, and SBs and WRIs. A MLR analysis will be used to identify which of the safety-related factors are significant predictors for SBs and WRIs associated with HHC nursing.

Chapter 4 describes the results of pilot testing and the actual data collection method. A description of the demographic characteristics of the participant is presented also. In addition, Chapter 4 provides an explanation of statistical analyses used to answer the research questions and hypotheses. Findings from descriptive test and inferential analysis are described.

# Chapter 4: Results

This quantitative, cross-sectional study was designed to explore the nature of the association between the organization-related factors (ORFs) and environment-related factors (ERFs) of HHC, and employees' safety behaviors (SBs) and their experience of work-related injuries (WRIs) during the past 12 months. The first research question was formulated to determine whether there is a significant relationship between ORFs and SBs among HCNs working in the Makkah Region, KSA. In this regards, the null hypothesis was that the ORFs are not associated with the SBs of HCNs, whereas the alternative hypothesis was that the ORFs are significantly related to the SBs of HCNs. The second research question attempted to find out whether there is a significant ERFs and SBs as experienced by HCNs. The null hypothesis stated that the ERFs are not related to SBs, whereas the alternative hypothesis stated that there is a significant relationship between ERFs and SBs considering that the variables such as age, years of experience, and safety training as covariate factors. The third research question sought to determine whether ORFs and ERFs are significantly related to WRIs among HCNs taking in account the age, years of experience, and safety training variables. The null hypothesis was that the ORFs and ERFs are not significantly associated with the WRIs in the past 12 months among the HHC nurses, whereas the alternative hypothesis was that the ORFs and ERFs are significantly related to WRIs among the HCNs. A descriptive analysis was used to provide an overview of the characteristics of the participants. A linear regression model was used to determine whether the ORFs and the ERFs affect the employee SBs and WRIs among the HCNs.

This chapter describes the results of the pilot test and the changes made in the instrument on the basis of the results of piloting. It provides a detailed description of the recruitment and data collection methods, the time frame for gathering data, and the response rates. This chapter also presents a descriptive analysis of the demographic data of the study participants, including the number of physical injuries in the last 12 months. A detailed analysis of data using a linear regression model is presented and organized by the three research questions and their hypothesis. The findings, including the probability values are presented in tables and figures.

## Pilot Study

I conducted a pilot test to assess the readability and clarity of the items of the Safety Home Care Nursing (SHCN) questionnaire. Prior to pilot testing, I received the permission from the local Research Ethics Committee to conduct the study in the identified setting. Then, I received a confirmation letter from Walden University to conduct the research. The pilot test was carried out in the HHC program in Jeddah city; the first setting provided a permission to gather data from their nurses. I obtained data from seven HCNs who met the inclusion criteria. This setting was selected because it was similar to that of other selected HHC programs in the Makkah Region in terms of providing free home care to eligible patients. I arranged and met with the seven HCNs during their morning conference prior to their daily home visits. The pilot included administering the questionnaires, asking the attendees to read the questionnaire, and rating each item on the scales. I took notes when respondents hesitated to answer a certain item or asked for more clarification for items that were too vague or difficult to

understand. The participants were asked to think aloud while they were trying to answer each question. As a result of the pilot test, the study instrument was revised on the basis the participants' comments and questions. A few modifications were applied such as the term "my supervisor" and "top management" were simply defined and added to the part two of the SHCN questionnaires. The word "damaged" was used instead of "rickety". Question 11 concerning the injuries was restated to "How many physical injuries, such as sharp injuries, falls, trauma, and backache, have you had during work hours." Modifications were also made to the SHCN Arabic version. Further, the direct nurse supervisors of the HHC unit were excluded from the study because they were directly responsible for managing and leading the employees.

## Data Collection

After the conditional approval received from Walden IRB, the full access to study participants also needed local permissions, including local ethical approval for conducting the study. All required application forms, included a letter from the program directors of the Public Health at Walden University were completed and sent to the local administration of the health care organization of the identified settings. Data collection commenced on 19 June, 2017 and was completed on 17 July, 2017. Data collection lasted for four weeks because the first two weeks of data collection corresponded to the official Eid AlFiter holiday, and 50% of the employees were on vacation. However, most of the data were gathered between July 9 and July 17 when 80% of the employees had gotten back to work. Data were obtained from a total of nine health care settings in the Makkah Region. I tried to include the available HHC units from the Makkah city because I did not

received permissions from three settings in Jeddah. This is to maintain an adequate number of participants and to achieve the minimum sample size mentioned in Chapter 3. As a result, I obtained data from 79 HCNs working in nine governmental hospitals located in the Makkah Region and providing free HHC services. I excluded nurses who were in the position of directly supervising other nurses working in the HHC unit and those who had worked for less than 12 months in the unit or had not involved in home visits during the same period. Visits to HHC units were arranged with the assistance of the managers of the health care settings and meeting with nurses were scheduled to be at the unit meetings or as appropriate. The initial meetings with HHC employees were scheduled at the beginning of the shift before they left for their daily home visits or upon their returning from visits at the end of the shift. I determined the number of HCNs who met the inclusion criteria for the last 12 months through the managers in the selected settings. All available nurses who met the inclusion criteria were invited to participate in this study when I visited the units. That is, 79 nurses were invited to participate in the study. In the initial meeting with potential participants, I introduced myself to attendees and provided a brief description of the study. I explained the purpose of the study and the importance of their participation. I also explained that their participation would be voluntary and anonymous, and their consent to participate in the study by completing and returning the questionnaire. After I answered all relevant questions about their participation, I distributed envelopes containing the consent form and the questionnaire to the potential participants. The participants were asked to deposit the completed questionnaires in a secured box allocated in the unit. Permission was taken from an

authorized person for keeping the cardboard box in the unit and to be collected later. The participants completed the questionnaires in 1−5 days.

### Response Rates

The total number of nurses working in the considered HHC units was 89. The available number of nurses was 84 from the nine HHC units adopted by governmental hospitals in the Makkah Region. Of the 84 nurses, I excluded the two nurses at position of head nurses of the unit and three who had worked for less than 12 months at the unit. Seventy nine questionnaires were distributed and returned. Five of the returned questionnaires were excluded because of incomplete data, yielding a response rate of 83.15%. This response rate was good as much as the total number of participants were higher than the calculated minimum sample size of 62 presented in Chapter 3.

## Study Results

### Demographic Characteristics of the Participants

The participants of this study were 74 nurses employed in nine HHC units in the Makkah Region. The total number of nurses working in the home care units was 89 nurses. The sample represented approximately 83.15% of the nursing workforce in the identified settings. The first section of the SHCN questionnaire asked participants questions regarding their personal characteristics, including age, gender, nationality, level of education, languages spoken, safety training program attended in the last 12 months, and the number of WRIs experienced in the last 12 months.

I used univariate analysis to describe the overall personal data collected from HHC nurses, including frequency distributions, means, and standard deviations. Table 1

presents the demographic description of the 74 participants. Of the 74 HHC nurses, 38 (51.4%) were females and 36 (48.6%) were males. The participants' age ranged from 22 to 55 years with a mean of 35.16 (*SD* = 7.52) years. Most of them were between the ages of 20 and 40 years, accounting for 77% of the participants. Fifty six (75.7%) of HHC nurses were Saudi and 18 (24.3%) were non-Saudi nurses. Further, 44 (59.5%) of HHC nurses had a diploma degree in nursing, 28 (37.8%) had a bachelor's degree in nursing, and two nurses had a postgraduate certification. Most of the considered nurses attended safety training in the last 12 months, accounting for 67.7% of the participants.

Because the age, training, and years of experiences are possible covariates and may be expected to affect SBs and WRIs, these variables were classified as follows. Based on the participants' responses to age, four groups were identified: from 20−30, 31−40, 41−50, and 51−60. With respect to the years of nursing experience, participants were categorized into two groups of 1−5 years of experiences and 6 or more years of experience. Of the 74 participants, 50 (67.7) had attended safety training in the past 12 months. Further, 14 (18.9) spoke Arabic, 5 (6.8) spoke English, and 55 (74.3) of the participants could speak both Arabic and English.

Table 2 shows the number of physical WRIs experienced by the nurses in the last 12 months. On the basis of the numbers of WRIs, the participants were classified into four categories: 0 (no injuries), 1 (1−2 injuries), 2 (3−4 injuries), and 3 (more than 4 injuries). There are 42 nurses (56.7%) experienced WRIs. Of those, 6 (8.1%) nurses were exposed to three or more WRIs. Thirty nurses (40.5%) experienced one or two injuries in

the past 12 months. The remaining 32 nurses (43.2%) had no exposure to any injuries in the same period.

Table 1

*Demographic Characteristics of the Participants*

| Variables | Frequencies | % | *M* | *SD* |
|---|---|---|---|---|
| Years of experience | | | | |
| 1−5 | 52 | 70.3 | 4.22 | 2.25 |
| 6−10 | 22 | 29.7 | | |
| Age | | | | |
| 20−30 | 27 | 36.5 | 35.16 | 7.52 |
| 31−40 | 30 | 40.5 | | |
| 41−50 | 16 | 21.6 | | |
| 51−60 | 1 | 1.40 | | |
| Gender | | | | |
| F | 38 | 51.40 | | |
| M | 36 | 48.60 | | |
| Nationality | | | | |
| Saudi | 56 | 75.70 | | |
| Non-Saudi | 18 | 24.3 | | |
| Qualification | | | | |
| Diploma | 44 | 59.5 | | |
| BSN | 28 | 37.8 | | |
| Postgraduate | 2 | 2.70 | | |
| Safety Training | | | | |
| Y | 50 | 67.7 | | |
| N | 24 | 32.4 | | |
| Language | | | | |
| Arabic | 14 | 18.9 | | |
| English | 5 | 6.80 | | |
| Both | 55 | 74.3 | | |

Table 2

*Description of Work-Related Injuries in the Last 12 Months*

| Variables | Frequencies | % |
|---|---|---|
| Number of Injuries | | |
| No injuries | 32 | 43.2 |
| 1−2 injuries | 30 | 40.5 |
| 3−4 injuries | 6 | 8.1 |
| > 4 injuries | 6 | 8.1 |

**Reliability Analysis**

Participants were asked to rate each statement concerning the safety factors related to the organization, the environment, and their behaviors using a 5-point Likert scale. The rating of (1) indicated that the participants ″strongly disagreed″ and a rating of (5) indicated that they ″strongly agreed″ to the statement with respect to the ORFs and the SBs. A response with scores between (4) and (5) represented a highly safe organization, while (1) and (2) indicated an unsafe organization with respect to the considered factors. For the ERFs items, the participants rated the frequency of safety issues from (1) never to (5) always. A response with scores between (1) and (2) represented an unsafe environment, while that with scores of (4) and (5) indicated safe environmental factors.

To ensure that the reliability of the adaptable SHCN scales, all items should have acceptable values of Cronbach's alpha coefficient of more than 0.70, as mentioned in Chapter 3. The higher the $\alpha$ coefficient is, the more the items measure the same underlying concept. Tables 3, 4, 5, and 6 showed the results of the internal consistency

using Cronbach's alpha. This reliability analysis assessed the consistency of items in each of the sub-scales used to measure the SBs and WRIs as DVs and ORFs and ERFs as IVs.

**Organization-Related Factors Scale**

The Cronbach's $\alpha$ values for the items related to factor management commitment (MC) and supervisory support (SS) are 0.74 and 0.89 respectively, indicating good reliability. The safety policy (SP) item showed a poor score of reliability ($\alpha$) of 0.48. Therefore, this item was eliminated from the scale. A review of the corrected item −total correlations suggested that the item 4MC is correlated relatively less (0.31) to the other MC items. The elimination of this item increased the reliability coefficient of the MC to 0.74. The reliability score for the SS items was 0.82. Item 8SS was removed because of the poor correlation ($r = 0.03$) to the other SS items. Removal of this item increased the reliability score to 0.89 as shown in Table 3.

Table 3

*Reliability Cronbach's alpha of Organization-Related Factors*

| Variables | Number of items | Reliability ($\alpha$) | Remaining items | Reliability ($\alpha$) |
|---|---|---|---|---|
| MC | 5 | 0.73 | 4 | 0.74 |
| SS | 7 | 0.82 | 6 | 0.89 |
| SP | 2 | 0.48 | | |

*Note. MC*: Management commitment *SS*: Supervisory support
*SP*: Safety participation

**Environment-Related Factors Scale**

Table 4 shows the reliability score for the following ERFs: Access to a patient's home (AC), home condition (HC), and home-based care (HB). The Cronbach's $\alpha$ values for the AC and HC items are 0.62 and 0.66, respectively. Despite the fact that acceptable reliability was 0.70, the minimum Cronbach's $\alpha$ value for the exploratory purposes was .60, not less than 0.60 (Ghahramani & Khalkhali, 2015).

Table 4

*Reliability Cronbach's alpha of Environment-Related Factors*

| Variables | Number of items | Reliability ($\alpha$) | Remaining items | Reliability ($\alpha$) |
|---|---|---|---|---|
| AC | 5 | 0.49 | 2 | 0.62 |
| HC | 6 | 0.60 | 4 | 0.66 |
| HB | 10 | 0.76 | 8 | 0.79 |

*Note. AC*: Access to a patient`s home *HC*: Home condition *HB*: Home-based care

The Cronbach's $\alpha$ coefficient of the HB items was 0.79 after the removal of two items (5 and 10). The corrected item-total correlation of items 10 and 5 was 0.03 and 0.27 respectively, indicating a low correlation to the other items. The reliability score of the HB item increased to 0.79 indicating a very good reliability, as shown in Table 4.

**Safety Behaviors Scale**

Table 5 presents the reliability scores for the SBs of the participants, including compliance to safety (SC), safety attitude (SA), and safety participation (SP). The Cronbach's alpha value of the SC items was 0.85, indicating high reliability. The SA reliability score was 0.70 after the removal of two items (5 and 7). Further, the reliability score of the SP was 0.89 after the removal of an item (9).

In conclusion the overall Cronbach's alpha values of the SHCN questionnaire are presented in Table 6. Therefore, the final SHCN scale (Appendix F), after the reliability analysis, has 33 items subdivided into ORFs (10 items), ERFs (14 items), and SBs (9 items) as shown in Table 6.

Table 5

*Reliability Cronbach's alpha of Safety Behaviors*

| Variables | Number of items | Reliability ($\alpha$) | Remaining items | Reliability ($\alpha$) |
|---|---|---|---|---|
| SC | 2 | 0.85 | | |
| SA | 5 | 0.19 | 3 | 0.70 |
| SP | 5 | 0.61 | 4 | 0.89 |

*Note. SC*: Compliance to safety *SA*: Attitude towards Safety *SP*: Safety participation

Table 6

*Overall Reliability Cronbach's alpha of the SHCN questionnaire*

| Variable | Number of items | Reliability ($\alpha$) |
|---|---|---|
| ORFs | | |
| MC | 4 | 0.74 |
| SS | 6 | 0.89 |
| ERFs | | |
| AC | 2 | 0.62 |
| HC | 4 | 0.66 |
| HB | 8 | 0.79 |
| SBs | | |
| SC | 2 | 0.85 |
| SA | 3 | 0.70 |
| SP | 4 | 0.89 |

*Note. ORFs:* Organization-related factors *MC*: Management commitment SS: Supervisory support ERFs: Environmental-related factors *AC*: Access to a patient`s home *HC*: Home condition HB: Home-based care *SBs*: Safety behaviors *SC*: Compliance to safety *SA*: Attitude towards Safety *SP*: Safety participation

**Overall Description of Participants Responses**

Table 7 presents the means and standard deviations of different variables used to measure HHC safety. A score of 3.0 and more was classified as a positive response to safety. While a score of less than 3.0 was considered a negative response with respect to safety issues (Ooshaksaraie & Azadehdel, 2014). As shown in Table 7, the average responses of the 74 participants to MC and SS were 3.31 (*SD* = 0.94) and 3.43 (*SD* = 0.93) respectively, indicating a relatively safe organization as experienced by HHC nurses. With respect to the ERFs, the means for AC and HC were 2.94 (*SD* = 0.61) and 2.93 (*SD* = 0.58) respectively, indicating a relatively unsafe environment. Meanwhile, the HB mean was 3.53 (*SD* = 0.71) indicating a safe environment as experienced by the nurses. With respect to the SBs, the scores of SC (*M* = 4.00, *SD* = 0.97), SA (*M* = 4.13, *SD* = 0.77), and SP (*M* = 4.22, *SD* = 070) indicating a safe safety behavior and attitude.

Table 7

*Means and Standard Deviations of All Variables in Different Scales*

| Variable | | *M* | *SD* | Overall *M* | *SD* |
|---|---|---|---|---|---|
| ORFs | MC | 3.31 | 0.94 | | |
| | SS | 3.43 | 0.93 | 3.37 | 0.82 |
| ERFs | AC | 2.94 | 0.61 | | |
| | HC | 2.93 | 0.58 | | |
| | HB | 3.53 | 0.71 | 3.06 | 0.50 |
| SBs | SC | 4.00 | 0.97 | | |
| | SA | 4.13 | 0.77 | | |
| | SP | 4.22 | 0.70 | 4.12 | 0.73 |

*Note. ORFs:* Organization-related factors *MC*: Management commitment *SS*: Supervisory support *ERF*s: Environmental-related factors *AC*: Access to a patient`s home *HC*: Home condition *HB*: Home-based care *SBs*: Safety behaviors *SC*: Compliance to safety *SA*: Attitude towards safety *SP*: Safety participation

The overall means of safety with respect to the ORFs and ERFs were 3.37 (*SD* = 0.82) and 3.06 (*SD* = 0.5) respectively, indicating a relatively safe organization and environment. The overall mean of SBs was 4.12 (*SD* = 0.73), indicating a safe behavior as experienced by HCNs.

Table 8 presents the correlations between all identified variables used to measure the safety-related factors. To evaluate the correlations between all the variables in the sub-scales, I applied Pearson's correlation coefficient. Table 8 shows a positive correlation between MC and SS ($r = 0.54$, $^{**}p < .01$). MC correlated positively to HB ($r = 0.32$, $^{**}p < .01$), SC ($r = 0.41$, $^{**}p < .01$), SA ($r = 0.31$, $^{**}p < .01$), and SP ($r = 0.32$, $^{**}p < .01$).

Table 8

*Correlations Between All Components of the Variables*

| Variable | MC | SS | AC | HC | HB | SC | SA | SP |
|---|---|---|---|---|---|---|---|---|
| MC | 1 | . | | | | | | |
| SS | 0.54** | 1 | | | | | | |
| AC | 0.13 | 0.08 | 1 | | | | | |
| HC | 0.15 | 0.19 | 0.40** | 1 | | | | |
| HB | 0.32** | 0.37** | 0.36** | 0.80** | 1 | | | |
| SC | 0.41** | 0.35** | 0.04 | 0.21 | 0.39** | 1 | | |
| SA | 0.31** | 0.13 | 0.06 | 0.22 | 0.32** | 0.67** | 1 | |
| SP | 0.32** | 0.22 | -0.09 | 0.16 | 0.38** | 0.76** | 0.69** | 1 |

*Note*. ** $p < .01$, * $p < .05$
*MC*: Management commitment SS: Supervisory support AC: Access to a patient`s home *HC*: Home condition HB: Home-based care *SC*: Compliance to safety *SA*: Attitude towards Safety *SP*: Safety participation

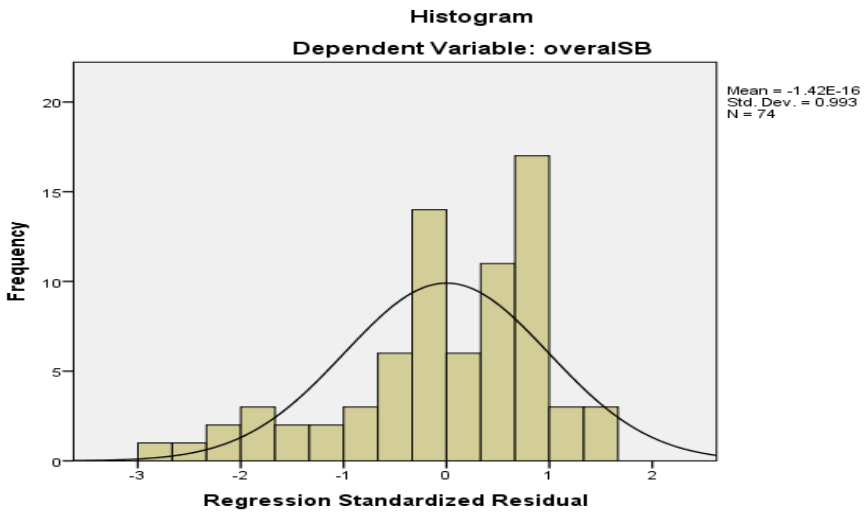
According to the Cohen model, the strength of the correlation ranged from moderate ($r$ = 0.30−0.49) to strong ($r$ = 050−1.0). Table 8 also shows significant, strong positive correlations between SP and SC ($r$ = 0.76, **$p$ < .01), and SA ($r$ = 0.69, **$p$ < .01). A moderate positive correlation between SP and HB *(*$r$ = 0.38, **$p$ < .01) was also noted.

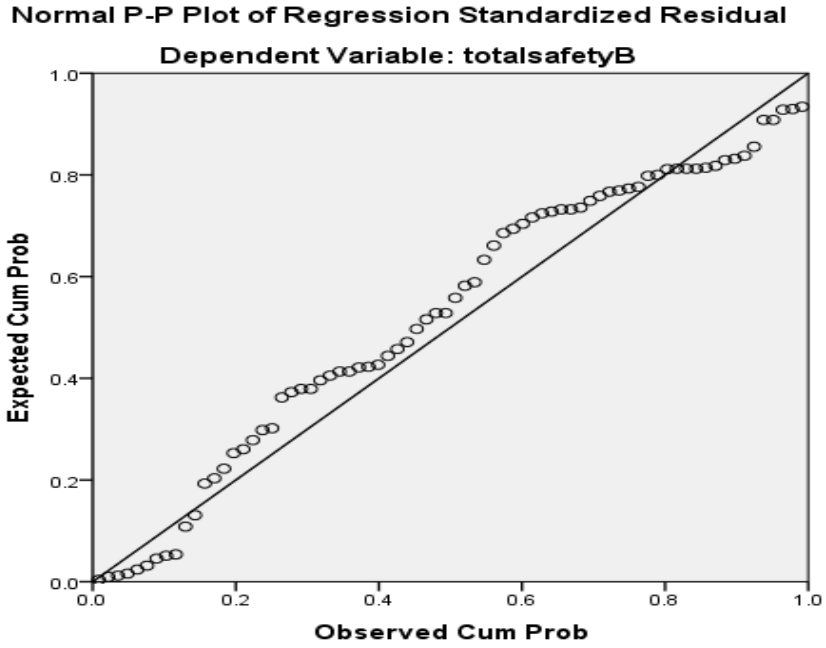
**Evaluating Assumptions**

I tested the relationship between the DV and ID for a violation of the assumptions of linearity, normality, no error, and homoscedasticity of variance by checking the scatter-plots, Q-Q plots, and histogram. A violation of these assumptions causes the distortion of the regression coefficient analysis. As shown in Diagram 1 and Diagram 2, the results of the relationship between ORFs and ERFs, and SBs are: Linear and homoscedastic as noted in the Q-Q plots and scatter plots and normally distributed as seen in the histograms.

Diagram 1

*Assumptions Of Linear Regression Between ORFs And SBs*




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: totalsafetyB
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

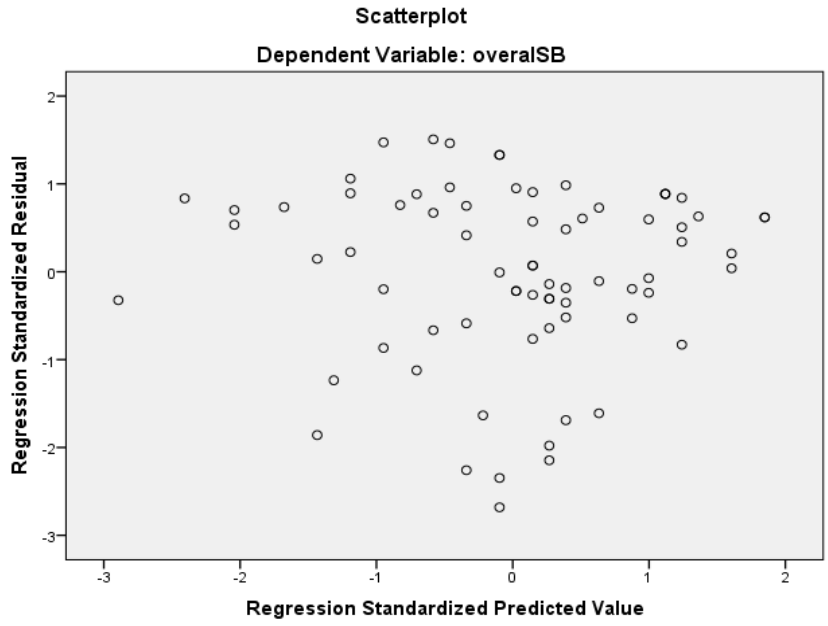
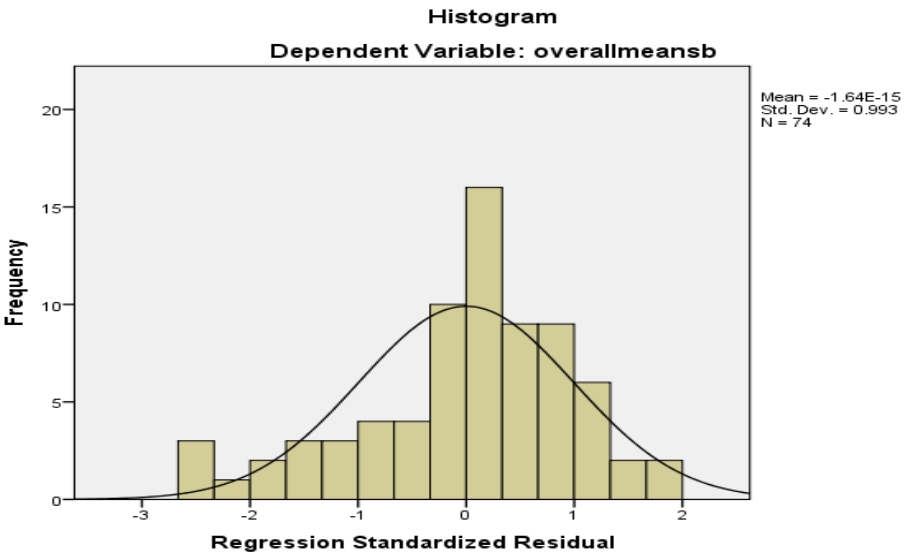
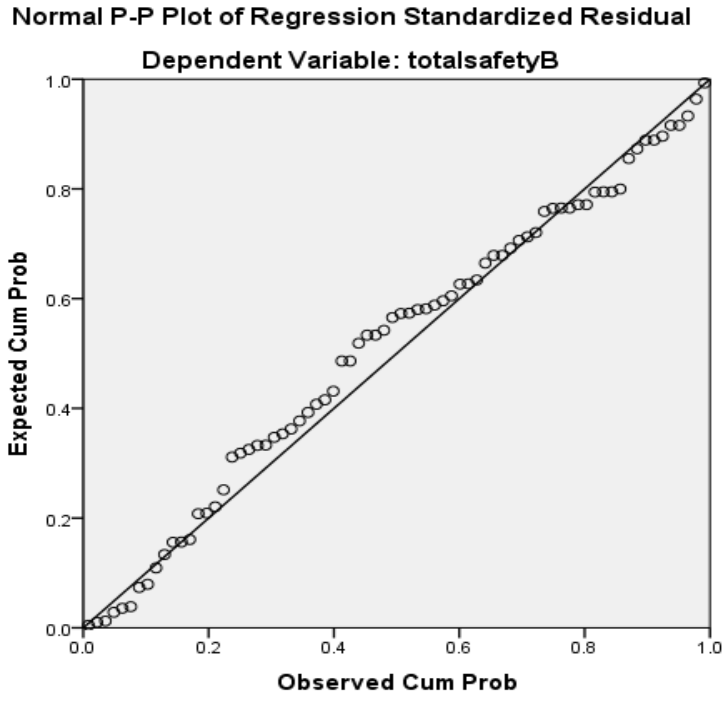

Scatterplot
Dependent Variable: overalSB
Regression Standardized Residual
Regression Standardized Predicted Value
-3
-2
-1
0
1
2

Diagram 2

*Assumptions Of Linear Regression Between ERFs And SBs*



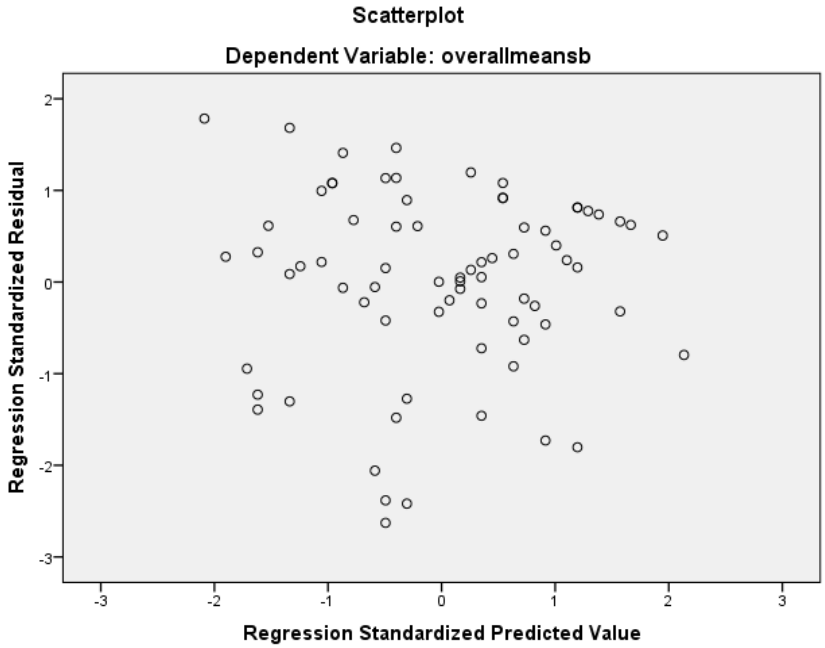
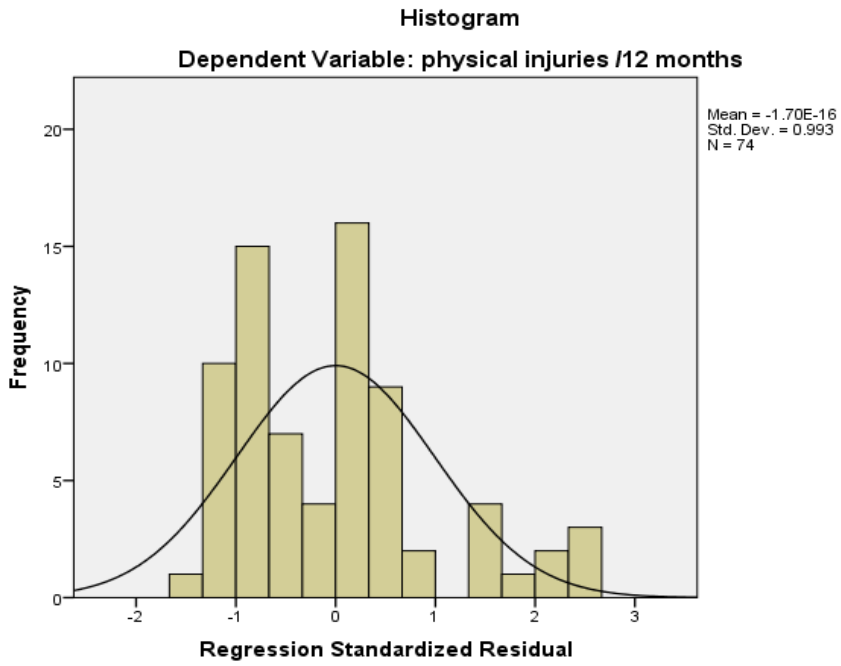
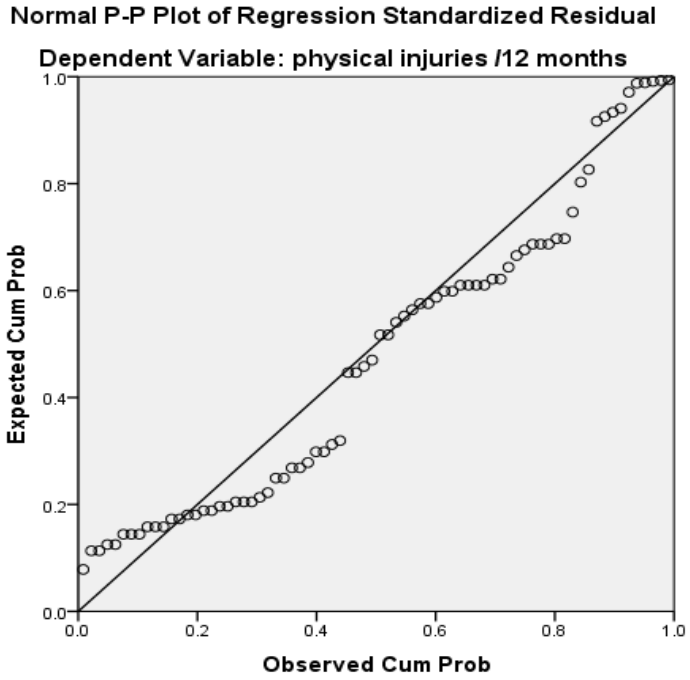



Diagram 3 shows the results of testing the assumptions for linear regression between the ORFs and the WRIs. The assumptions of linearity, normality, no error, and homogeneity of variance were met as noted in the scatter plot, Q-Q plot and the histogram. Diagram 4 shows the results of testing the assumptions for linear regression between the ERFs and WRIs. The results show a non-normally distributed diagram as noted in the histogram and a lack of linear correlation of variables between the ERFs and the WRIs as noted in the scatter plot and Q-Q plot. Therefore, the assumptions of linearity, normality, no error, and homoscedasticity of linear regression between ERFs and WRIs were violated.

Diagram 3

*Assumptions Of Linear Regression Between ORFs And WRIs*



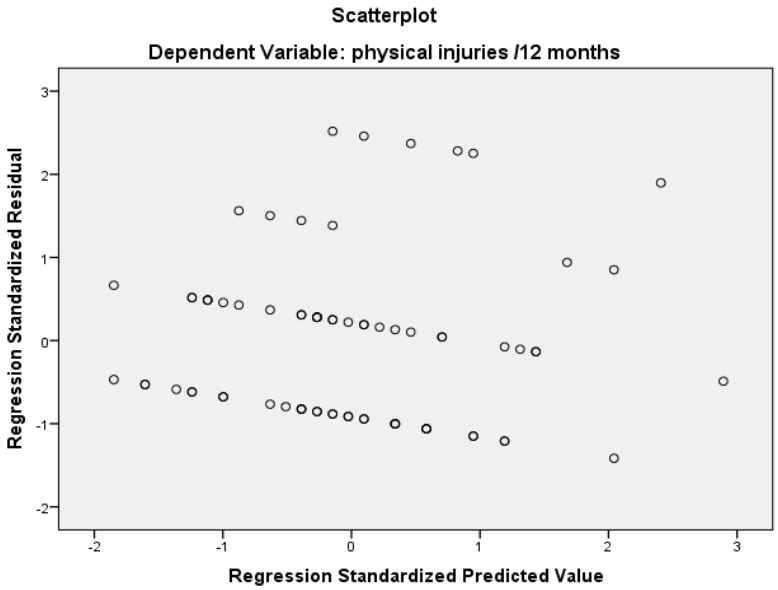
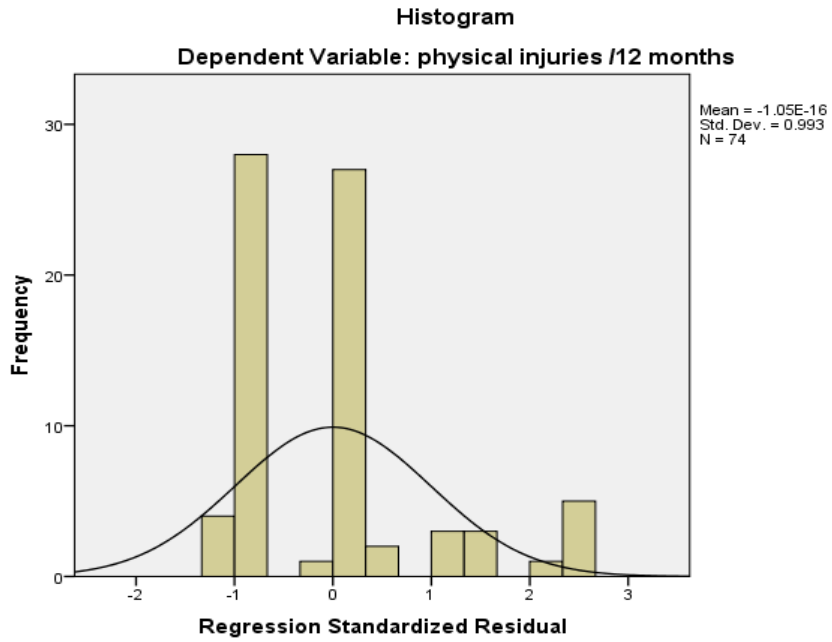
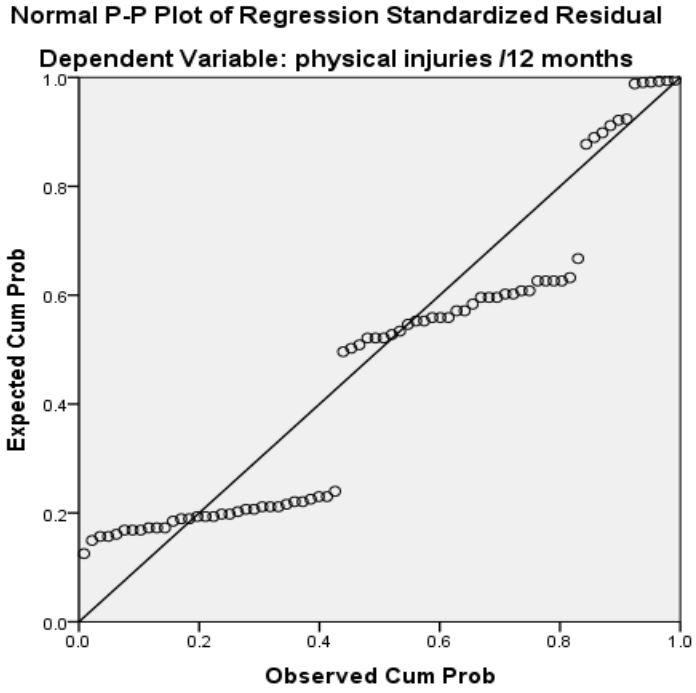
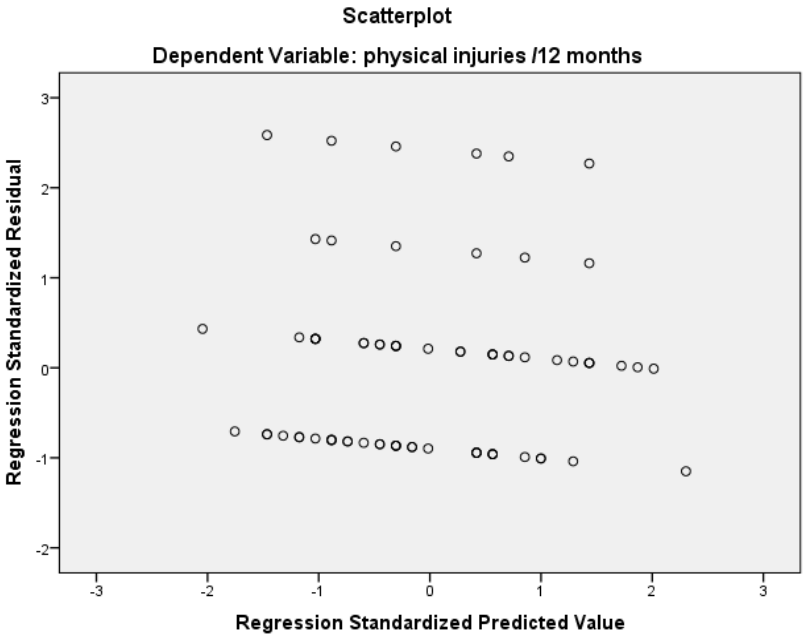



Diagram 4

*Assumptions Of Linear Regression Between ERFs and WRIs*




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: physical injuries /12 months
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Scatterplot
Dependent Variable: physical injuries /12 months
Regression Standardized Residual
Regression Standardized Predicted Value
-3
-2
-1
0
1
2
3

## Linear Regression Analysis

### Relationship Between ORFs and SBs

RQ1 seeks to discover whether there is a relationship between ORFs associated with home healthcare and SBs as experienced by HHC Nurses. The null hypothesis states that there is no significant relationship between the ORFs and SBs among HHC nurses. The alternative hypothesis states that there is a significant relationship between the ORFs and employee SBs.

I applied a multiple regression analysis to determine whether ORFs (management commitment & supervisory support) a significantly affect the employees' SBs in HHC. According to the model summary, the result is significant. The multiple regression model with the two predictors (MC and SS) produced coefficients of determination ($R^2 = 0.16$), indicating that 16% of the variance of the SBs could be explained as an effect of the ORFs. The value of the $F(2, 70) = 6.76$ showed a significant correlation between the ORFs and SBs at $p < .01$. Regarding the effect of the MC and SS, Table 9 summarizes the descriptive statistics and regression analysis of the SBs in relation to components of the ORFs. The results showed that the MC was significantly affecting the employee SBs, indicating that an average of 0.27 increases in MC, it would expect an increase in SBs. Meanwhile the SS showed a positive correlation with the SBs, but it has no significant influences on it. The regression equation representing the relationship between the ORFs (predictor) and the SBs (outcome) of HHC workers can be expressed as follows:

$$Y = 2.99 + 0.27\ \text{MC} + 0.07\text{SS}$$

Table 9

*Relationship of Safety Behaviors and Organization Components*

| Variable | Mean | SD | Correlation with SBs | *b* | *β* | *t* | sig |
|---|---|---|---|---|---|---|---|
| SBs | 4.12 | 0.73 | | | | | |
| MC | 3.31 | 0.94 | 0.39*** | 0.27 | 0.35 | 2.69** | 0.009 |
| SS | 3.43 | 0.93 | 0.27** | 0.07 | 0.09 | .67 | 0.51 |

*** $p < .001$, ** $p < .01$

*Note. SBs*: Safety behaviors *MC*: Management commitment SS: Supervisory support

In conclusion, ORFs are a significant factor affecting SBs as $F$ (2, 70) = 6.76, $p <$ .01, $R^2 = 0.16$. Therefore, the null hypothesis that states there is no significant relationship between ORFs and SBs is rejected. The alternative hypothesis that states there is a significant relationship between ORFs and SBs is accepted. More specifically, the MC was a significant predictor affecting SBs as experienced by HHC nurses, meanwhile the SS showed no significant contribution to the employees' SBs.

**Relationship between ERFs and SBs**

RQ2 sought to determine whether there is a relationship between the ERFs associated with HHC and SBs as experienced by HHC nurses. The null hypothesis states that there is no significant relationship between the ERFs and SBs as experienced by HHC nurses. The alternative hypothesis states that there is a significant relationship between the ERFs and SBs among HHC nurses.

I applied a multiple regression analysis to determine whether ERFs (access to a patient's home, home condition, home based care) significantly affect the employees' SBs associated with HHC. According to the model summary, the result is significant. The

multiple regression model with the three predictors (AC, HC, HB) produced coefficients of determination ($R^2 = 0.20$), indicating that 20% of the variance of the SBs could be explained an effect of ERFs. Further, $F(3, 70) = 5.86$ showed a significant correlation between the ERFs and SBs at $p < .001$. Regarding the effects of the AC, HC, and HB, Table 10 summarizes the descriptive statistics and the regression analysis of the SBs in relation to components of the ERFs.

Table 10

*Relationship Between Safety Behaviors and Environment components*

| Variable | *Mean* | *SD* | Correlation with SBs | *b* | *β* | *t* | sig |
|---|---|---|---|---|---|---|---|
| SBs | 4.12 | 0.73 | | | | | |
| AC | 2.96 | 0.66 | 0.01 | -0.14 | -0.12 | -1.04 | 0.30 |
| HC | 2.97 | 0.65 | 0.22* | -0.25 | -0.23 | -1.27 | 0.21 |
| HB | 3.23 | 0.52 | 0.40*** | 0.88 | 0.63 | 3.56*** | 0.001 |

*** $p < .001$

*Note. SBs*: Safety behaviors *AC*: Access to a patient`s home *HC*: Home condition *HB*: Home-based care

The results showed that the HB has a significant impact on employee SBs, indicating that with an increase of 0.88 in HB; it would expect an increase in the SBs. Both the AC and HC variables showed a negative correlation with the SBs, indicating a decrease in the AC and HC variables, there is an increase of the SBs. However, the AC and HC showed no significant influences on SBs. With respect to the regression equation, the relationship between the ERFs (predictor) and the SBs (outcome) of HHC workers can be expressed as follows:

$$Y = 2.41 + 0.63HB - 0.12AC - 0.23HC$$

In conclusion, the overall ERFs is significantly affecting SBs as $F$ (3, 70) = 5.86, $p < .05$, $R^2 = 0.20$. The null hypothesis states that ERFs are not significantly related to SBs. The alternative hypothesis states that ERFs are significantly associated with SB. On the basis of the results of the regression analysis, the alternative hypothesis is accepted. Among all components of ERFs, the HB is a significant predictor of SBs among HHC nurses. The AC and HC have no contribution to SBs.

When I compared the effects of the ORFs and ERFs on SBs, the results of the multiple regression analysis indicated that the ORFs are a stronger predictor ($\beta = 0.34$, $p < .01$) of SBs, while the ERFs are not a significant predictor ($\beta = 0.15$) as shown in Table 11. Table 11 presents the regression analysis for predicting the SBs in relation to the overall ORFs and ERFs.

Table 11

*Overall Relationship Between SBs and ORFs and ERFs*

| Variable | *Mean* | *SD* | *b* | *β* | *t* | sig |
|---|---|---|---|---|---|---|
| ORFs | 3.37 | 0.82 | 0.30 | 0.34 | 3.00 | 0.004 |
| ERFs | 3.06 | 0.50 | 0.22 | 0.15 | 1.33 | 0.19 |

*Note*. *SBs*: Safety behaviors *ORFs*: Organization-related factors
*ERFs*: Environment-related factors

**Relationship of SRFs with WRIs**

The research question three attempted to assess the relationship between the ORFs (MC, SS) and ERFs (AC, HC, HB), and the WRIs. To address this question, I applied simple and multiple regression analysis to determine of which the five factors affect WRIs. Regarding the effect of the MC and SS, Table 12 presents the regression

analysis of each variable of ORFs (MC and SS) in relation to the WRIs as an outcome. The Pearson's correlation test revealed a significant, moderate negative correlation between the SS and WRIs ($r$ = -0.3 at $p < 0.01$) and no significant relationship between the WRIs and the MC ($r$ = -0.08 at $p = 0.25$). This can be explained that when the WRIs decrease, the SS increases. In addition, the SS is a highly significant predictor of WRIs as $F$ (1, 72) = 7.00, $p < .01$, $R^2 = 0.02$. Meanwhile, the MC has no influence on WRIs as a model of regression produced no significant result.

Table 12

*Relationship Between WRIs and Organization components*

| Variable | Correlation with WRIs | $R^2$ | *Adj* $R^2$ | *b* | $\beta$ | *t* | *sig* |
|---|---|---|---|---|---|---|---|
| MC | -0.08 | 0.01 | 0.01 | 0.11 | 0.12 | 0.86 | 0.39 |
| SS | -0.3** | 0.09 | 0.08 | -0.29 | -.30** | -2.69 | 0.01 |

** $p < .01$

*Note. WRIs:* Work-related injuries *MC*: Management commitment
*SS*: Supervisory support

Regarding the effect of AC, HC, HB, Table 13 presents the regression analysis of each variable of the ERFs (AC, HC, HB) in relation to the WRIs. The Pearson's correlation test indicated a significant, moderate negative correlation between the AC and the WRIs ($r$ = -0.3 at $p < 0.01$), whereas the HC and HB reported no significant relationship with the WRIs. This can be explained that when the WRIs decrease, AC increases. In addition, the AC was a significant predictor of the WRIs as $F$ (1, 72) = 5.07, $p = 0.03$, $R^2 = 0.07$. The HC and HB reported no influences on the WRIs as the regression model results were not significant.

Table 13

*Relationship Between WRIs and Environment components*

| Variable | Correlation with WRIs | $R^2$ | *Adj* $R^2$ | *b* | *β* | *t* | sig |
|---|---|---|---|---|---|---|---|
| AC | -0.26** | 0.07 | 0.05 | -0.35 | -0.26 | -2.25* | 0.03 |
| HC | -0.14 | 0.02 | 0.01 | -0.20 | -0.14 | -1.22 | 0.23 |
| HB | -0.07 | 0.01 | -0.01 | -0.11 | -0.07 | -0.55 | 0.58 |

** $p < .01$, * $p < .05$

Note. *WRIs:* Work-related injuries *AC*: Access to a patient`s home HC: Home condition *HB*: Home-based care

I applied also MLR analysis to determine the relation of the WRIs to the overall ORFs and ERFs. Table 14 demonstrates that the regression results are not significant for the ORFs, as $F$ (1, 72) = 3.47, $p$ = 0.07, $R^2$ = .05 and the ERFs, as $F$ (1, 72) = 2.90, $p$ = 0.09, $R^2$ = 0.04. Based on these results, the ORFs and ERFs are statistically not significant with the WRIs in the current study.

Table 14

*Overall Relationship Between WRIs and ORF and ERF*

| Variable | Correlation with WRIs | $R^2$ | *Adj* $R^2$ | *B* | *β* | *t* | Sig |
|---|---|---|---|---|---|---|---|
| ORFs | -.21* | 0.05 | 0.03 | -0.24 | -0.22 | -1.86 | 0.07 |
| ERFs | -.20* | 0.04 | 0.03 | -0.36 | -0.20 | -1.70 | 0.09 |

* $p < .05$

*Note. WRIs:* Work-related injuries *ORFs*: Organization-related factors *ERFs*: Environment-related factors

Based upon the results of regression analysis for determining the effect of the SRFs on the WRIs, the ORFs and ERFs are not significantly related to the WRIs. Therefore, the alternative hypothesis that states, there is a significant relationship

between the ORFs and ERFs with the WRIs are failed to be accepted. However, among all the SRFs, the SS and AC are strong factors influencing WRIs. Both reported a negative effect on WRIs.

**Effect of Covariate Variables**

Variables such as years of experience, age, and safety training have a significant effect on safety climate, safety perception, and work injuries (Gyekye & Salminen, 2010; Jafari et al., 2014; Wachter & Yorio, 2014). Therefore, it was necessary to assess these covariates in relation to SRFs and WRIs. I performed a multiple regression analysis to assess the effect of the ORFs and ERFs in relation to SB, controlling the years of experiences, age, and safety training. The overall tested model was significant, as $F$ (5, 68) = 4.13, $p < 0.01$, $r = 0.48$. I compared the contribution of each independent variable to the prediction of SBs. However, when I considered all three variables simultaneously in the multiple regression model, only ORFs were a significant factor ($\beta = 0.32$, $p = 0.009$), the others were not significant as shown in Table 15.

Table 15

*Factors Affecting Safety Behaviors*

| Variable | $\beta$ | $t$ | Sig |
|---|---|---|---|
| ORFs | 0.32 | 2.67** | 0.009 |
| ERFs | 0.14 | 1.26 | 0.21 |
| Years of experience | 0.09 | 0.81 | 0.42 |
| Age | 0.20 | 1.71 | 0.09 |
| Training | 0.08 | 0.74 | 0.46 |

** $p < .01$

*Note*. *ORFs*: Organization-related factors ERFs: Environment-related factors

To determine the effect of the ORFs and ERFs on the WRIs with the covariates, a regression analysis is presented in Table 16. The overall tested model was not significant at $F$ (5, 68) = 1.35, $p$ = 0.26, $r$ = 0.30. Additionally, I compared the contribution that each variable has to the effect on the WRIs. The results indicated that all variables are not statistically significant factors as shown in Table 16.

Table 16

*Factors Affecting Work-related Injuries*

| Variable | $\beta$ | $t$ | Sig |
|---|---|---|---|
| ORFs | -0.21 | -1.58 | 0.12 |
| ERFs | -0.15 | -1.24 | 0.22 |
| Years of experience | -0.04 | -.28 | 0.77 |
| Age | 0.11 | 0.84 | 0.41 |
| Training | 0.13 | 1.07 | 0.29 |

*Note*. *ORFs*: Organization-related factors *ERFs*: Environment-related factors

## Summary

This chapter discussed the statistical analysis applied to determine the effect of SRFs on WRIs. A pilot test of the SHCN questionnaire was conducted, and few modifications were made to enhance the readability of the statements. Seventy four responses to the SHCN questionnaire were analyzed using a descriptive test and a linear regression analysis to identify whether the ORFs and ERFs were significant factors affecting SBs and WRIs among HHC nurses. The descriptive analysis of the characteristics of the study population, including the WRIs in the last 12 months

indicated that there were 42 nurses (56.7%) experienced WRIs, while the remaining 32 nurses (43.2%) had no exposure to any injuries in the same period.

The results of the linear regression analysis indicated that the overall ORFs and ERFs were significantly affecting the SBs. Among all safety items of the SRFs, the management commitment and home based care were significantly influenced the SBs. In addition, the ORFs reported a stronger effect on the SBs than the ERFs. With the analysis of covariates such as years of experience, age, and safety training, ORFs were the only significant factor affecting SBs. With respect to the effect of SRFs on the WRIs, the ORFs and ERFs were not found to be statistically significant in relation to the WRIs.

In Chapter 5, I analyzed and interpreted the findings in relation to safety organization, safety environment, and safety behaviors. I discussed and confirmed or not the study findings by the findings in the literatures. The recommendations, implications, and conclusion of the study are presented on the basis of current findings.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

The purpose of this study was to explore the effect of the SRFs associated with HHC on employees' SBs and WRIs. A modified SHCN questionnaire with 44 items was used to measure the association between the ORFs (management commitment, supervisory support) and ERFs (access to a patient's home, home condition, and home-based care) as IVs, and the SBs and WRIs as DVs. A self-reported of 74 responses from nurses working in home care in the Makkah region of the Saudi Arabia were obtained to determine whether the ORFs and ERFs are significant factors affecting SBs and WRIs as experienced by HCNs.

The findings of the current study indicated that HCNs experienced a relatively safe organization and environment associated with HHC. With regard to the impact of SRFs on SBs and WRIs, significant relationships between the overall ORFs (management commitment, supervisory support) and ERFs (access to a patient's home, home condition, home-based care) and the SBs were reported. The ORFs demonstrated a stronger effect on the SBs than that effect of the ERFs. Amongst all the safety components of the ORFs and ERFs, management commitment (MC) and home-based care (HB) were significant items affecting the SBs. With respect to the relationship between the ORFs and ERFs, and the WRIs, significant negative correlations were reported between these factors and the WRIs. The overall ORFs and ERFs provided no significant contribution to the WRIs among HCNs; however, amongst all the safety components of the ORFs and ERFs, supervisory support (SS) and access to a patient's home (AC) were factors negatively

affecting the WRIs. Therefore, SS and AC have contributed to influencing WRIs among nurses working in HHC units in the Makkah region.

This chapter describes and interprets the findings of the study and relates these results to those of similar studies in terms of confirmed, disconfirmed, and knowledge added to the discipline. The study limitations are described and the recommendations for assuring HHC safety are discussed. A further description of the implications for positive social changes in relation to individuals, families, and society is also discussed also. Finally, the conclusions of the study are presented.

## Interpretation of Findings

The current study established a relationship between the overall ORFs and SBs and WRIs. While the overall ERFs revealed no contribution to SBs and WRIs, the HB and AC factors were found to be influential. Participants perceived HHC as a relatively safe organization and environment. Based on the linear regression analysis of HHC nurses' responses, the findings revealed the significant effect of the ORFs on employees' SBs. This study established an empirical link between the specific dimension of ORFs such as the MC and SBs. The MC factor assessed the degree to which employees perceived that their management team valued a safety issue, the effectiveness of the safety training program, and management's actions to monitor safety activities. These measures had a significant positive influence on safety compliance, safety participation and safety attitudes of the participants. In this respect, the MC factor contributed to safe behaviors among HHC nurses in the Makkah region. In addition, the SS was the crucial component of the ORFs that was inversely associated with the WRIs. The SS reflects the

safety support from direct managers of HHC, including safety communications with the employees, action taking to correct safety problem, rewarding of safety compliance and enforcing safety procedures. In the presence of such supportive safety actions and effective safety communications from the direct manager, a reduction in WRIs occurs.

Safety studies consider MC an important element of safety in health care organizations as well as in industry (Chercos et al., 2016; Cui, Fan, Fu, & Zhuwhich, 2013; Liu, Huang, Wang, Xiao, & Chen, 2015**).** Consistent with the current findings, these studies regarded MC as an influential factor for safety behaviors. MC is a critical component of the safety climate and is positively related to employee safety compliance and safety participation. Liu et al. (2015) indicated that management's concern about safety, along with educational training on safety issues, improved employee participation and compliance, which in turn reduced WRIs. In the current study about 67% of nurses attended training in safety issues. Despite 32 (43%) having experienced WRIs, participants perceived training as effective for assessing workplace hazards. Kiani & Khodabakhsh (2014) and McGonagle et al. (2016) studied safety management attitudes and values in an organization in relation to WRIs. Although an insignificant relationship was found between safety management and injuries, Kiani & Khodabakhsh showed that suffering from illness and injuries was anticipated with a low level of support from the manager. With respect to SS, Liu et al. (2015) also indicated a negative effect of supervisor support on WRIs. Supervisory support focused on the two directions of communication between a front-line manager and employees, such safety communication increased the SC that resulted in decreased injuries. Therefore, MC was a critical factor

influencing employees' safety performances. Management commitment also plays an indirect significant role in controlling hazards in the workplace. The results of the current study objectively reinforce the importance of the role of safety management and the supervisor in supporting safety issues in an organization. When the safety issue is given as a high priority and when supervisor-employee safety communication is effective, employees are encouraged to perform care safely.

With respect to the ERFs, home-based care (HB) and access to a patient's home (AC) were reported as strong influences on employees' SBs and WRIs, respectively. The HB factor assessed: the safety communication between health care providers, patients, and their families, security and personal safety at the patient's home, safety training, and adequacy of personal protective equipment (PPE). These measures were found to positively affect the SBs. This finding agreed with the study by Brondino, Silva, & Pasini (2012) showing that safety communication and training were predictors of employees' SBs. Safety communication amongst coworkers regarding personal safety and workplace safety improves safety performance. Safety training conveys knowledge and enhances coworker safety norms. A study by Chercos & Berhanu (2017) also provides similar findings with respect to the significant relationships between safety training and availability of PPE, and SB. Workers who had no safety training were exposed to more injuries than those who had received training. In addition, those who used PPE reported fewer injuries than those who did not use PPE in the workplace. Chercos & Berhanu (2017) found that the high rate of injuries was related to a lack of safety training and poor use of PPE.

Regarding the AC factors assessing the safety of the location of a client's home and the safety of the building where nurses visited their patients, these conditions were found to have a significant inverse relationship with to WRIs among HCNs. According to nurses' responses, they frequently experienced unsafe conditions in relation to the buildings and areas where patients lived. These findings are similar to the conditions reported by the community care providers (Terry et al., 2015) who found a problem with easy access to a client's home. To ensure the safety of health care workers, Terry et al. (2015) suggested that an assessment be conducted during the initial visit to a client' s home.

## Limitations of the Study

This multidimensional study associated with HHC has added knowledge to the safety issue, however, there are a number of limitations to be considered. The current study relied on the use of self-reported data which can be subjected to some degree of under reporting, recall and social desirability, and response bias. The finding may also be distorted by the participants' desire; however, a self-reported questionnaire is still the most appropriate method for assessing a person's belief, feelings, and perception (Korb, 2011). The truthfulness of responses can be improved by asking participants to complete the questionnaire anonymously. In addition, self-reporting of behaviors, attitudes, and injuries has been used effectively in several workplace safety studies and is the most practical way to reflect an individual's opinion (Fugas et al., 2012; Kiani & Khodabakhsh, 2014; Puah, Ong, & Chong, 2016). Another limitation to be considered is that the data were only obtained from HCNs from a relatively small population in areas I

had access to it. The reason for the focus on nurses as participants was to close the gap of safety evidence in HHC nursing. Thus, it is expected that the current results are only applicable to the selected sample and settings. Future studies would be useful if they include a higher number of participants not only HCNs, but all health care providers involved in HHC, to establish the generalizability of the results on other populations. Another limitation was related to the use of SHCN questionnaire which is a modified scale derived from valid and reliable instruments used in the previous studies. The SHCN questionnaire was assessed by a group of experts in the field of safety to enhance its validity and reliability. It is suggested that the study instrument needs to be reassessed with a larger sample to further ensure its reliability. An additional limitation of this study was related to the use of a cross-sectional design to measure the participants' perception at one point in time. Further study is required to measure participants' responses at multiple points of time, which would allow for the assessment of the relationship between safety behaviors and the organizational climate over time. This may enhance the generazability of the study findings onto a larger population.

Despite these limitations, I believe the study has provided a valuable insight into the most important safety factors that could influence compliance and participation in safety activities and reduce injuries among health care professionals. This study was an attempt to include a variety of safety factors related to the organization, environment, and employee behavior that found in the literatures. Understanding safety issues in relation to the workplace would provide more information about the gap in safety knowledge and behaviors when dealing with patients (Spratt et al., 2012)

## Recommendations

This study revealed that top management actions have a stronger influence on employees' compliance with safety policies and participation in promoting workplace safety. In order to promote employees' participation and compliance with safety and health activities, safety training and strategy development should be given priority. Management should be trained to enhance their safety knowledge and attitude towards the protection of employees from accidents and injuries and the organization from financial loss. As part of an effective management duty, the manager should be able to conduct safety auditing and risk assessment to identify the limitations the workplace safety and to take appropriate action for improvement.

Formal safety training of employees and, more specifically, the persons in the supervisory positions should be arranged. The leaders and employees should be able to work together to identify risks in their own areas and implement the prevention measures to minimize the impact of risks on the employees, patients, and organizations. The safety training program should include general information about safety, and safety concerns about home and community, such as safety during home visits, personal safety and security, road safety, and use of PPE. Safety training programs empower the employees at all levels with knowledge and safety measures required to improve workplace safety and many injuries can be avoided (HSE, 2013)

The front line supervisor is an important, influential person. The supportive action of the supervisor induces positive safety behaviors among employees. The leadership style of the unit supervisor should reinforce an effective safety communication with the

employees. The supervisor should have the ability to inform, interact, and share information on safety issues. This would assist in maintaining a safe working environment.

Nurses need to understand the multidimensional aspects of safety associated with the organization and the environment of the HHC program in order to actively participate in establishing effective safety strategies, policies, and procedures which in turn affect the quality of patient care. Health care providers should involve in safety planning and decision making. This would encourage them to put more effort toward ensuring that they carry out their work safely.

Work-related injuries were negatively affected by a client's safe home, and a safe access to it and the sharing of information about health and safety between health care providers and the patient s' families. This would enhance families' knowledge and willingness to participate in maintaining safety for all. Therefore, health care providers should monitor client's home for safety prior to each visit.

Finally, future safety research may need to examine and identify qualitatively the safety challenges encountered by health care providers when introducing community and home care to clients. In spite of this, nurses are the major profession for providing HHC, obtaining the experiences of other health care providers would provide in depth information with regards to their concerns and needs.

## Implications

This study provides a comprehensive view of the potential safety aspects associated with home and community care. HHC safety is based on a tested tool that health care providers can use to evaluate the safety performance in an organization. The results indicated that management performance and supervisory roles are predictors for SBs and WRIs. These findings imply that health care organizations need to pay attention to formulating safety interventions and training. The management of an organization who positively act for employees' safety will find safety compliance and participation from their employees, which in turn, reflects inversely on the occurrence of the WRIs. The leadership style of the direct supervisor who promotes safety communication between the supervisors and employees, by informing and consulting employees of safety concerns, enforcing strict safety procedures, and rewarding those reporting unsafe conditions, as well as taking actions to correct safety problems, would empower the employees to comply with safety policies and carry out work safely. A supervisor position that has direct contact with employees cannot be overlooked. Employees' safety behavior is positively influenced by the leadership style of the supervisor, therefore, training of leaders would have a strong impact on reducing WRIs and enhancing of worker and patient safety. Violation of health care policies and procedures is an indication that the top management and supervisors have to play a positive role in empowering and encouraging their employees to comply with safety issues (Kath, Marks, & Ranney, 2010; Wachter & Yorio, 2014).

Measurement of the multidimensional aspects of HHC enhanced awareness of sources of unsafe conditions and behaviors the physical and psychosocial aspects of patients receiving home care are crucial elements in HHC. The safety building and the safety area where the health care providers visit their patients were important aspects of the worker safety. This finding implies for that policy makers should look for HHC providers as a vulnerable group for WRIs. Therefore, strategies for the prevention and protection of HHC employees from injuries and risks should be encouraged and communicated. Health care providers should also consider these factors as a part of the assessment prior to home visits. Understanding the effect of these psychosocial factors and sharing these factors with the patients' families would increase their cooperation and participation towards patients' safety as well as employees' safety.

The findings of this cross-sectional study provided empirical evidence of safety conditions with respect to HHC that was never conducted before, however, further longitudinal study is required to ensure frequent and ongoing monitoring of the gap in safety concerns that has an effect on workers and patients health and safety. A random selection of the sample will provide stronger and valid results that can be generalized to other populations. A qualitative study on HHC safety is suggested to improve the scope of safety as perceived by health care providers and clients.

## Conclusions

This study revealed the impact of several safety factors associated with HHC for promoting safety behaviors and reducing WRIs. A management team commitment to safety, including safety training and monitoring of safety of the working environment has a strong effect on employee compliance with safety regulations and safety participation. The leadership style that supported the safety communication with employees and the use of personal protective equipment inversely affected WRIs. These findings imply the need for, firstly, a formal safety training for managers, leaders, and employees to promote knowledge and behaviors; secondly, reviewing the safety strategies to ensure identification the roles of management and employees with respect to safety concerns and issues; thirdly, safety interventions to ensure ongoing monitoring of safety conditions and behaviors; and finally, clients and families participations in as important members in promoting safety associated with community care. A further qualitative safety study is recommended to gain more knowledge about the scope of safety meaning among health care providers and community clients and to provide empirical data that would help in understating the gap of safety in community health care institutions. Thus, the safety of home and community care may need an integration of efforts of; the management and leadership of the health organization, health care providers, health planners, and clients' family.

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Appendix A: Permission to Use Tools

Safety Climate Attribute ((Lu & Tsai, 2010)

From , chaurluh <chaurluh@webmail.nkmu.edu.tw On Mar 14, 2016
Dear Sania Abdulkhaleq,

Thanks for your kind notification.
I'm Chaur-Luh TSAI
I'm pleasure to hear the attributes of safety climate in my study can be used in other fields.
Wish you complete your research smoothly.
Best regards!

Capt. & Doctor Tsai Chaur-Luh
Assistant Professor of the Department of Shipping Technology
National Kaohsiung Marine University

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Sania Abdulkhaleq 3/9/16
Subject: Permission for study tool utilization
to lucs
Hello Dr. Chin-Shan Lua

I am Sania AbdulKhaleq from the Kingdom of Saudi Arabia. Currently, I am enrolled in the PhD Public Health Program in Walden University. I am at the stage of preparing my final dissertation for the degree. My study is about measuring the workplace safety in a health care program in the kingdom of Saudi Arabia. I am planning to use a part of your instrument (safety climate Attribute) for my study. Therefore, I would like to take your respective permission to use the tool and I might need to adapt some of its items to suit my study.

Thank you for your concern
Best regards

Mrs. Sania Abdulkhaleq, RN. MSN
PhD Public Health
Walden University

Modified-Home Healthcare Worker Questionnaire –RN/Aide (M-HHCW) (Polivka et al., 2015).

barbara.polivka@louisville.edu Received 3/10/16
to me
You certainly can use the instrument. I've attached the version of the tool we used with nurses and aides.

Good luck with your study!

Barbara J. Polivka, PhD, RN
Shirley B. Powers Endowed Chair in Nursing Research & Professor
School of Nursing
University of Louisville
Norton Healthcare
barbara.polivka@louisville.edu

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Sania Abdulkhaleq sania.abdulkhalek@waldenu.edu 3/10/16

To: barbara.polivka@louisville.edu
Subject: A permission for tool use
to barbara.polivka
Hello Dr. Polivka,

I am Sania AbdulKhaleq from the Kingdom of Saudi Arabia. Currently, I am enrolled in the PhD Public Health Program in Walden University. I am at the stage of preparing my final dissertation for the degree. My study is about measuring the workplace safety in a health care program in the kingdom of Saudi Arabia. I am planning to use a part of your instrument (M-Home Health Care Worker (HHCW) questionnaire) for my study. Therefore, I would like to take your respective permission to use the tool and I might need to adapt some of its items to suit my study.

Certainly, your works will be acknowledged.
Thank you for your concern.

Best regards

Mrs. Sania Abdulkhaleq, RN. MSN
PhD Public Health
Walden University

Safety Climate Scale (Vinodkumar & Bhasi, 2009)

<mbhasi@cusat.ac.in> 3/11/16

to me

Dear Mrs Sania Abdulkhaleq,

Your request to modify and use our instrument Safety Climate Questionnaire is permitted with due citation and acknowledgement.
regards
Dr M Bhasi

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Sania Abdulkhaleq sania.abdulkhalek@waldenu.edu 3/10/16

to mnvinodkumar, mbhasi
Hello Dr. Vinodkumar & Bhasi

I am Sania AbdulKhaleq from the Kingdom of Saudi Arabia. Currently, I am enrolled in the PhD Public Health Program in Walden University. I am at the stage of preparing my final dissertation for the degree. My study is about measuring the workplace safety in a health care program in the kingdom of Saudi Arabia. I am planning to use a part of your instrument (Safety Climate Questionnaire) for my study. Therefore, I would like to take your respective permission to use the tool and I might need to adapt some of its items to suit my study.

Certainly, your works will be acknowledged
Thank you for your concern

Best regards

Mrs. Sania Abdulkhaleq, RN. MSN
PhD Public Health
Walden University
+966 50695536

North Carolina Study of Home Care and Hospice Nurses scale (Leiss, 2014).

Jack Leiss <jackl@mcmoss.org> 3/11/16
Dear Mrs. Abdulkhaleq,

Please, feel free to use the instrument and to adapt it as you see fit. I wish you well in your studies. If your research results in a publication in English (unfortunately, I can't read Arabic), I would appreciate receiving a reference so that I may read it.

Sincerely,
Jack Leiss

---

Sania Abdulkhaleq sania.abdulkhalek@waldenu.edu 3/10/16
A permission for tool use
to jack
Hello Dr. Leiss,

I am Sania AbdulKhaleq from the Kingdom of Saudi Arabia. Currently, I am enrolled in the PhD Public Health Program in the Walden University. I am at the stage of preparing my final dissertation for the degree. My study is about measuring the workplace safety in a home health care program in the kingdom of Saudi Arabia. I am planning to use a part of your instrument (safety climate and PPE use, 2014) for my study. Therefore, I would like to take your respective permission to use the tool and I might need to adapt some of its items to suit my study.

Certainly, your effort will be acknowledged
Thank you for your concern
Best regards

Mrs. Sania Abdulkhaleq, RN. MSN

3/12/16
**<sania.abdulkhalek@waldenu.edu>**

to Jack

Hello Dr, Leiss,
Could I have a version of your study tool. This will be highly appreciated

3/13/16
**jackl@mcmoss.org>**

to me

I hope this helps, Mrs. Abdulkhaleq. Please let me know if I can be of further help, and good luck with your research

Medical Home Care Coordination Survey (MHCCS) (Zlateva et al., 2015)

Zlateva, Ianita <ZlatevI@chc1.com 3/28/16

Hello Sania!

Thank you for your interest in the surveys. They are available online here: http://www.biomedcentral.com/content/supplementary/s12913-015-0893-1-s2.pdf and here: http://www.biomedcentral.com/content/supplementary/s12913-015-0893-1-s3.pdf

You are allowed to use the surveys or any parts of them with proper citation.
Thank you,

Ianita Zlateva
Director of Research and Evaluation
Weitzman Institute

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Permission for study tool utilization
Sania Abdulkhalek sania.abdulkhaleq@waldenu.edu 3/26/16

to ZlatevI
Hello Dr. Zlateva,

I am Sania AbdulKhaleq from the Kingdom of Saudi Arabia. Currently, I am enrolled in the PhD Public Health Program in Walden University. I am at the stage of preparing my final dissertation for the degree. My study is about measuring the workplace safety in a home health care program in the kingdom of Saudi Arabia. I am planning to use a portion of your instrument (Medical Home Care Coordination Survey (MHCCS) for my study. Therefore, I would like to take your respective permission to use some items in your tool and I might need to adapt some of its items to suit my study.
If you agree, I wish a copy of your survey.

Certainly, your works will be acknowledged
Thank you for your concern
Best regards

Mrs. Sania Abdulkhaleq, RN. MSN
PhD Public Health
Walden University

Appendix B: Invitation Sheet

Greetings,

I am Sania Abdulkhaleq, a doctoral degree student at Walden university in the US. I am conducting a research study on the home health care safety. I would like to invite:

- Nurses have worked in home health care and participated in home care visits for the last 12 months (date will be specified)

You can take part of the study to tell us about your view concerning the safety aspects associated with your work environment. Your information would assist in the development of home health care services. There is no risk associated with your participation. You will be asked to complete an anonymous questionnaire which will take about 15 minutes. Your information will be kept confidential.

Participation in this research is voluntary. You can choose to be in the study or not. I will provide you with an enclosed envelope contains: the informed consent, and the questionnaire of the study. You can take it and read it to decide whether to take a part or not.

I will explain the information in the consent form.

Do you have any questions for me at this time?

If you have any more questions about the study, please do contact the researcher Mrs. Sania Abdulkhaleq via Watts number 0506955366 or sania.abdulkhalek@waldenu.edu.

Your voluntary participation is greatly appreciated.

# Appendix C: Environment Scale (First Draft) and Panel Comments

RQ2: Is there a relationship between the environmental related safety factors associated with home healthcare and safety behavior experienced by home care nurses?

| | Statements (environmental related factors) | Relevant | Essential | Essential BNU | Not necessary | Redundant | Clear | Comments |
|---|---|---|---|---|---|---|---|---|
| 1 | *In my HHC program* Coordination with patient and family caregivers facilitates home patient care. | | | | | | × | Coordinate ? How, be specific. |
| 2 | Patient's home assessment is carried prior to home visits. | ✓ | ✓ | | | | | Is there a guideline for such assessment, What should it |
| 3 | Information about the location of the patient`s home is available and clear. | ✓ | ✓ | | | | × | Two concepts |
| 4 | Accessibility to the patient`s home is relatively easy and safe. | | ✓ | | | | × | Accessibility is vague, specify? |
| 5 | Arrangements for patient visit facilitate commute from home to home. | | ✓ | | | | × | What are the arrangements? |
| 6 | Commute from home to home is often safe. | ✓ | ✓ | | | | | Do not use often |
| 7 | I often encounter risks when commute from home to home. | | ✓ | | | | | Do not use often |
| 8 | Nurses aware of procedure to follow in the event of an emergency. | × | | | | | | Is it related to accessibility? |
| 9 | The building where I visited my patient is safe. | ✓ | ✓ | | | | × | |
| 10 | Home visits as per scheduled are often run smoothly with no risks. | × | | | | ✓ | | |
| | | | | | | | | |
| 11 | Home health care workers work and caregivers to prepare a safe working area for patient care | | ✓ | | | | × | Restate, specify group works<br>What is a working area? |
| 12 | There is an adequate space to provide the necessary patient care | › | › | | | | × | What is the necessary?<br>Restate |
| 13 | Patient`s room is sufficiently ventilated and well lighted | › | › | | | | | Be specific two items is not acceptable |
| 14 | Home condition presents with cluttered or unclean conditions. | ✓ | | | | | × | What is mean by clutter?<br>Two different words in a sentence? |
| 15 | Equipment or devices needed to make the job safer is available in patients` homes such as sharp containers, gloves. | ✓ | ✓ | | | | | What are the equipments?<br>Specify and restate |
| 16 | There are adequate equipment/items to carry out patient care safely. | ✓ | ✓ | | | | | Which equipments? |
| | | | | | | | | |

| | Statements (environmental related factors) | Relevant | Essential | Essential BNU | Not necessary Redundant | | Clear | Comments |
|---|---|---|---|---|---|---|---|---|
| 17 | Home care team shares with patient and family regarding providing health care. | | | | | | | Use patient care instead of health care. Share How/ restate |
| 18 | Nursing intervention provided to patient is adequately safe. | | | | | | | Nursing intervention? Specify? Adequately safe is two concepts |
| 19 | Family caregiver is willing to learn to give care. | | | | | | | Willing? How to measure? |
| 20 | Patient / family caregivers comply with health instructions. | ✔ | ✔ | | | | ✔ | |
| 21 | Nurses feel welcomed in patients` homes. | ✔ | ✔ | | | | | Feel?? How, use I feel |
| 22 | Nurses often have difficulty communicating with patients because of different language. | | ✔ | | | | | Do not use often. Make it short and meaningful. |
| 23 | Nurses attempt to make information available to families in their level of understanding. | ✔ | ✔ | | | | | Attempt?? How to be measured, restate |
| 24 | Patient`s record is complete and updated. | | ✔ | | | | | (Complete, update) Two different meanings |
| 25 | Family caregiver is prepared and trained to provide safe care. | ✔ | ✔ | | | | | Broad /Specify |

Please: Indicate ( ✔ ) if you agree with or ( ✕ ) if you disagree

Overall comments from the panel:

- Make the sentence short. Do not use there is.
- Be specific, do not use two concepts/questions in one statement
- Use I/I am instead of nurses. It is better for the participant to answer for her own actions and feeling (I rather than nurses)
- state the question without often
- Use client rather than patient
- (Home health care workers, home care team, nurses) what is the difference? Do they have different tasks

Appendix D: Initial translated Arabic SHCN questionnaire

**عزيزتي المشاركه / عزيزي المشارك**

السلام عليكم ورحمة الله وبركاته

تقوم سنية عبد الخالق، طالبة دكتوراه بجامعة والدن باللولايات المتحدة الامريكية بدراسة بحثية عنوانها "الارتباط بين سلامة العمل والإصابات المرتبطة بالعمل بين مقدمي الرعاية الصحية المنزلية". تهدف هذه الدراسة إلى معرفة العلاقة بين العوامل التنظيمية والبيئية وتأثيرها على سلوكيات سلامة التمريض وتعرضهم لإصابات العمل في برامج الرعاية الصحية المنزلية. تتكون الاستبيانه من أربعة أجزاء، الجزء الأول البيانات الشخصية، وتشمل الأجزاء الأخرى بيانات تتعلق بسلامة المنظمة، وسلامة بيئة العمل، وسلامة السلوكيات المرتبطة بالرعاية الصحية المنزلية. امام كل فقرة مقياس مكون من خمسه خيارات بما يتلائم مع المحور المطلوب .

يرجى الاجابه على جميع العناصر بما يتلائم مع وجهة نظرك. علما، ان جميع المعلومات ستكون سرية وسوف تستخدم فقط لغرض هذا البحث.

شكرا لتعاونكم

مع اطيب التحيات،،،،

**الباحثة**
**سنية محمد صالح عبد الخالق**
**جامعة والدن**

## استبانه سلامة تمريض الرعاية المنزلية

**التاريخ : .....** **الرمز: .....**

**هل شاركت في الزيارات المنزلية في ال 12 شهرا الماضية ، ضعي دائرة (O ) حول:** **نعم** **لا**

**اذا كانت اجابتك بنعم، استمري بالاجابة على الاسئلة التالية**

**القسم الاول : البيانات الشخصية**

**يرجى الاجابة على الاسئلة التالية :**

1. سمي وظيفتك الحالية : .....
2. ما عدد سنوات العمل في مهنة التمريض؟ ..... سنه
3. ماعدد سنوات العمل في الرعاية الصحية المنزلية ؟ ..... سنة
4. ماعمرك ؟ ..... سنه
5. ضع( ي) دائرة حول الجنس: 1. انثى 2. ذكر
6. ضع( ي) دائرة حول الجنسية 1. سعودي/ سعودية 2. غير سعودي / غير سعودية
7. ضع (ي) دائرة حول المؤهل العلمي : 1. دبلوم 2. بكالوريوس 3. دراسات عليا
8. خلال ال12 شهرا الماضية، هل حضرت دورة تدريبية في مجال السلامة؟

   ضعي دائرة حول اجابتك 1. نعم 2. لا
9. ضع (ي) دائرة حول اللغات التي تتكلم(ين ) بها: 1. العربية 2. الانجليزية 3. العربية والانجليزية
10. مامعدل الزيارات المنزلية التي عادة ما تقوم (ين) بها في الأسبوع ؟ _____ زيارة
11. خلال ال 12 شهرا الماضية، كم عدد اصابات العمل التي تعرضت لها اثناء العمل ؟ ..... اصابة

**12. العناصر التالية تشير الى اداء المشرفين وادارة المستشفى . يرجى وضع دائرة حول الرقم الذي يوضح درجة موافقتك عليها:**

| أوافق بشدة | أوافق | محايد | أوافق | لاأوافق بشدة |
|---|---|---|---|---|
| 5 | 4 | 3 | 2 | 1 |

**في المنظمة الصحية التي اعمل بها**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | تقوم الإدارة العليا باجراء جولات وتقييم لسلامة بيئة العمل بشكل دوري | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | التدريب في مجال السلامة ياعدني في تقييم مخاطر العمل | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | يكافئ مديري المباشر الموظفين عند الابلاغ عن ظروف غير امنه | 1 | 2 | 3 | 4 | 5 |
| 7 | يتصرف مديري المباشر بسرعة لتصحيح مشكلات تتعلق بالسلامة | 1 | 2 | 3 | 4 | 5 |
| 8 | | 1 | 2 | 3 | 4 | 5 |
| 9 | يخبرني مديري المباشر عن مخاوف وامور تتعلق بالسلامة | 1 | 2 | 3 | 4 | 5 |
| 10 | يشيد مديري المباشر بالامتثال بأنظمة السلامة | 1 | 2 | 3 | 4 | 5 |
| 11 | | 1 | 2 | 3 | 4 | 5 |
| 12 | يطبق مديري المباشر إجراءات السلامة بحزم | 1 | 2 | 3 | 4 | 5 |
| 13 | | 1 | 2 | 3 | 4 | 5 |
| 14 | يتم تشجيع جميع الموظفين بالابلاغ عن مخاوف تتعلق السلامة. | 1 | 2 | 3 | 4 | 5 |

## القسم الرابع: العوامل البيئيه

**يشمل هذا القسم عناصر ذو العلاقة بمنزل المريض والمواقع المحيطة بة والرعاية الصحية المنزلية للمريض**

**13. لطفا، ضع (ي) دائرة (O) تبعا لتكرار الحالات التي واجهته اثناء زياراتك المنزلية :**

| | | ابدا | نادرا | احيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | | 1 | 2 | 3 | 4 | 5 |
| 5 | المواصلات التي تستخدم للزيارات المنزلية صالحة للسير وامنه | 1 | 2 | 3 | 4 | 5 |

**14. في منزل المريض، ضعي دائرة (O) تبعا لتكرار الحالات التي واجهتها :**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | | 1 | 2 | 3 | 4 | 5 |
| 3 | مخاطرالدرج والارضيات الزلقة | 1 | 2 | 3 | 4 | 5 |
| 4 | غرفة المريض سيئة التهوية | 1 | 2 | 3 | 4 | 5 |
| 5 | مكان رعاية المريض نظيفة | 1 | 2 | 3 | 4 | 5 |
| 6 | | 1 | 2 | 3 | 4 | 5 |

## 15.الرعاية المنزلية :

**يرجى وضع دائرة حول الدرجة المناسبة التي تنطبق عليك وعلى برنامجك للرعاية الصحية المنزلية.**

| | | ابدا | نادرا | احيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | أنا أعمل مع مقدمي الرعاية الصحية المنزلية لاعداد منطقة رعاية امنة بمنزل المريض | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | لاأشعر بالأمان عندما أكون في منزل المريض | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | | 1 | 2 | 3 | 4 | 5 |
| 7 | احضر تدريبات السلامة للحد من المخاطر المتوقعة بمنزل المريض | 1 | 2 | 3 | 4 | 5 |
| 8 | | 1 | 2 | 3 | 4 | 5 |
| 9 | معدات الحماية الشخصية الأساسية مثل القفازات والاقنعة والمرايل الواقية كافية لتنفيذ الاجراءات بامان | 1 | 2 | 3 | 4 | 5 |
| 10 | | 1 | 2 | 3 | 4 | 5 |

## القسم الثالث : السلوكيات الامنه

**5. يرجى وضع دائرة حول الرقم المناسب الذي ينطبق عليك في بيئة العمل**

| أوافق بشدة | أوافق | محايد | أوافق | لاأوافق بشدة |
|---|---|---|---|---|
| 5 | 4 | 3 | 2 | 1 |

**في برنامج الرعاية الصحية المنزلية التي اعمل بها:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | اقوم باستخدام جميع ادوات السلامة (الوقائية) اللازمة لأداء عملي | 1 | 2 | 3 | 4 | 5 |
| 2 | اقوم بانجاز عملي متبعا سلوكيات السلامة. | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | أشعر بضرورة بذل جهود للحد من الحوادث في مكان العمل | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | | 1 | 2 | 3 | 4 | 5 |
| 7 | لاالتزم بقواعد وإجراءات السلامة الصحيحة من اجل انهاء العمل | 1 | 2 | 3 | 4 | 5 |
| 8 | | 1 | 2 | 3 | 4 | 5 |
| 9 | ابذل مزيدا من الجهد لتحسين السلامة في مكان العمل | 1 | 2 | 3 | 4 | 5 |
| 10 | اقوم طوعا بمهمات او انشطه تساعد على تحسين السلامة في بيئة العمل | 1 | 2 | 3 | 4 | 5 |
| 11 | أقوم بتشجع زملائي باستخدام اجراءات السلامة | 1 | 2 | 3 | 4 | 5 |
| 12 | | 1 | 2 | 3 | 4 | 5 |

Appendix E: Arabic SHCN Scale Post Revision

**عزيزي المشارك /عزيزني المشاركه**

السلام عليكم ورحمة الله وبركاته

تجري أ. سنية عبد الخالق، طالبة بمرحلة الدكتوراه في جامعة والدن في الولايات المتحدة بدراسة بحثية تركزعلى سلامة العاملين في مجال الرعاية الصحية وعنوانه "الارتباط بين سلامة بيئة العمل والإصابات المرتبطة بالعمل بين مقدمي الرعاية الصحية المنزلية". تهدف الدراسة إلى قياس العلاقة بين العوامل التنظيمية والبيئية وتأثيرها على سلوكيات السلامة عند التمريض وتعرضهم لإصابات في برامج الرعاية الصحية المنزلية.

تتكون الاستبيان من أربعة أجزاء، الجزء الأول البيانات الشخصية وألاخرى تتضمن بنودا تتعلق بسلامة المنظمة ، سلامة البيئة وسلوكيات السلامة المرتبطة بالرعاية الصحية المنزلية. امام كل بند خمسة خيارات تناسب المحور المحدد.
يرجى الإجابة على جميع البنود وفقا لوجهة نظرك . ستكون جميع المعلومات سرية وسوف تستخدم فقط لغرض هذا البحث.

شكرا لتعاونكم

اطيب التحيات،،،،

**الباحثة**
**أ. سنية عبد الخالق**
**برنامج الدكتوراه صحة عامه**
**جامعة والدن**

# استبانة "سلامة تمريض الرعاية المنزلية

**التاريخ : .....  .....**

- **هل شاركت في الزيارات المنزلية في ال 12 شهرا الماضية ؟**

**ضع(ي) دائرة (O ) حول الاجابة الصحيحة :  نعم  لا**

## اذا كانت اجابتك بنعم، استمري للاجابة على البنود التالية

### القسم الاول : البيانات الشخصية

**يرجى الاجابة على الاسئلة التالية :**

1. سمي وظيفتك الحالية : .....
2. ما عدد سنوات العمل في مهنة التمريض؟ ..... سنه
3. ماعدد سنوات العمل في الرعاية الصحية المنزلية ؟ ..... سنة
4. ماعمرك ؟ ..... سنه
5. ضع( ي) دائرة حول الجنس: 1. انثى 2. ذكر
6. ضع( ي) دائرة حول الجنسية 1. سعودي/ سعودية 2. غير سعودي / غير سعودية
7. ضع (ي) دائرة حول المؤهل العلمي : 1. دبلوم 2. بكالوريوس 3. دراسات عليا
8. خلال ال12 شهرا الماضية، هل حضرت دورة تدريبية في مجال السلامة؟
9. ضعي دائرة حول اجابتك 1. نعم 2. لا
10. ضع (ي) دائرة حول اللغات التي تتكلم(ين ) بها: 1. العربية 2. الانجليزية 3. العربية والانجليزية
11. مامعدل الزيارات المنزلية التي عادة ما تقوم (ين) بها في الأسبوع ؟ _____ زيارة**11.** خلال ال 12 شهرا الماضية، كم عدد الاصابات الجسدية التي تعرضت لها اثناء العمل ، مثل: الإصابات الحادة، السقوط ، الصدمات الجسدية ، آلام الظهر، وغيرها؟

..... اصابة

## القسم الثاني : العوامل التنظيمية

**البنود التالية تشير الى اداء الادارة والمشرفين بعملك.**
الإدارة العليا تعني المدير في رتبة أعلى ومسؤول عن الإدارات بأكملها أو المنظمة.
رئيسي: الشخص المسؤول المباشر للإشراف على الموظفين وأنشطتهم وتوجيههم لأداء العمل المعين.

**12. يرجى وضع دائرة حول الرقم الذي يشير درجة موافقتك مع كل بند :**

| لا أوافق بشدة | لا أوافق | محايد | أوافق | أوافق بشدة |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**في المنظمة الصحية التي اعمل بها:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | تعطي الاداره العليا موضوع السلامه اولوية عاليه | 1 | 2 | 3 | 4 | 5 |
| 2 | تقوم الإدارة العليا باجراء جولات وتقييم لسلامة بيئة العمل بشكل دوري | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | في عملي، البرامج التدريبية في مجال السلامه غير فاعلة | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | يكافيء رئيسي الموظفين عند الابلاغ عن ظروف غير امنه | 1 | 2 | 3 | 4 | 5 |
| 7 | | 1 | 2 | 3 | 4 | 5 |
| 8 | لايعطي رئيسي اي اهتمام عندما تكون سلامة الموظف في خطر | 1 | 2 | 3 | 4 | 5 |
| 9 | | 1 | 2 | 3 | 4 | 5 |
| 10 | يشيد رئيسي بالامتثال بأنظمة السلامة | 1 | 2 | 3 | 4 | 5 |
| 11 | | 1 | 2 | 3 | 4 | 5 |
| 12 | يطبق رئيسي إجراءات السلامة بحزم | 1 | 2 | 3 | 4 | 5 |
| 13 | | 1 | 2 | 3 | 4 | 5 |
| 14 | تشجع الادارة العليا جميع الموظفين للابلاغ عن مخاوف تتعلق السلامة. | 1 | 2 | 3 | 4 | 5 |

## القسم الثالث: العوامل البيئيه

**يتضمن هذا القسم بنودا ذو العلاقة بمنزل المريض والمواقع المحيطة به والرعاية المنزلية للمريض.**

**13. يرجى وضع دائرة (O) حول تكرار الظروف التي واجهتك اثناء زياراتك المنزلية :**

| | | ابدا 1 | نادرا 2 | احيانا 3 | غالبا 4 | دائما 5 |
|---|---|---|---|---|---|---|
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | | 1 | 2 | 3 | 4 | 5 |
| 3 | توفر وسهولة الحصول على موقف امن للسيارة | 1 | 2 | 3 | 4 | 5 |
| 4 | | 1 | 2 | 3 | 4 | 5 |
| 5 | المواصلات التي تستخدم للزيارات المنزلية امنه | 1 | 2 | 3 | 4 | 5 |

**14. في منزل المريض، ضع (ي) دائرة (O) حول تكرار الظروف التي واجهتك :**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | | 1 | 2 | 3 | 4 | 5 |
| 3 | مخاطرالدرج والارضيات الزلقة | 1 | 2 | 3 | 4 | 5 |
| 4 | | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | | 1 | 2 | 3 | 4 | 5 |

**15. الرعاية المنزلية :**

**يرجى وضع دائرة (O) حول تكرار السلوكيات والظروف التي واجهتك مرتبطة بالرعاية المنزلية.**

| | | ابدا | نادرا | احيانا | غالبا | دائما |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | | 1 | 2 | 3 | 4 | 5 |
| 7 | احضر تدريبات في السلامة للتقليص من المخاطر المحتملة في منزل المريض. | 1 | 2 | 3 | 4 | 5 |
| 8 | | 1 | 2 | 3 | 4 | 5 |
| 9 | | 1 | 2 | 3 | 4 | 5 |
| 10 | المواد مثل الضماد وانابيب الشفط غير كافية لتنفيذ إجراءات التمريض بأمان. | 1 | 2 | 3 | 4 | 5 |

## القسم الرابع : السلوكيات الامنه

**16. يرجى وضع دائرة(O) حول الرقم المناسب الذي يشير الى درجة موافقتك مع الجوانب المختلفة للسلوكيات والاتجاهات في مكان عملك.**

| لا أوافق بشدة | لا أوافق | محايد | أوافق | أوافق بشدة |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**في مكان عملي:**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | اقوم باستخدام جميع ادوات السلامة (الوقائية) اللازمة لأداء عملي | 1 | 2 | 3 | 4 | 5 |
| 2 | اقوم بانجاز عملي متبعا سلوكيات السلامة. | 1 | 2 | 3 | 4 | 5 |
| 3 | أشعر أن المحافظة على السلامة في جميع الأوقات غيرواقعي | 1 | 2 | 3 | 4 | 5 |
| 4 | أشعر بضرورة بذل الجهد للحد من الحوادث في مكان العمل | 1 | 2 | 3 | 4 | 5 |
| 5 | بالنسبة لي، تشجيع الاخرين لاتباع الاجراءات الامنه امر صعب | 1 | 2 | 3 | 4 | 5 |
| 6 | أشعرباهمية تعزيز برامج السلامة | 1 | 2 | 3 | 4 | 5 |
| 7 | احيد عن انظمة السلامة من اجل انهاء العمل | 1 | 2 | 3 | 4 | 5 |
| 8 | اتاكد من تقديم أعلى مستويات السلامة عند القيام بعملي | 1 | 2 | 3 | 4 | 5 |
| 9 | بالنسبة لي، بذل مزيدا من الجهد لتحسين السلامة في مكان العمل غير مجدي | 1 | 2 | 3 | 4 | 5 |
| 10 | اقوم طوعا بمهمات او انشطه تساعد على تحسين السلامة في العمل | 1 | 2 | 3 | 4 | 5 |
| 11 | أقوم بتشجع زملائي بسلامة العمل | 1 | 2 | 3 | 4 | 5 |
| 12 | اتبع الانظمة والاجراءات السلامة الصحيحة عند القيام بعملي | 1 | 2 | 3 | 4 | 5 |

**نشكركم لمساعدتكم وتعاونكم**

Appendix F: Final Version of the SHCN Questionnaire

**Dear participants**

**Peace upon you…**

Mrs. Sania Abdulkhalek, a doctoral degree candidate at Walden University in the U.S. conducts a research study focusing on health care workers safety, entitled " Association Between Work-Related Safety and Work-Related Injuries Among Home Health Care Providers." This study aims to know the relationship between organizational and environmental factors and their impact on the nurses' safety behaviors and their exposure to work injuries in home health care programs.

The questionnaire consists of four parts, the first part is personal data and the other includes statements related to safety organization, safety environment, and safety behaviors associated with home health care. In front of each item a scale of five options that suits the identified category.

Kindly, answer all the items according to your view. All information will be confidential and will be used only for this research.

Thank you for your cooperation

Best regards

Sincerely,,

Sania AbdulKhaleq
Doctoral Candidate in Public Health
Walden University

Safety Home Care Nursing Questionnaire

**Date:** ……..

- **Have you participated in home visits in the last 12 months?**

Circle (O) the correct answer: Yes No

If your answer is yes, please continue to answer the following items

***Section One : Personal Data.***

**Please answer the following questions:**

1. **Name your current position: ……..**
2. **How many years have you worked in nursing? ……** Years
3. **How long you have been working in home health care program? ……** Years
4. **What is your age: …….. Years**
5. **What is your gender: circle the answer** 1. Female 2. Male
6. **Circle your nationality:** 1. Saudi 2. Non Saudi
7. **Circle your qualification:** 1. Diploma Degree 2. BSN 3. Postgraduate
8. **In the past 12 months, did you attend staff development in safety issue**?
9. **Circle your answer** 1. Yes 2. No
10. **Circle your spoken languages:** 1. Arabic 2. English 3. Both
11. **During the past 12 months, how many physical injuries have you had during working time, such as: sharp injuries, falls, trauma, backache, and others**

…….. Injuries

***Section Two : Organization Factors***

12. Please circle (O) the number that indicates the degree of your agreement with each item:

| Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

These items indicate the performance of management and supervisors in your workplace.
Top management is the manager at higher rank responsible for the whole departments or the organization.
Supervisor is the direct/ immediate responsible person for overseeing the employees and their activities and directing them to perform the assigned work their activities and directing them to perform the assigned work

**In the health care setting, I work:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Top management has given the safety issue as a high priority | 1 | 2 | 3 | 4 | 5 |
| 2 | | 1 | 2 | 3 | 4 | 5 |
| 3 | Safety training helps the employee to assess workplace hazards. | 1 | 2 | 3 | 4 | 5 |
| 4 | Safety training programs in my workplace are ineffective | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | My supervisor acts quickly to correct safety problems. | 1 | 2 | 3 | 4 | 5 |
| 7 | My supervisor informs me of safety concerns and issue. | 1 | 2 | 3 | 4 | 5 |
| 8 | | 1 | 2 | 3 | 4 | 5 |
| 9 | My supervisor consults their employees on safety issues. | 1 | 2 | 3 | 4 | 5 |
| 10 | | 1 | 2 | 3 | 4 | 5 |

## Section Three : Environment Factors

This section includes items related to the patient's home and its surrounding areas, and patient home care.

**13. Please, circle (O) how frequently you experience the following conditions during your home visits:**

| | Never 1 | Rarely 2 | Sometimes 3 | Often 4 | Always 5 |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |

**14. In the patient's home, Circle (O) how frequently you experience the following conditions:**

| | Never 1 | Rarely 2 | Sometimes 3 | Often 4 | Always 5 |
|---|---|---|---|---|---|
| 1 | Patient's care area is untidy and messy | | | | |
| 2 | | | | | |
| 3 | Poorly ventilated patient's room | | | | |
| 4 | | | | | |

***Section Three : Environmental Factors***

**15. Home-based care: circle (O) how frequently you experience the behaviors and conditions associated with home care.**

| Never | Rarely | Sometimes | Often | Always |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**In my home care:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | | 1 | 2 | 3 | 4 | 5 |
| 2 | I work with health care providers to prepare a safe working area for the care of patients at home. | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | I feel insecure, when I am in the patient's home. | 1 | 2 | 3 | 4 | 5 |
| 5 | | 1 | 2 | 3 | 4 | 5 |
| 6 | I attend safety training to minimize the potential hazards in the client's home. | 1 | 2 | 3 | 4 | 5 |
| 7 | | 1 | 2 | 3 | 4 | 5 |
| 8 | Personal protective equipment such as gloves, masks, and protective apron are adequate to carry out procedures safely. | 1 | 2 | 3 | 4 | 5 |

***Section Four: Safety Behaviors***

**16. Please circle (O) the appropriate number that indicates your degree of agreement with different aspects of behaviors and attitude in your workplace.**

| Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**In my workplace:**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | I use all necessary safety (protective) items to do my job | 1 | 2 | 3 | 4 | 5 |
| 2 | I carry out my work in a safe manner. | 1 | 2 | 3 | 4 | 5 |
| 3 | | 1 | 2 | 3 | 4 | 5 |
| 4 | I feel, it is necessary to put efforts to reduce incidents at the workplace | 1 | 2 | 3 | 4 | 5 |
| 5 | I feel, it is important to promote safety programs | 1 | 2 | 3 | 4 | 5 |
| 6 | | 1 | 2 | 3 | 4 | 5 |
| 7 | I voluntarily carry out tasks or activities that help to improve workplace safety. | 1 | 2 | 3 | 4 | 5 |
| 8 | | 1 | 2 | 3 | 4 | 5 |
| 9 | I follow correct safety rules and procedures while carrying out my job | 1 | 2 | 3 | 4 | 5 |

**Thank you for your cooperation and assistance.**