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**College of Health
and Sport Sciences**



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Knowledge, Attitudes, and Barriers toward Prevention of Pressure Ulcer (PU) In Critical Areas: A Cross-Sectional Study

In Partial Fulfillment of the Requirement for the Degree of Master of
Science in Adult Health Nursing

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☐ Without making any changes to the thesis.

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Abstract

Background: Pressure Ulcer (PU) is a serious health condition that exhaust health care professionals, especially nurses. as prolonged hospitalization is a leading risk factor; however, PU is a preventable injury. Furthermore, Nurses have a crucial role in PU prevention and management, mainly by applying PU prevention and management clinical guidelines. The literature suggests that such implementation is affected by nurses' perception of PU. This study focused on three components of nurses' perception, including (1) knowledge regarding PU, (2) attitude toward PU, and (3) perceived barriers to PU prevention.

Aim: The study aimed to identify the level of knowledge and attitude toward PU Prevention and the perception of barriers to implementing PU prevention guidelines among nurses at Salmaniya Medical Complex (SMC).

Methodology: The study followed a descriptive cross-sectional design. The study was conducted at SMC and included 132 nurses from critical and non-critical working areas. A simple randomization method was used to select the study sample, and three calibrated questionnaires were used to assess the study variables: (1) Pressure Ulcer Knowledge Assessment Tool 2.0 (PUKAT 2.0), (2) Attitude towards Pressure Ulcer Prevention instrument (APuP), and (3) Pressure Injury Prevention Barriers (PIPB).

Results: Results showed that 12.1 % (n=16) of nurses had satisfactory knowledge about PU, and about 65.15 % (n=86) demonstrated a positive attitude toward PU prevention. There was no statistically significant difference between critical and non-critical care nurses regarding knowledge of PU (p-value = 0.84) or attitude toward PU (p-value =0.45). The lack of devices was the most reported barrier to PU prevention, followed by uncooperative patient families.

Conclusion: Nurses showed inadequate knowledge regarding PU, especially in terms of PU prevention; however, nurses have demonstrated a positive attitude toward PU and reported a low number of barriers to PU prevention; subsequently, a structured training program may elevate nurses' knowledge and improve care.

Keywords: Pressure Ulcer; Knowledge; Attitudes; Prevention & control; Nurses.

Publications

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Dedication

This study is dedicated to.

➤ *My dear family*

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LIST OF ABBREVIATIONS

AHRQ	Agency for Healthcare Research and Quality
ANA	American Nurses Association
APuP	Attitude toward Pressure ulcer Prevention instrument
ASDAR	Aged-Standardized Disability Adjusted Life Years (DALYs) Rate
ASDR	Aged-Standardized Death Rate
CCU	Cardiac Care Unit
DALYs	Disability Adjusted Life Years
EAPC	Estimated Annual Percentage of Change
EBP	Evidenced-Based Practice
EPUAP	European Pressure Ulcer Advisory Panel
ER	Emergency Room
ICC	Infraclass Correlation Coefficient
ICU	Intensive Care Unit
IHI	Institute for Healthcare Improvement
KMO	Kaiser–Meyer–Olkin
MOH	Ministry of Health
NICE	National Institute for Health and Care Excellence
NPIAP	National Pressure Injury Advisory Panel
PIPB	Pressure Injury Prevention Barriers
PIPK	Pressure Injury Prevention Knowledge
PPKUT	Pieper Pressure Ulcer Knowledge
PU	Pressure Ulcer
PUKAT	Pressure Ulcer Knowledge Assessment Tool
PUKAT 2.0	Pressure Ulcer Knowledge Assessment Tool 2.0
PZ-PUKT	Pieper-Zulkowski Pressure Ulcer Knowledge test
SMC	Salmaniya Medical Complex
UOB	University of Bahrain
WHO	World Health Organization
WOCN	Wound, Ostomy, and Continence Nurses

Chapter I

Introduction

INTRODUCTION

Chapter Overview

This chapter presents an introduction to the concept of Pressure Ulcer (PU) and its history; it cites the current statistics regarding pressure ulcer prevalence and estimated cost; furthermore, it highlights the importance of the nursing role in preventing and managing PU and explains the significance of the study. This chapter introduces the context and the definitions of the main study variables. Furthermore, it states the study problem statement, aim, and research questions.

Introduction and Background

Pressure Ulcer (PU) prevention and management depends on nursing interventions (Morton & Fontaine, 2018) , especially in Intensive Care Unit (ICU), where the risk for PU is higher (Moore, 2013). Because of the profound role of nurses in preventing PU, many healthcare systems consider PU prevention one of the most sensitive and reliable nursing performance indicators (Foster & Prevost, 2012; Koch et al., 2020).

The first recorded case of PU was for an elderly female from the XXI Dynasty in ancient Egypt, where the mummy of that female had an extended PU over the buttocks and shoulders (Rowling, 1961). The authors of the previous article used the term Bedsore, a term used by Florence Nightingale in her book notes on nursing, first published in 1859 (Nightingale, 1992) and has been one of the standard terms that described this condition.

Even though the term Bedsore dates to the 1800s, the oldest term used to indicate this condition was “Decubitus,” which dates to 1777; this term implies that the wounds were developed due to lying in bed; later, many other terms were used, like “Ischemic Ulcer” and “Bedsore

Mechanica”. In the 1980s, the term “Pressure Sore” was used to emphasize the disassociation between staying in bed and the sore. The term “Pressure Ulcer” appeared in the 1990s and has been widely used since then; however, the term “Ulcer” does not cover the first stage of PU, where the skin is unbroken. Based on that, the term “Pressure Injury” was promoted by many entities interested in wound care, including the US National Pressure Injury Advisory Panel, and even was officially adopted by some countries (Kottner et al., 2019). For the sake of this thesis, the term Pressure Ulcer is used to be consistent with the tool used for the data collection. All previous terms referred to the same phenomena, described as “localized damage to the skin and/or underlying tissue, as a result of pressure or pressure in combination with shear. Pressure injuries usually occur over a bony prominence but may also be related to a medical device or other objects.” (Kottner et al., 2019).

Globally, PU accounted for 3,170,796 new cases in 2019, with an incidence rate of 41.8 per 100,000 population (Zhang et al., 2021). The highest incidence rate was reported from high-income countries in North America at 128 per 100,000 population. Whereas the United States declared the highest number of incidences among all other countries (Zhang et al., 2021), where the estimations indicate the death of 60,000 each year due to PU (Agency for Healthcare Research and Quality [AHRQ], 2014). Central and South Asia had the lowest incidence rates at 5.8 and 6.9 per 100,000. (Zhang et al., 2021).

The incidence of PU is associated with short-term mortality, increased length of hospitalization by almost ten days, and could be associated with decreased life span (Ahtiala et al., 2020); especially for older adults, the mortality rate may reach up to 60 % (Lyder & Ayello, 2008). However, the mortality rates have been decreasing, which could be explained by implementing patient safety practices (Verdú-Soriano et al., 2021). During the past 25 years, the prevalence

of PU among patients admitted to ICU decreased from 50 % to 10 % (Ahtiala et al., 2020). This reduction could reflect the decrease in prevalence and incidence among the general population, which decreased by around 10 % from 1990 to 2019 (Zhang et al., 2021).

The prevalence of PU among patients admitted to secondary healthcare facilities is 4.5 % in general admission, but this percentage increases to 10-50 % among patients admitted to ICU (Foster & Prevost, 2012; Moore, 2013). A recent systemic review suggests that the prevalence of PU is much higher, with around 10 % of all adults admitted to hospitals (Z. Li et al., 2020). Another systematic review focused on critical care units reported slightly higher numbers, as it reported an incidence rate of 12 % among hospitalized patients in different clinical areas. In ICU, the incidence rate was 13.7 %, around 5% less than the incidence rate in the orthopedic department, where the highest rate was reported (Afzali Borojeny et al., 2020).

A systematic review dedicated to European countries found an overall prevalence rate of 13.7 % among all hospitalized patients, where 32.35 % were stage I, 27.59 % were stage II, 13.1% were stage III, and 8.0% were stage IV (Moore et al., 2019).

With such a high incidence rate, resources are continually depleted to prevent and manage PU. Whereas the average daily cost for PU prevention is €7.88 for each admitted patient, and the average cost of treatment is €77.36 per admitted patient per day (Demarré, Verhaeghe, et al., 2015), notice that the cost of therapy almost ten times the cost of prevention. Estimations from the US indicate that an episode of PU may cost from 20,900 \$ to 151,700 \$, whereas the overall cost of PU is \$9.1-\$11.6 billion per year (AHRQ, 2014).

The prevention of PU is considered one of the main goals for patient safety (The Joint Commission, 2020). PU is described as a preventable injury to the skin, with or without the

involvement of underlying tissues, due to physical pressure that could be associated with friction movement, which usually occurs over a bony prominence (Berman et al., 2016).

The scope and the standard of Nursing Practice originated from the definition of nursing as “Protection, promotion, and optimization of health and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups, communities, and populations” (American Nurses Association [ANA], 2015).

The previous definition emphasizes the importance of nursing practice in optimizing health services that is because nurses and midwives are the largest health professional group, which serves on the frontline and in constant contact with the clients, as highlighted by the Health2020 strategy promoted by the World Health Organization (World Health Organization [WHO], 2015).

The concept of enhancing nursing care outcomes by basing nursing practice on thorough evidence began with Florence Nightingale. She used experiments to generate evidence that would guide nursing practice early in the 1800s (Mackey & Bassendowski, 2017); since then, Evidenced-Based Practice (EBP) has been embedded in nursing practice and education (Berman et al., 2016).

An elevated level of knowledge and positive attitudes toward EBP has been proven to promote the implementation of EBP in various aspects of nursing practice, including PU prevention.

One recognized example of an evidence-based guideline for PU prevention is the Institute for Healthcare Improvement (IHI) Pressure Ulcer Prevention Guidelines (Berman et al., 2016). Where its implementation, in companion with other guidelines, has proven to be effective in

reducing the incidence of PU by 80 % among generally hospitalized patients (Gupta et al., 2020); the reduction in PU prevalence was much less among ICU patients, around 8 %, but still a clinically significant reduction (Cruz, 2020).

Other examples of PU prevention Evidence-Based Guidelines include (1) Pressure Ulcer Risk Assessment and Prevention: Comparative Effectiveness Executive Summary (AHRQ, 2014); (2) Pressure Ulcers: prevention and Management Clinical Guideline (National Institute for Health and Care Excellence [NICE], 2014); (3) Wound, Ostomy and Continence Nurses (WOCN) 2016 Guideline for Prevention and Management of Pressure Injuries (Ulcers) (Wound, Ostomy and Continence Nurses [WOCN], 2017); and (4) Prevention and Treatment of Pressure Ulcer/Injuries: Clinical Practice Guideline (National Pressure Injury Advisory Panel [NPIAP], 2019). Despite the importance of all the previous guidelines and the different use for each of them, the last two are considered the gold standard for PU prevention (Morton & Fontaine, 2018).

The Pressure Ulcer Risk Assessment and Prevention: Comparative Effectiveness Executive Summary, issued by AHRQ in 2013, along with the Preventing Pressure Ulcers in Hospitals program issued by the same agency in 2012 and reviewed in 2014, concentrates on quality measuring and improvement. Moreover, it provides a guideline for implementing and maintaining the practices. For practicing guidelines, AHRQ recommended the WONC guideline for the prevention and management of pressure ulcers (injuries) (AHRQ, 2014). WONC guideline provides a collection of clinical practices along with the evidence on the topic of preventing and treating PU and the outcomes to be considered for evaluation (Wound, Ostomy, and Continence Nurses Society-Wound Guidelines Task Force, 2017).

Unlike the WONC guidelines, the NICE pressure ulcer prevention and management guidelines provide a detailed recommendation for risk assessment, skin assessment, care planning, repositioning, prevention, and management for various age groups. Moreover, the NICE guideline suggests exploring some research areas (NICE, 2014).

The Prevention and Treatment of Pressure Ulcer/Injuries: Clinical Practice Guideline was issued by European Pressure Ulcer Advisory Panel (EPUAP), National Pressure Injury Advisory Panel (NPIAP), and Pan Pacific Pressure Injury Alliance in 2019 in around 400 pages, relaying over 500 references. This guideline provides the most comprehensive guidelines for preventing and treating PU, covers all age groups like NICE, and includes the know-how to implement the guidelines along with the quality indicators to be followed. Moreover, it provides guidelines for specific populations, including patients in critical care and the operating room (NPIAP, 2019).

The AHRQ published a guideline to improve PU prevention and management in hospitals based on several interactive steps that start with assessing the readiness to change. Where it cited improving knowledge and attitude as essential factors for positive change, moreover, it stressed the importance of evaluating knowledge and attitude before designing the educational program, so the hospital management can focus on the training on the specific needs, which could be unexpected (AHRQ, 2014).

Context of the Study

The Kingdom of Bahrain is located in the Arabian Gulf, on an archipelago of 33 islands of about 780 square kilometers. It is inhabited by 1.56 million, whereas 49 % are Bahraini citizens and 51 % are foreigners. Bahrain has a universal healthcare system that serves both Bahrainis and

non-Bahraini (Pedapenki & Madan, 2022). According to international statistics, Bahrain has recorded a relatively low mortality rate of 2 - 2.2 death per 1000 citizens per year between the years 2015 to 2020 (Bahrain Country Overview | World Health Organization, n.d.; Bahrain - Death Rate 2020, n.d.; World Bank Open Data, n.d.). Compared to the global rate recorded of 8.0 death per 1000 citizens per year in 2020, according to the world bank (Death Rate, Crude (per 1,000 People) | Data, n.d.). Moreover, the comprehensive healthcare system, which was founded in the 1960s, contributed to an increase in the life expectancy for Bahrainis, as it reached 75 years for males and 77 years for females (Bahrain Country Overview | World Health Organization, n.d.), compared to a global life expectancy of 70.85 for male and 75.87 for females (Life Expectancy at Birth (Years), n.d.).

In Bahrain, the prevalence of PU is 16 % of hospitalized patients (Kadhom & Alqadi, 2017). There is no published data on the incidence rate of PU in Bahrain; however, the region where the Kingdom of Bahrain is located, namely the Middle East and North Africa (MENA), has an incidence rate of 15.9 per 1000,000 population (Zhang et al., 2021). Furthermore, the Kingdom of Bahrain has a relatively increased Estimated Annual Percentage of Change (EAPC) for Aged-Standardized Death Rate (ASDR) and for Aged-Standardized Disability Adjusted Life Years (DALYs) Rate (ASDAR) (Yakup et al., 2022).

Nurses have a critical role in preventing PU; however, there is a lack of data on the nurses' perception of PU regarding knowledge, attitude, and barriers to prevention. This study aimed to provide such data, which could be used to develop an efficient training program for nurses.

Standnyk et al. (2018) indicated that educational programs, a positive attitude, and an elevated level of knowledge would improve the implementation of PU evidence-based practice.

However, in the current study context, the available training and educational activities regarding the utilization of nurses of prevention and management guidelines remain unclear.

Problem Statement

In Bahrain, there is a dearth of data informing about nurses' knowledge and practice toward the prevention of PU. Understanding the level of knowledge, attitude, and perceived barriers to PU prevention in the Kingdom of Bahrain is essential in managing PU according to evidence-based practice.

Research Significance

EBP education programs are crucial to improving knowledge, attitudes, and behavior toward EBP (Hsieh & Chen, 2020; Koota et al., 2021; Sim et al., 2016; Stokke et al., 2014). Nurses' knowledge and attitude toward PU prevention affect the implementation of the PU prevention evidence-based guideline (Murugiah et al., 2020; Seo & Roh, 2020; Stadnyk et al., 2018; Ursavas & Is,eri, 2020; Waugh, 2014).

Furthermore, positive attitudes and education programs on EBP have proven to promote the implementation of such EBP among nurses (Hsieh & Chen, 2020; Sim, Jang, & Kim, 2016; Stokke et al., 2014), which ultimately improves patients' outcomes (Emparanza et al., 2015; Wu et al., 2018). Additionally, elevated knowledge and a positive attitude would improve the implementation of PU prevention guidelines and vice versa (Sving et al., 2016). Moreover, implementing Evidenced-based guidelines would decrease the prevalence rate of PU (Beal & Smith, 2016; Martin et al., 2017) and subsequently, the cost (Demarré, Lancker, et al., 2015; Demarré, Verhaeghe, et al., 2015).

There is a need in Bahrain to develop and implement PU prevention training programs (Kadhom & Alqadi, 2017); develop an effective and efficient education program;

and evaluate the learning needs, skills, and attitudes toward the subject at hand (Mohamadi et al., 2019).

Evidence-based PU prevention guidelines are established and accessible; however, PU prevalence rates are still high (Waugh, 2014), possibly due to poor implementation of the established PU prevention guidelines (Demarré, Verhaeghe, et al., 2015). Many factors contributed to this situation, including insufficient knowledge and negative attitude (Stadnyk et al., 2018), a problem that could be solved by proper training programs (Murugiah et al., 2020; Seo & Roh, 2020; Ursavas & Isleri, 2020)

Guided training and educational program have proven to be effective in improving the knowledge and attitude of nurses toward PU prevention and management and reducing PU prevalence (Awali et al., 2018; Sardari et al., 2019; Lin et al., 2020).

Aim of the Study

This study aimed to identify the level of knowledge and attitude toward PU Prevention, as well as the perception of barriers to implementing PU prevention guidelines among nurses in critical areas at SMC.

The study objectives were to:

- (1) Assess nurses' knowledge and attitude about Pressure Ulcer prevention and practices;

- (2) Identify the barriers to implementing PU prevention guidelines as perceived by nurses in critical areas; and
- (3) Compare the difference between the knowledge and attitude toward PU Prevention and the perception of barriers to implementing PU prevention guidelines among nurses in critical and non-critical areas.

Conceptual and Operational Definitions of the Study

The main study variables are Nursing knowledge, attitude, and barriers to PU prevention.

Nursing Knowledge

Conceptual definition:

Nursing knowledge is defined as “the means by which the whole purpose of caring for patients is achieved” (Hall, 2005).

Operational definition:

In this study, nursing knowledge of PU has the following operational definition: it is the required knowledge to prevent PU as measured by the updated version of the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0) (Manderlier et al., 2017).

Nursing Attitude

Conceptual definition:

Attitude has been defined as the “organization of interrelated beliefs” (Clarkson et al., 2019, p. 378).

Operational definition:

Attitude toward PU prevention is the construction of the collective attitudes toward five aspects of PU prevention, which are: (1) personal competency to prevent pressure ulcers; (2) priority of

pressure ulcer prevention; (3) the impact of pressure ulcers; (4) personal responsibility in pressure ulcer prevention; and (5) confidence in the effectiveness of prevention measured by Attitude towards Pressure ulcer Prevention instrument (APuP) (Beeckman et al., 2010).

Barriers to PU Prevention

Conceptual definition:

Barriers to PU prevention are “situations and circumstances that potentially could prevent nursing professionals from providing the standard of care for the prevention of pressure Injuries, as recommended by guidelines” (Lopez-Franco et al., 2020).

Operational definition:

This study used the Pressure Injury Prevention Barriers (PIPB) questionnaire; according to it, any situation or circumstance marked by the respondent as frequently or often preventing PU prevention was considered a barrier (Lopez-Franco et al., 2020).

Research Questions

- (1) What is the level of knowledge regarding PU prevention practice among critical care nurses in the Salmanyia medical complex?
- (2) What is the attitude toward PU prevention practices among critical care nurses in Salmaniya medical complex?
- (3) What are the barriers that prevent the implementation of PU prevention practices from critical areas nurses' perspectives at Salmanyia medical complex?
- (4) Is there a difference between critical areas and non-critical areas nurses in terms of knowledge and attitude toward PU Prevention, as well as the perception of barriers to implementing PU prevention guidelines?

Chapter II

Literature Review

LITERATURE REVIEW

Chapter Overview

This chapter aims to explore the current status of the main study variables; the purpose of this literature review is to (1) identify the literature related to the attitude and the level of knowledge regarding PU among nurses; (2) Identify the gap of knowledge in the previous work regarding the PU prevention and management EBP knowledge and attitudes among nurses, especially in Bahrain; and (3) list the most common barriers to PU prevention as reported by nurses.

PU Overview

PU is a preventable injury where the damage occurs due to pressure, based on the degree of that damage, the national pressure ulcer advisory panel classified PU into four stages or grades: the first stage, “stage I,” indicates underlying damage where the skin is still intact; the second stage, “stage II” refers to superficial ulceration of the skin that did not pass the dermis; the third stage “stage III” represent more deep ulceration that passed the dermis and reaches to the adipose tissue; and finally the fourth stage “stage IV” where the wound passed all layers of the skin and reached the underlying tissues (Edsberg et al., 2016; Kottner et al., 2020).

The literature suggests that decreased level of knowledge regarding PU and PU prevention may negatively influences the application of PU prevention and treatment guidelines (Sengul & Karadag, 2020). According to Manderlier et al., (2017), the domains of knowledge necessary for nurses includes risk assessment, so nurse needs to be able to assess the risk; and identify the risk factors including prolongate hospitalization, advanced age, and decreased neurosensory

functions. Furthermore, for risk assessment, nurses are required to identify the etiology of PU and how it develops especially in variable patients' groups like elderly and immobile patients. Moreover, nurses need to be aware of the different PU prevention and treatment procedures, including repositioning and applying lubricants; such procedures may prevent or limit the development of PU complications which include depression, skin bacterial infection, pain, osteomyelitis, sepsis, and death (Afzali Borojeny et al., 2020).

PU Prevention Knowledge and attitudes

Several studies were conducted to measure the knowledge and attitude of PU within the nursing community, starting with nursing students. For example, two studies were conducted in Australia and Italy using validated instruments, PUKAT 2.0 and APuP, concluded that nursing students have a low level of knowledge and a positive attitude (Simonetti et al., 2015; Usher et al., 2018). .

Moreover, it concluded that education level and clinical experience could affect knowledge and attitude and found a weak correlation between knowledge and attitude (Simonetti et al., 2015). The lack of knowledge associated with a positive attitude continues to be the dominant result of studies conducted on working nurses. Including a study conducted in Belgium; that found a positive correlation between the implementation of evidence-based guidelines and attitude toward PU prevention. Participants were randomly selected for this study, which may affect their willingness to complete the questionnaire; moreover, it could push them to provide socially accepted answers; another limitation of that study is that it followed a cross-sectional design (Beeckman et al., 2011).

A study in Sweden followed a quasi-experimental clustered pre-and post-test design had reached similar results. The researchers found a positive effect of repeated quality measures on the attitude and knowledge of PU prevention (Sving et al., 2016).

More recent studies agreed with the previous findings that nurses have insufficient knowledge and a positive attitude; for example, a study conducted in Jordan revealed a decreased level of knowledge among Critical Care Nurses associated with a positive attitude (Batiha, 2018). Seo and Roh (2020) reached similar results of a low level of knowledge and positive attitude; however, this study proves that training can improve knowledge. Further studies confirmed the previous results regarding insufficient knowledge, however, it revealed variant results regarding attitude where it concluded that nurses have an unsatisfactory attitude toward PU prevention. Moreover, this study shed light on the weakest points of knowledge to be the knowledge of etiology and development and the knowledge of risk assessment (Halász et al., 2021). De Meyer et al., (2019) confirmed that Knowledge of etiology and development besides knowledge of prevention, are the weakest points for knowledge; this study also confirmed the finding of previous research in Ballgame, which concluded that nurses have an unsatisfactory level of knowledge. A negative attitude was also reported in one study conducted in Africa; however, for this particular study, the negative attitude could be linked to the high number of reported barriers to PU prevention (Etafa et al., 2018).

In contrast with the previous studies, a study conducted in China demonstrated that Chinese nurses' attitudes and knowledge of PU prevention are unsatisfactory; however, this study stressed the role of continuous training in boosting knowledge and attitude toward PU prevention (Jiang et al., 2020). Furthermore, a meta-analysis from Ethiopia reported a low level of knowledge among nurses and stressed the value of continuous training (Gedamu et al., 2021).

In addition to the previous studies, many other publications supported the claim that training and education would promote knowledge and attitude toward PU prevention (Delmore et al., 2018; Seo & Roh, 2020; Ursavas & İleri, 2020).

Regarding nurses working in critical care units, an Iranian study concluded that ICU nurses have a low level of knowledge associated with a moderate to favorable attitude (Tirgari et al., 2018). Those results were supported by the results of Khojastehfar et al. (2020), who found that the majority of ICU nurses did not reach a favorable knowledge or attitude. Whereas, Mäkinen et al. (2020) declared that ER healthcare professionals in Sweden and Finland had an elevated level of knowledge associated with a positive attitude.

In general, positivity was the dominant direction of nurses' attitudes toward PU prevention. However, nurses could not transmit such a positive attitude into real-world measurements to prevent PU (Avsar et al., 2019). Regarding the level of knowledge, according to a systemic review published in 2018, almost all reviewed studies reported that the majority of nurses have an unsatisfactory level of knowledge, with PU prevention being the weakest point, as concluded by Dalvand et al. (2018). and recently confirmed by Rodríguez & Gamboa, (2020).

However, there were a few exceptions, including Liu et al. (2016), who reported that nurses have a satisfactory level of knowledge. However, Liu et al. followed a convenient sampling method from an educational hospital; and designed the study to evaluate the validity of a translated instrument rather than to assess the level of knowledge (Liu et al., 2016). Moreover, nurses in teaching hospitals may have a relatively increased level of knowledge (Gedamu et al., 2021).

In summary, the literature review indicated that most nurses have insufficient knowledge and a positive attitude regarding PU. Moreover, the literature showed that the weak point of knowledge was related to PU prevention. However, the level of knowledge could be improved by training. The literature indicated that an elevated level of knowledge is associated with a positive attitude, a high level of education, and extended experience; furthermore, it suggested that nurses in critical areas have a higher level of knowledge.

Factors Affecting Knowledge and Attitude of PU Prevention Guidelines

In addition to training and education, where higher education is associated with an elevated level of knowledge among working nurses (Fulbrook et al., 2019; Rodríguez & Gamboa, 2020), the following factors would affect knowledge and attitude toward PU prevention which include: (1) gender, where female nurses are more knowledgeable; (2) work experience, which has a positive effect on knowledge (Fulbrook et al., 2019), and attitude; (3) working in ICU, which also has a positive effect on knowledge and attitude; (5) working hours, which does not affect the level of knowledge among nurses. However, a positive attitude is more dominant among nurses who works more than 50 hours a week (Khojastehfar et al., 2020); and (6) level of education, which directly affect the level of knowledge (Halász et al., 2021; Murugiah et al., 2020).

Furthermore, Fulbrook et al., (2019). concluded that, in addition to the experience, role, and qualification of nurses, access to current sources of information affects the level of knowledge, where nurses who have access to updated PU prevention guidelines are expected to have a higher level of knowledge

The previously mentioned associations were confirmed recently as some older studies suggested either weak or no effects of experience and education on the level of knowledge (Pieper &

Mattern, 1997); those results were supported by Chianca et al. (2010), who conducted a study in Brazil reported a weak negative relationship; and the results was in consistence with other studies in terms of reporting a deficit of knowledge among nurses. In addition to the previous factors, some studies suggested a positive correlation between the level of knowledge and attitude on one side and the implementation of PU prevention guidelines on the other (Rodríguez & Gamboa, 2020).

Regarding the institution's role, training has proven to positively affect the knowledge level (Barakat-Johnson et al., 2019). Institutions may concentrate on training and sharpening the skills of nurses to decrease the prevalence of PU. A quantitative quasi-experimental design one group pre-posttest presented evidence that implementing an educational program is significantly associated with improved knowledge, attitude, and practice. Whereas PU knowledge means score improved from (74.04 ± 13.49) to (95.03 ± 2.32) , attitude improved from (41.86 ± 4.767) to (47.05 ± 2.935) , and performance from (66.7 ± 2.983) to (82.0 ± 1.719) after four weeks of the training of 100 nurses (Awali et al., 2018).

Moreover, a performance-focused experimental pre-test-post-test study was conducted over two groups, control and interventional. The study showed that the interventional group, which was exposed to guided training, showed performance score improvement from a mean performance score of (57.69 ± 10.13) to (86.28 ± 6.19) ; the performance was measured by specialists directly and indirectly (Sardari et al., 2019).

The guided educational program is associated with improved knowledge, attitude, and performance; moreover, it is also associated with improved patient outcomes. A systematic review published in 2020 reviewed 21 publications on the efficacy of multiple-component PU

prevention, and management found that staff education is an essential component of such programs. Furthermore, it found that all strategies that reach statistical significance reduction in PU prevalence have incorporated staff education in their strategies (Lin et al., 2020).

Barriers to Implementation of PU Prevention Guidelines

Despite the fact that most nurses demonstrate positive attitudes; the knowledge deficit, the shortage of staff, and lack of time prevent the translation of such positive attitudes to practice (Avsar et al., 2019; Moore & Price, 2004). Other barriers to implementing PU prevention guidelines are patient-related situations, like unstable patients, and the lack of staff, time, aids, and equipment. Those barriers were detected early in a paper published in 2004 based on a cross-sectional survey, where the lack of staff followed by the lack of time were the most frequently reported barriers (Moore & Price, 2004).

Qaddumi & Khawaldeh (2014) reported that lack of time and staff as the most frequent barrier to PU prevention and management, followed by unstable patient conditions. The majority of participants in this study did not recognize knowledge deficit as a barrier, although this study indicated that nurses have insufficient knowledge of PU (Qaddumi & Khawaldeh, 2014).

In consistence with the previous study, A cross-sectional survey carried out in Ethiopia reported the lack of time and staff as the most recognized barriers, as they were reported by 83.1 % of staff nurses; followed by the lack of equipment, which was reported by 67.7 % of the participants (Etafa et al., 2018). However, Etafa et al. (2018) added the following to the barriers to PU prevention: (1) insufficient training, (2) low level of job satisfaction, (3) the presence of other priorities, and (4) lack of standard PU prevention guideline

The previously mentioned barriers were also cited by a qualitative study designed to explore nurses' perception of PU prevention and management in Australia; this study suggested that those barriers originated from the "competing demands in a complex clinical setting." Moreover, Barakat-Johnson et al. (2019) emphasized the importance of a sufficient level of knowledge and skills in improving the quality of PU prevention and management based on the fact that insufficient training is considered a barrier, where the role of the institution emerges to support the efforts of PU prevention and management (Barakat-Johnson et al., 2019).

Despite the fact that lack of knowledge was not reported as a barrier by the nurses in the previous publications, the gap of knowledge was recognized as a main barrier to PU prevention by the PU prevention implementation project team, which was assigned to evaluate a residency nursing scholar program created by the Joint Commission Resources, which focused on PU prevention. In addition to insufficient training and education, the project team mentioned the insufficient participation of doctors and assistant nurses in PU prevention, insufficient communication plans, and lack of quality improvement measures (Jankowski & Nadzam, 2011).

An Ethiopian study reported the lack of opportunity to update knowledge as a barrier to PU prevention by nurses as it was mentioned as a barrier by 42 % of the participant, followed by a lack of appropriate devices, which was cited by 55.2 % of the participants, lack of staff and time which was mentioned by 54.7 %; lack of training, which was reported by 51.9 %, lack of multidisciplinary involvement, mentioned by 47.6 %, special patients situation like uncooperative patients, cited by 43.9 %, and lack of updated guideline, mentioned by 42.5% (Ebi et al., 2019).

Mwebaza et al. (2014), who used a similar instrument to list the nurses' perceived barriers, concluded that the most common barrier recognized by nurses was the heavy workload and shortage of staff, followed by a lack of appropriate devices, uncooperative patients, and lack of universal guidelines

In summary, nurses recognize several barriers to PU prevention guideline implementations. A leading challenge reported by nurses was the lack of time assigned for PU prevention; some studies expressed this challenge differently, for example, the heavy workload. Other challenges mentioned by nurses included (1) shortage of staff, (2) insufficient specialized devices, like pressure-releasing mattresses, (3) insufficient training, (4) low level of job satisfaction, (5) the presence of other priorities, (6) patient-related situations like severely ill patients, (7) lack of universal guideline, and (8) inadequate involvement of other health care workers. The majority of nurses lack knowledge regarding PU. However, nurses generally do not recognize the lack of knowledge as a barrier.

In Bahrain, there is a lack of studies investigating nurses' perceptions of PU; however, two studies tackled the issue of PU prevention. The first study investigated the prevalence of PU in Bahrain hospitals and concluded that the prevalence of PU among patients who are admitted to Bahrain hospitals is 16%. According to Kadhom & Alqadi (2017), around 65% of the patients were admitted without going through risk assessment, demonstrating the need for better nursing training (Kadhom & Alqadi, 2017). The second publication presented PU as one of the health care issues in a long-term care facility. It demonstrates the consequences of untreated PU and highlights the role of nurses as team members in managing PU (Salmana et al., 2014).

Literature Review Summary

Generally, nurses have a low knowledge level and a positive attitude toward PU prevention. The weakest point of knowledge is PU prevention. Nurses' attitude and knowledge could be improved by focused training. Other factors affecting nurses' knowledge and attitude include education, gender, experience, working setting, and working hours.

The positive attitude indicates the willingness to learn and apply the PU prevention guideline; however, nurses recognized several barriers to such implementation, mainly the shortage of time, staff, and equipment. Furthermore, despite its prevalence, nurses do not recognize poor knowledge as a barrier.

Bahrain has a limited number of publications on that matter, where their knowledge and attitude on PU prevention were studied, nor the nurses' perceived barriers to PU prevention guideline implementation. This gap knowledge about nurses' knowledge, attitudes, perceived barriers, and practice in managing PU will be filled by conducting this study and presenting results pertaining to the context of Bahrain and nurses involved in the care of the patient with PU. The results of this study intend to improve the practice and align the practice with Evidence-based guidelines about PU.

Chapter III

Materials and Methods

MATERIALS AND METHODS

This work intended to describe the nurses' perception of the phenomena of PU in different working environments. Data were collected and analyzed on three dimensions of perception: (1) knowledge, (2) attitudes, and (3) perception of barriers to practice. This chapter describes the methodology used to select the study sample, in addition to methods used to collect, structure, and analyze the data in terms of (1) Research design, (2) Study setting, (3) Population, sample, and sampling technique, (4) Measurement tools, (5) Data collection procedures, (6) Ethical consideration and (7) Statistical analysis.

MATERIALS

Research Design

The study followed a descriptive, cross-sectional design in which data is examined at a particular point in time. For this research, each participant completed the study questionnaire only once. The cross-sectional design was chosen for this research because of its exploratory nature, where there is no intervention or intention to study causal relationships, so there is no need to pre-post examine the study variables. Moreover, the cross-sectional design is considered to explore relationships, correlations, and differences (Polit & Beck, 2017).

The collected data was used to (1) present the status of nurses' knowledge and attitude on PU prevention practice; (2) compare the level of knowledge and attitudes among nurses in different critical and non-critical settings, and (3) define the barriers for the implementation of PU prevention evidenced-based guidelines, from nurse's perspective.

Settings

The study was conducted at SMC, which contains one of the largest public, multi-specialty hospitals in Bahrain (Abuzeyad et al., 2018). SMC provides emergency, secondary, and tertiary health care for Bahraini and non-Bahraini residents through a total of fifty wards containing around one thousand beds. MOH statistics stated the number of patients admitted to SMC only in 2019 as forty-seven thousand in various departments (Quality Control Unit [SMC], 2001; MOH, 2021). Furthermore, SMC serves as a learning, training, and research center for health professionals and students (Ministry of Health [MOH], 2021). The study included nurses from different working areas, including critical and non-critical areas.

Population, Sample

The study population included all staff nurses in SMC medical-surgical wards and critical areas, including Cardiac Care Unit (CCU), Medical and Surgical Intensive Care Units (ICU), Emergency Room (ER), and the burn unit. According to the latest statistics published by MOH (2021), that by 2019 the department of nursing services at SMC included two thousand eleven employees out of a total of three thousand four hundred and seventeen employees at SMC, which accounted for almost 59% of the total workforce; of those, there are 1725 working nurses (MOH-Human Resources, 2021). The study targeted all eligible nurses from different units and followed simple randomization to identify the study sample via random number tables.

Sample Size

The research followed a cross-sectional descriptive design, which concentrated on two quantitative variables: (1) nurses' attitudes measured by Attitude Toward Pressure ulcer

Prevention instrument (APuP), (Beeckman et al., 2010); and (2) nurses' knowledge of PU measured by the updated version of Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0), (Manderlier et al., 2017).

Based on that, the following formula will be used to determine the sample size (Charan & Biswas, 2013).

$$\text{Sample size} = \frac{((Z(1 - \alpha/2))^2) SD^2}{d^2}$$

$Z_{1-\alpha/2}$ = Standard normal variant equals 1.96 when considering 5% type I error ($\alpha = 0.05$).

SD = Standard Deviation.

d = Precision or Margin of Error.

For the sake of this calculation will consider the following values: 0.05 for significance criterion (α) and %5 of the maximum score for the margin of error (d). SD will be 11.6 for nurses' knowledge total score mean percentage measured by PUKAT 2.0 (De Meyer et al., 2019). SD will be 3.8 for nurses' attitudes measured by APuP (Batiha, 2018). Accordingly:

$$\text{Sample size}_{(\text{knowledge})} = \frac{(1.96^2(11.6)^2)}{(5^2)} = 21$$

$$\text{Sample size}_{(\text{attitude})} = \frac{(1.96^2(3.8)^2)}{(52 \times 0.05)^2} = 9$$

Moreover, power analysis was used to calculate the sample size with enough statistical power to compare quantitative variables between critical areas nurses and non-critical areas nurses. To minimize the chances for Type II errors (false negative) will consider 0.80 for power, and to decrease the risk for Type I errors (false positive), a significance criterion of 0.05 will be considered (Polit & Beck, 2017).

Data from previous literature will be used to estimate the effect size using Cohen's d formula by dividing the mean difference on the pooled SD, which will be calculated according to the following formula; later, an online tool will be used to calculate the sample size.

$$\text{Effect size} = \frac{M_1 - M_2}{SD}$$

$$SD_{\text{(pooled)}} = \sqrt{\frac{(SD_1^2 + SD_2^2)}{2}}$$

To calculate sample size based on data on nurses' knowledge of PU measured by PUKAT 2.0, the mean percentage of the total score for critical areas nurses will be 52.5 at SD of 11.6 (De Meyer et al., 2019) for non-critical areas nurses, it is 45.5 with SD at 11.84 (Halász et al., 2021), accordingly estimated effect size is 0.6, at desired power of 0.80 the sample size will be 45 for each group (Social Science Statistics, 2021; University of British Columbia [UBC] Statistics, 2021).

To calculate sample size based on data of nurses' attitudes of PU measured by APuP, the mean for critical areas nurses will be 39.9 at SD of 3.8 (Batiha, 2018); for non-critical areas nurses, it is 35.28 with SD at 11.99 (Halász et al., 2021); accordingly estimated effect size is 0.52, at desired power of 0.80 the sample size will be 59 for each group (Social Science Statistics, 2021;

University of British Columbia [UBC] Statistics, 2021). One last step is to add 15% in case of invalid data collection forms; accordingly, sample size will be 136 divided into 2 groups.

Inclusion & Exclusion Criteria:

Inclusion criteria:

- (1) Working nurses at SMC for at least one year in the current position
- (2) Nurses with bachelor's and master's degrees
- (3) Nurses provide direct patient care.

Exclusion Criteria:

- (4) Nurses who do not agree to participate.
- (5) Nurses in managerial rank.

Sampling Technique

A simple randomization method was employed in the study using a random number table. The sample size was calculated to be 136 nurses to select those nurses; the head nurses of the ICU, CCU, ER, burn unit, medical nursing, and surgical nurses were contacted to provide a list of the legible nurses. According to the pre-mentioned inclusion-exclusion criteria, at each unit/ward. The provided lists did not include names or identification; however, they included the position and a code number. The lists from critical areas were compiled in one list, and the lists from the non-critical areas were compiled in a separate list.

The complied lists were used for randomization using the simple randomization method of random table numbers. An equal number of 80 potential participants were randomly selected from each list. Codes of selected nurses were sent back to the heads of units, and the study

questionnaire was given to the participants to be completed. The completed questionnaire was recollected from the head nurses after completion.

Invitations to participate were sent to 160 nurses who were selected randomly with a response rate of 95% as 152 agreed to participate and submitted the required self-reported questionnaires; however, 20 participants did not complete the study questionnaire correctly, so they were excluded from the analysis.

Measurement Tools

To accomplish the research's aim and achieve its objectives, measurement instruments were used to collect the required data. Those research tools took the form of a self-reporting questionnaire, either electronic or paper, and were provided and completed in English. Completed self-reporting questionnaires presented a quantify values of the main research variables, including (1) level of knowledge on PU prevention by the updated version of the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0) (Manderlier, et al., 2017); (2) attitude toward PU prevention by Attitude towards Pressure ulcer Prevention instrument (APuP) (Beeckman et al., 2010); and (3) Barriers to implementation of PU prevention guidelines by Pressure Injury Prevention Barriers (PIPB) (López-Franco et al., 2020).

The self-reporting study questionnaire was provided and completed in English, as it is the primary language of the three questionnaires (PUKAT 2.0, APuP, and PIPB) that constitute the data collection form, in addition to that, English is the language used in teaching and practicing nursing in Bahrain. Furthermore, almost half of the nurses at SMC are non-Bahraini (MOH-Human Resources, 2021), and use English in practice.

Tool one: Pressure Ulcer Knowledge Assessment Tool 2.0

Knowledge assessment is the initial step to developing a PU prevention, education, or training program. Seven questionnaires were used to assess PU knowledge at least twice in published studies; of those instruments, the most commonly used were Pieper Pressure Ulcer Knowledge (PPKUT) questionnaire, which was updated to Pieper-Zulkowski Pressure Ulcer Knowledge Test (PZ-PUKT); and Pressure Ulcer Knowledge Assessment Tool (PUKAT), which was updated to PUKAT 2.0 (López-Franco & Pancorbo-Hidalgo, 2019). An additional tool was developed later to the previous literature review, the Pressure Injury Prevention Knowledge (PIPK) questionnaire (López-Franco et al., 2020).

For the sake of this study, PUKAT 2.0 was used (Appendix II, Part 2) as it has been updated recently; it was developed in English for the target population, i.e., working nurses; and it was based on updated international guidelines, including NICE and NPIAP (Manderlier, et al., 2017). Although PIPK was recently developed based on updated guidelines for working nurses, it was designed for Spanish nurses (López-Franco et al., 2020).

PUKAT 2.0 is preferred over PZ-PUKT despite the fact that PZ-PUKT has similar reliability scores and was developed recently in English targeting the working nurses, as the PZ-PUKT reliability test was conducted on a small sample and PUKAT 2.0 is relatively more recent (Pieper & Zulkowski, 2014). PUKAT 2.0 is a valid and relabel update to one of the widely used PU knowledge assessment tools, the PUKAT, which was developed internationally based on the updated guidelines (Manderlier, et al., 2017).

A more recent systemic review reached a similar conclusion, where the reviewer analyzed 18 instruments and found that 5 of them passed the psychometric evaluation; of those, the reviewer concluded that PUKT and PUKAT 2.0 are the most valid and reliable instruments (Kielo et al., 2020).

PUKAT 2.0 measures nurses' knowledge of PU, containing 25 multiple-choice questions, and the participants were asked to choose the correct answer. Questions have equal value, whereas the correct answer was counted as one, and the wrong answer was counted as zero, so the maximum score would be 25. The overall score was calculated by adding the number of correct answers, and the percentage was calculated by dividing the number of correct answers by the maximum score of 25. The composers of the PUKAT 2.0 did not set a cut-off value that indicates a satisfactory level of knowledge (Manderlier, et al., 2017). However, researchers who used the same instrument considered a mean score of less than 60 % as an indicator of insufficient knowledge (Clarkson et al., 2019; Usher et al., 2018).

Questions are distributed over six themes: (1) etiology includes 6 Questions (PUKAT 2.0 Q1-Q6); (2) classification and observation include 4 Questions (PUKAT 2.0 Q7-Q10); (3) risk assessment includes two questions ((PUKAT 2.0 Q11-Q12); (4) nutrition, includes three questions (PUKAT 2.0 Q13-Q15); (5) prevention of pressure ulcers, includes eight questions (PUKAT 2.0 Q16-Q23); and (6) specific patient groups, includes two questions (PUKAT 2.0 Q24-Q25) (Manderlier, et al., 2017). Questions are presented in Appendix II.

To confirm validity and reliability, A prospective psychometric instrument validation study was conducted over three phases:

First, tool development, both PUKAT and PUKAT 2.0 have six themes. However, the researcher combined 2 PUKAT themes into one, so in PUKAT 2.0, the theme “prevention” includes both “reduction of the magnitude” and “reduction of the duration of pressure and shear.” Moreover, the researchers added a new theme, “Specific Patients Groups,” in PUKAT 2.0. To further update the tool, the researchers relied on updated practice guidelines. Content and face validity were assessed by exposing the tool to 2 separate expert panels and a pilot study; based on the feedback, the questions were amended, and three questions were removed.

Second, in psychometric testing, item difficulty was tested and measured by the percentage of the correct response to all participants (P-Value), $P = 0.70$ (considering that: if $P > 0.9$, it is too easy, and $P < 0.1$, it is too difficult). The discrimination index was measured by the difference between the percentages of correct responses among the worst and the best-performing groups (D-Value); a D-value > 0.3 is considered good. For this instrument, the D-value was low for four items, reasonable for nine items, moderate for nine items, and good for three items.

As the tool relied on multiple choices, the evaluation of the quality of the response alternative was required, which represented the attractiveness of the wrong alternatives and was assessed by defining the distribution of the wrong answers over the alternatives; which is presented as a-value, the overall a-value for the tool was 0.16, and the ideal value is 0.1.

Third, the construct validity was evaluated via two procedures; first, the test-retest procedures were conducted by answering the questionnaire by 65 nursing students ten days later than the initial test. The Infraclass Correlation Coefficient (ICC) was calculated to be close to sufficient

at 0.69. The second procedure was the known group technique, and to perform this procedure, the researchers divided the participants into six groups based on the expected ability to answer correctly. Based on that, the wound care nurses were considered with the highest expectation, and the first-year nursing student assumed the lowest expectation. After comparing the different groups' scores, the tool showed the ability to differentiate between groups with varying levels of knowledge. The results of the psychometric evaluation were discussed, and the questionnaire was redefined (Manderlier, et al., 2017).

Tool Two: Attitude toward Pressure Ulcer Prevention instrument

The study used the Attitude towards Pressure ulcer Prevention instrument (APuP) to measure attitude (Appendix II, Part (3)), which was developed in 2010 (Beeckman et al., 2010) and has been widely used since then in different sittings up to 2021 (Halász et al., 2021). Even though APuP was criticized as being “not ideally suited to represent the attitudes of a Swedish sample of nurses and nursing students” (Florin et al., 2016, p.655). APuP was recognized by Wounds Canada, a not-for-profit organization interested in wound prevention (Wounds Canada, 2021), as an essential instrument to promote PU prevention (Norton, et al., 2017). Moreover, it was used to develop a new tool to measure nurses' knowledge, attitude, and practice of PU prevention and management (Shanley et al., 2020).

Another instrument used to measure nurses' attitudes toward PU is the Moore and Price Attitude Scale, developed based on a literature review from the 1980s and 1990s (Moore & Price, 2004). APuP has been chosen over Moore and Price Attitude Scale for three reasons: (1) APuP is more

updated; (2) APuP passed through more reargues prosses for validation; and (3) APuP validity has been recognized in the literature (Beeckman et al., 2010)

APuP Questionnaire was used to assess nurses' attitudes toward PU; APuP includes thirteen statements, six of which were positively formulated and seven were negatively formulated. All statements were rated on a four-point Likert scale: strongly disagree, disagree, agree, and strongly agree. The statements are distributed over five subscales: (1) personal competency to prevent pressure ulcers which includes two positive and one negative statement; (2) priority of pressure ulcer prevention which includes two negative and one positive statement; (3) impact of pressure ulcers, which include two negative and one positive statement; (4) persona responsibility in pressure ulcer prevention, which includes one positive and one negative statement; and (5) confidence in the effectiveness of prevention, which includes one positive and one negative statement (Beeckman et al., 2010).

For the sake of calculating the score, the negative statements were reverse rated; for example, one point was allocated for strongly disagreeing with the positive statement and strongly agreeing with the negative statement, two points were given for disagreeing with the positive statement and agreeing with the negative statement and so on, (Beeckman et al., 2010). Based on that, the maximum possible score for each statement is four and the minimum is 1, the overall maximum is 52 points, and the minimum score is 13. The overall percentage was calculated by dividing the overall score into the maximum score of 52. The cut-off for satisfactory attitude was set at 75%, as the composers of the APuP, used it to measure nurses' attitudes toward PU prevention and considered scores of 75 % and more as satisfactory (Beeckman et al., 2011); other researchers applied this consideration (Clarkson et al., 2019).

To evaluate the psychometric parameters of the APuP instrument, a two-phase prospective psychometric instrument validation study was conducted. Phase 1 included the design of the instrument, and phase 2 included the psychometric evaluation. The study was conducted on 258 qualified nurses and 291 nursing students, and the initial instrument included 32 items (Beeckman et al., 2010).

Construct validity was assessed by: (1) factor analysis. The most appropriate form of the instrument has 13 questions distributed over five categories; the Kaiser–Meyer–Olkin (KMO) for this form indicates sampling adequacy ($KMO = 0.72$). (2) discriminating power, the known group technique was used, where the researchers assumed that the expert nurses have a more positive attitude compared to nursing students, and the instrument indicated this difference. (3) internal consistency, the Cronbachs α was 0.79 (>0.5), which indicates acceptable internal consistency. Furthermore, The instrument produced similar results during stability testing as the (intraclass correlation (ICC) = 0.88 (Beeckman et al., 2010)

Tool three: The Pressure Injury Prevention Barriers (PIPB)

Most of the research instruments concerned with the nurses' perception of PU focus on knowledge and attitude, giving little attention to what the nurses perceive as a barrier to implementing PU prevention evidence-based practice (López-Franco et al., 2020). The Pressure Injury Prevention Barriers (PIPB) questionnaire was used to assess the barriers to PU prevention implementation from the nurses' perspective (Appendix II, Part (3)).

The PIPB was used to measure nurses' perception and recognition of Barriers to PU prevention; it contains 25 situations and circumstances that represent a potential barrier to PU prevention.

The respondents are asked how often it happens, i.e., never, sometimes, frequently, or always. To calculate the PIPB score, zero is allocated for never, one is allocated for sometimes, two is allocated for frequently, and three is given for always; based on that, the maximum score is 3 for each situation and 75 for the overall score. Moreover, for an item to be counted as a barrier, the nurse should respond frequently or always, whereas one was allocated when the responded recognized the item as a barrier and 0 was allocated when the nurse do not recognize the item as a barrier, so the number of identified barriers was calculated ((López-Franco & Pancorbo-Hidalgo, 2019).

The items of the PIPB questionnaire are scattered over four domains: (1) management and organization, with 12 items and a maximum score of 36; this cluster included items 9, 12, 13, 16, 17, 18, 19, 20, 21, 23, 24, 25 ; (2) motivation and priority, which contains six items with a maximum score of 18, this cluster included items 2, 4, 5, 8, 10, 15; (3) knowledge, which contains four items with a maximum score of 12, this cluster included items 1, 3, 6, 14; and (4) staff and collaboration which contains three items with a maximum score of 9, this cluster included items 7,11, and 12 (López-Franco et al., 2020).

The mean score of the PIPB Questionnaire divisions was calculated by summing the scores of that division's items (0 = never, 1= sometime, 2= frequently, 3= always) and dividing it by the number of items allocated for that division. The mean percentage was calculated by dividing the mean by the maximum score for that division (López-Franco et al., 2020). PIPB was developed through 3 stages: first, the researchers conducted a literature review to identify relative articles and extract factors and situations that could be described as potential barriers to

PU prevention. The researchers identified 18 publications from those; the researchers formulated a list of 28 potential barriers that were unequally themed up into seven groups.

The second stage is validating the content, which was conducted via a panel of experts, where each expert evaluated the 28 items through a 5-point scale that describes clarity and relevancy, later Aiken's V Index was used to measure the consensus among the experts; moreover, the experts had added two more items. The third stage is the Psychometric testing, which was conducted by a cross-sectional study that took place in 4 hospitals on 438 RNs. The researchers concluded that the Questionnaire is a good fit as several fit indexes were calculated and proven goodness of fit, including relative χ^2 (χ^2 divided by the df) <3 , Comparative Fit Index (CFI) >0.90 , Tucker Lewis Index (TLI) >0.90 , root mean square error of approximation (RMSEA) <0.08 and weighted root mean square residual (WRMR) <1 . The questionnaire has good internal consistency (Cronbach's alpha = 0.90). Moreover, the construct validity was evaluated by the known-groups test, which concluded that the instrument could differentiate between individuals who recognize more or a smaller number of items as barriers (López-Franco et al., 2020).

METHODS

Data Collection Procedure

A copy of the ethical approval (Appendix I) was provided to the head nurses to grant access to nurses in the ward or in the unit. The head nurses played a major role in participant recruitment and the data collection process. The randomly selected legible nurses from different working areas at SMC were invited to participate by the head nurses. The electronic questionnaire was used initially as the hospital was applying some restrictions to contain the COVID-19 pandemic. When the restrictions were removed, hard copies of the study questionnaires were used, and the completed documents were gathered from the head nurses.

The data were collected over the completion of self-reporting questioners which includes demographic data in addition to the 3 tools of the study which accounted for around 70 data point, such high number of questions influenced the required time to complete the data collection point, some participants reported that they needed 30-40 minutes to complete the study data collection form.

Ethical Considerations

Ethical principles were maintained as a comprehensive submission, including study proposal, informed consent form, data collection forms, and any other required document submitted to the relevant ethical committees at the University of Bahrain (UOB), Salmaniya Medical Complex (SMC), and Ministry of Health (MOH), and gained ethical approval on November 15th, 2021 (Appendix I)

The informed Consent Form was obtained from respondents before filling out the study questionnaire to ensure autonomy. Furthermore, the informed consent form included voluntary

approval to participate, the right of withdrawal, and a statement that confidentiality will be maintained in the study.

In reference to anonymity and confidentiality, data were gathered in an organized and comparable way using a structured Data Collection Form (Appendix II), which did not include any identifier. The research-relevant data were deidentified and then transferred to the database to maintain the anonymity and confidentiality of the study subjects. This deidentified data based is stored on the research laptop, which is protected by username and password; all study-related data is going to be permanently deleted upon thesis submission completion and publication of findings

Statistical Analysis

Statistical Package for Social Sciences (SPSS) software version 28 and Microsoft Excel were used to enter and analyze the study data. Demographic characteristics of the study sample were defined by Descriptive statistics, including frequency tables.

Descriptive statistics were used to present the study questionnaires' responses and summarize the main study variables, i.e., knowledge, attitude, and nurses' perception of barriers. Inferential statistical tests were used to assess the relationship between variables and compare different groups, that include Pearson's r , to test the relationship between 2 continuous variables, e.g., knowledge and attitude. Two independent sample t-test was used to compare means of level of knowledge and score of attitudes in binary nominal variable i.e. gender, nationality, and working areas (Critical / non-Critical). One-way ANOVA was used to compare means of knowledge and attitude when the variable includes more than two categories.

The chi square was used to determine the connection between having a satisfactory level of knowledge with other categorical variables. Throughout the statistical tests, the statically significance level was set at p Value of 0.05 or less.

Chapter Summary

This research assessed the nurses' perception regarding PU. The cross-sectional method was used for this research because it is not intended to investigate casual relationships or test a particular intervention. The study was conducted at SMC and included nurses from critical and non-critical units. The study sample size was calculated to be 136 to differentiate between the results from critical and non-critical nurses. Twenty-four nurses were added to compensate for a non-response rate; eventually, invitations for participation were sent to 160 nurses, who were randomly selected via a simple randomization method, with a response rate of 95% (n=152) and 13.15 % (n=20) invalid responses.

For the sake of evaluation and study of primary variables of this research, three validated tools were used: (1) PUKAT 2.0 to evaluate knowledge of PU among nurses; (2) APuP to assess attitude toward PU prevention; and (3) PIPB, to identify the barriers to PU prevention from nurse's perspective. Each tool passed through a validation process and was proven to be valid. All three instruments were incorporated into the data collection form (Appendix II).

Head nurses were approached with ethical approval (Appendix I) to permit the data collection from the wards. Informed consent was obtained to maintain autonomy, and data were deidentified to maintain confidentiality and anonymity. SPSS 28.0 software was used for

statistical analysis, which included descriptive and inferential statistics that described the study variables and investigated the differences between study groups.

Chapter IV

Results

RESULTS

Chapter Overview

This study was conducted to define the current standing of nurses in SMC from the PU. This chapter presents the study's results in terms of its main variables, i.e., Knowledge, Attitude, and perceived barriers. Furthermore, it answers the research questions which highlight the interrelation of those variables with different characteristics of the study sample, such as the working setting, whether critical or non-critical and the working experience. In this chapter, part 1 presents participants' demographic data; part 2 illustrates nurses' level of knowledge regarding PU prevention; part 3 shows results related to nurses' attitude toward PU; part 4 concentrates on barriers to PU prevention from nurses' perspectives.

Part I: Participants' demographic data

Results showed that most of the study participants were females (84.8%; n=112), with a mean age of 34 years $\pm$ 7 years (mean $\pm$ SD). The study included Bahraini and non-Bahraini participants, with a minimal majority of Bahraini nurses (55.3%; n=73). The great majority of the nurses held BSc degrees in nursing (87.1%; n=115). Almost a third of the nurses had a working experience of 5-10 years (34.4%; n=45). The study sample included nurses from various working areas, where (52.3%; n=69) of the participating nurses were from critical working areas, which include the burn unit, CCU, ICU, and ER. Further details on the allocations of study subjects are presented in Table (1).

Table (1): Participants' Demographic Data

		No. (n=132)*
		Count (%)
Age in years 34 ± 7 (mean $\pm$ SD)	Under 25	10 (7.6)
	26-35	78 (59.1)
	36-45	35 (26.5)
	46-55	7 (5.3)
	Above 56	2 (1.5)
Gender	Male	20 (15.2)
	Female	112 (84.8)
Educational level	Diploma	13 (9.8)
	BSc	115 (87.1)
	Master	3 (2.3)
	PhD	1 (0.8)
Years of Experience (n=131) 9.1 ± 6.3 (mean $\pm$ SD) *	Under 5	40 (30.5)
	5-10	45(34.4)
	11-15	24 (18.3)
	16-20	14(10.7)
	21-25	6 (4.6)
	Above 25	2 (1.5)
Work	Critical including	69 (52.3)
	Burn Unit	7 (5.3)
	CCU	16 (12.1)
	ER	16 (12.1)
	ICU	30 (22.7)
	Non-Critical including	63 (47.7)
	MW	34 (25.8)
	SW	29 (22.0)

* One of the particepants did not answer the question on the years of experience

Part II: Nurses' Level of Knowledge Regarding PU Prevention

Results showed that 87.9 % (n=116) of nurses answered incorrectly on more than half of PUKAT 2.0 questions, as illustrated in Figure (1)

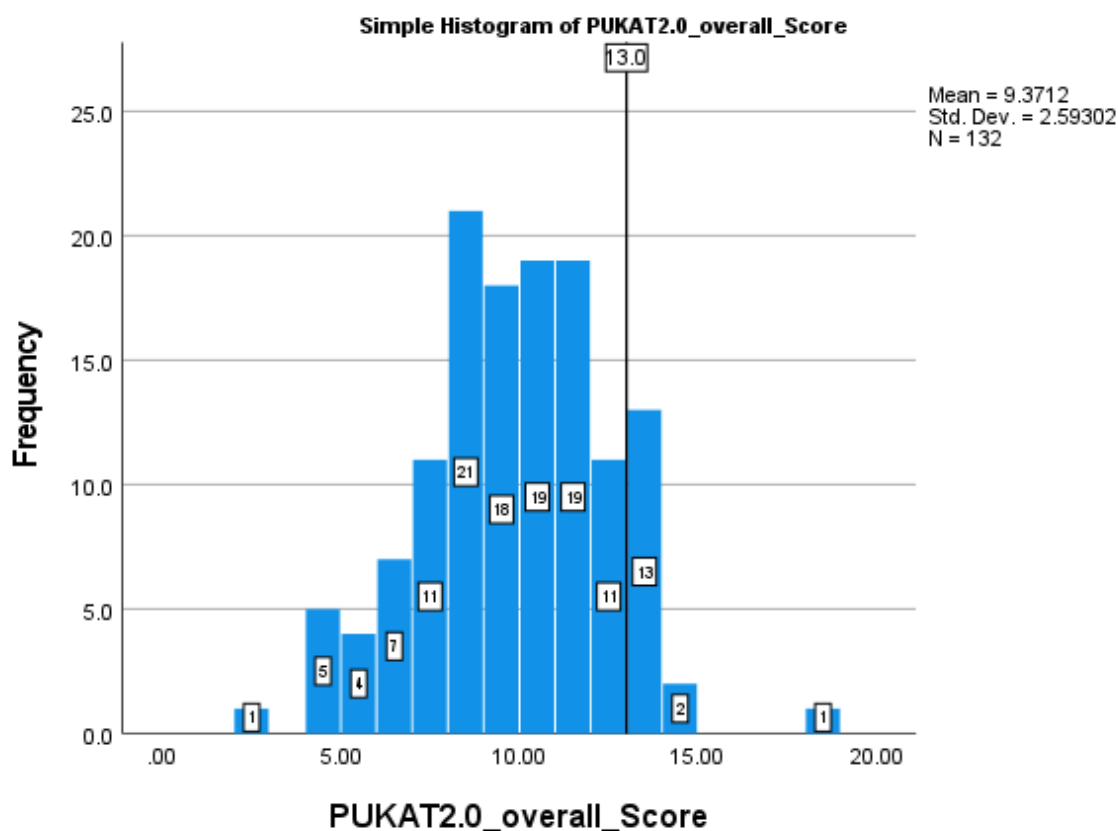


Fig 1: PUKAT 2.0 Overall Results Mean

Results indicated that the most correctly answered question was 12 (Appendix III), which enquired about the frequency of skin assessment on pressure points in hospitals from the theme of risk assessment as it was answered correctly by 80.3 % (n=106) of the participants. The least correctly answered question was question 6 (Appendix III), which asked about nursing interventions that may reduce the risk of developing PU, which was answered correctly by 3.8% (n=5) of the participating nurses.

Table (2) presents the number of nurses who answered more than half of the questions correctly for each theme of knowledge, which indicates that nurses had a higher knowledge level on specific PU knowledge themes. The majority of nurses scored more than 50 % in the PUKAT

2.0 questions related to Risk Assessment 91.7 % (n=121) of the participants. And only 18.93 % (n=25) of nurses passed the 50% limit in two themes, namely Etiology and Prevention.

Table (2): Number of nurses who passed 50% for each theme of knowledge.

Number nurses scored 50 % and more.

	Critical (n=69)	Non-Critical (n=63)	Total (n=132)
Risk assessment	64 (93%)	57 (90%)	121 (92%)
Nutrition	37 (54%)	29 (46%)	66 (50%)
Classification and Observation	44 (64%)	40 (63%)	84 (64%)
Special patients groups	46 (67%)	37 (58%)	83 (63%)
Etiology	13 (19%)	12 (19%)	25 (19%)
Prevention	14 (20%)	11 (17%)	25 (19%)

The variation of the number of nurses who passed the 50 % limit in different themes of knowledge is reflected in the number of correctly answered questions and the mean score; These results were displayed in Figure (2), which showed that the topic of risk assessment counted the highest rate of accurate answers where the topic of prevention counted for the lowest rate of correct answers the order of the PU knowledge subtopics in terms of the mean score is presented in Figure (2).

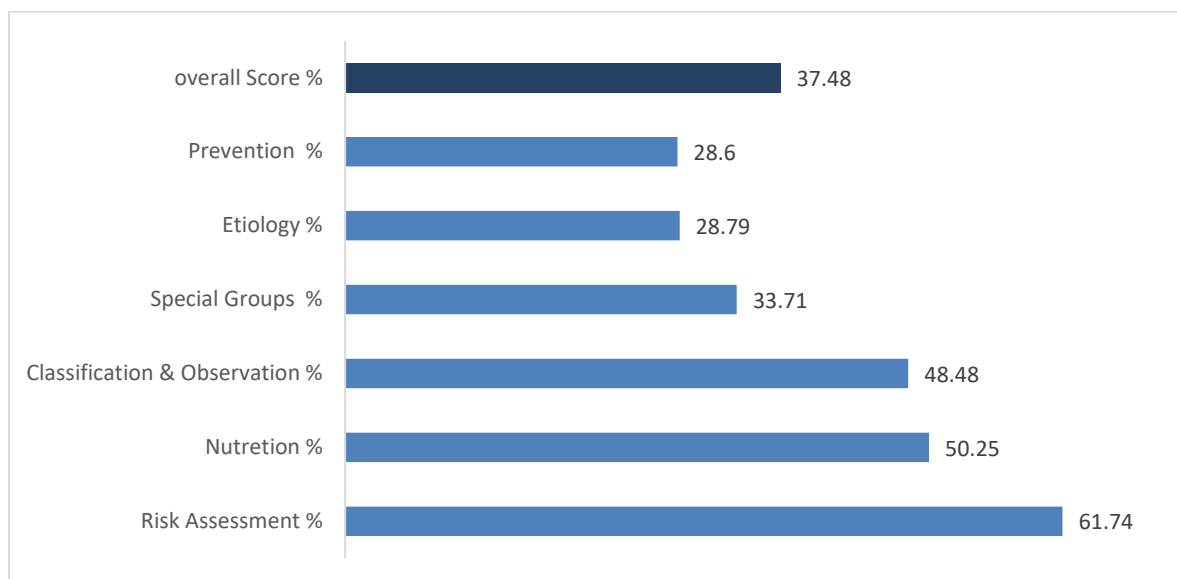


Fig 2: Score Means for Different Themes of Knowledge.

Table (3) presents the mean knowledge score among different groups of nurses. The 2 Independent Sample T-test was used to investigate whether the knowledge score is affected by gender, nationality, or working areas. The results revealed a statistically significant difference between males and females (p -Value = 0.04), as males recorded a higher mean of 41.80 ± 12.88 (mean $\pm$ SD) compared to 36.71 ± 9.73 (mean $\pm$ SD) achieved by females. Despite the fact that nurses in Critical areas recorded a higher mean at 38.14 ± 10.68 (mean $\pm$ SD) compared to 36.76 ± 10.05 (mean $\pm$ SD) from non-critical areas, this difference is not statistically significant (p Value=0.84).

Table (3): Mean score of PUKAT2.0 distribution on gender, nationality, working area.

Characteristics (n) (n=132)	Mean ± SD	Significance
Nationality		
▪ Bahraini (73)	37.26 ± 10.5	P=0.78
▪ Non-Bahraini (59)	37.26 ± 10.3	
Gender		
▪ Male (20)	41.8 ± 12.88	P=0.04
▪ Female (112)	36.71 ± 9.73	
Working areas		
▪ Critical (69)	38.14 ± 10.68	P=0.84
▪ Non-Critical (63)	36.76 ± 10.07	

One-way ANOVA was used to compare the PUKAT 2.0 scores means of different variables categories in terms of PUKAT 2.0 in percentage, Table (4). Those variables included age groups where the highest mean was reported from the Age group (36-45 years old) at 39.20 ± 9.84 (mean $\pm$ SD) and the lowest for the age group (under 25) at 30.40 ± 12.54 (mean $\pm$ SD). The results regarding the comparison between the level of knowledge between working areas indicated that nurses at the ICU had the highest mean result at $40.0 \% \pm 11.46$ (mean $\pm$ SD), which is higher than most of the other units, whereas nurses reached a mean score of around 36.5 %. The lowest mean was recorded for ER nurses at $36.25 \% \pm 10.78$ (mean $\pm$ SD). In addition, 16.7 % (n=5) of ICU nurses answered correctly on more than half of the questions, compared to 10.8 % (n=11) from all other units.

Regarding working experience, there was no statistically significant difference between the means of knowledge score. Where nurses with working experience of 16-20 years reported the highest mean at $40 \% \pm 10.98$ (mean $\pm$ SD), Table (4). Further analysis to investigate the correlation between the level of knowledge and working experience revealed no statistically

significant correlation between PUKAT 2.0 results and working experience (Pearson Correlation (r) = 0.004, p Value = 0.965).

Table (4): Mean score of PUKAT 2.0 distribution on age, experience, and working units.

Variable	Categories	n	Score means	SD	Significance.
Age	Under 25	10	30.40	12.54	0.77
	26-35	78	38.15	10.10	
	36-45	35	39.20	9.84	
	46-55	7	31.43	10.18	
	Above 56	2	38.00	2.83	
	Total	132	37.48	10.37	
Working units	Burn Unit	7	37.71	12.41	0.8
	CCU	16	36.75	8.54	
	ER	16	36.25	10.78	
	ICU	30	40.00	11.46	
	MW	34	36.82	10.22	
	SW	29	36.69	10.03	
	Total	132	37.48	10.37	
Working Experience	Under 5	40	37.40	12.44	0.88
	5-10	45	36.89	8.82	
	11-15	24	37.83	9.06	
	16-20	14	40.00	10.98	
	21-25	6	35.33	12.24	
	Above 25	2	32.00	11.31	
	Total	131	37.40	10.37	

In summary, knowledge of PU was only affected by gender. Statistical analysis was not done for education level, current position, total working hours per week, or working schedule, as there was no variance.

Part III: Nurses' attitude toward PU

Table (5) indicates that most nurses had a positive attitude toward PU, as 65.15 % (n= 86) of nurses passed the cut-off score of satisfactory attitudes. Moreover, there was no statistically significant difference between groups regarding the number of nurses who responded positively to the attitude questionnaire. Regarding nationality, non-Bahraini nurses recorded a slightly higher rate of positive responses toward APuP statements, as 66.1 % (n=39) of them have a positive attitude, at a mean result of 40/52, compared to 64.4 % (n=47) Bahraini nurses with a mean result of 38.9/52.

Female nurses included fewer nurses with positive attitudes, 62.5 % (n=70), compared to male nurses, 80 % (n=16). Furthermore, the results revealed that the percentage of nurses with a positive attitude is higher in the critical areas at 68.1 % (n=47), compared to non-critical areas at 61.9 % (n=39). The sample mean for the attitude questionnaire (APuP) is 39.40 ± 4.94 out of possible 52.

Table (5): Direction of Nurses' Attitude on PU

Characteristics (n=132)	Attitude		Significance
	Positive	Negative	
Total (132)	86	46	
Nationality			
▪ Bahraini (73)	47	26	P=0.84
▪ Non-Bahraini (59)	39	20	
Gender			
▪ Male (20)	16	4	P=0.13
▪ Female (112)	70	42	
Working areas			
▪ Critical (69)	47	22	P=0.45
▪ Non-Critical (63)	39	24	

If a nurse scores in APuP 75% or more, it is considered a positive attituded.

Table (6) indicates that the statement that recorded the most positive responses is the negatively formulated statement 3.1, “A pressure ulcer almost never causes discomfort for a patient,” as 75 % (n=99) of the nurses strongly disagreed and 9.8 % (n=13) disagreed. The statement that received the most negative responses is the negatively formulated statement 2.1, “Too much attention goes to the prevention of pressure ulcers.”, where 10.6 % (n= 14) of nurses strongly disagree, and 18.9 % (n =25) disagree.

Table (6): Nurses' Response to APuP

Item	Strongly disagree. n (%)	Disagree n (%)	Agree n (%)	strongly agree. n (%)	Mean Out of 4
Personal competency to prevent pressure ulcers					
1.1 + I feel confident in my ability to prevent pressure ulcers.	10 (7.6)	17 (12.9)	64 (48.5)	41 (31.1)	3.03
1.2 + I am well-trained to prevent pressure ulcers.	10 (7.6)	18 (13.6)	68 (51.5)	36 (27.3)	2.98
1.3 - Pressure ulcer prevention is too difficult. Others are better than I am.	45 (34.1)	43 (32.6)	34 (25.8)	10 (7.6)	2.93
Priority of pressure ulcer prevention					
2.1 - Too much attention goes to the prevention of pressure ulcers.	14 (10.6)	25 (18.9)	57 (43.2)	36 (27.3)	2.13
2.2 - Pressure ulcer prevention is not that important.	97 (73.5)	15 (11.4)	7 (5.3)	13 (9.8)	3.48
2.3 + Pressure ulcer prevention should be a priority.	8 (6.1)	12 (9.1)	32 (24.2)	80 (60.6)	3.39
Impact of pressure ulcers					
3.1 - A pressure ulcer almost never causes discomfort for a patient.	99 (75.0)	13 (9.8)	12 (9.1)	8 (6.1)	3.54
3.2 - The financial impact of pressure ulcers on a patient should not be exaggerated.	49 (37.1)	44 (33.3)	26 (19.7)	13 (9.8)	2.98
3.3 + The financial impact of pressure ulcers on society is high.	15 (11.4)	49 (37.1)	40 (30.3)	28 (21.2)	2.61
Responsibility in pressure ulcer prevention					
4.1 - I am not responsible if a pressure ulcer develops in my patients.	72 (54.5)	38 (28.8)	13 (9.8)	9 (6.8)	3.31
4.2 + I have an important task in pressure ulcer prevention.	12 (9.1)	7 (5.3)	40 (30.3)	73 (55.3)	3.32
Confidence in the effectiveness of prevention					

5.1 +	Pressure ulcers are preventable in high-risk patients.	14 (10.6)	30 (22.7)	54 (40.9)	34 (25.8)	3.31
5.2 -	Pressure ulcers are almost never preventable.	45 (34.1)	44 (33.3)	24 (18.2)	19 (14.4)	3.32

The APuP questionnaire includes five components, as described in Chapter Three. Figure (3) indicates that nurses had more favorable responses for the statements under the APuP component “Responsibility of PU prevention,” which recorded the highest mean at 6.63 (82.86 %) $\pm$ 0.95 (16.81%) out of 8. Compared to the component “confidence in the effectiveness of prevention,” which was recorded at 5.69 (71.12 %) $\pm$ 1.48 (18.54%) out of possible 8.

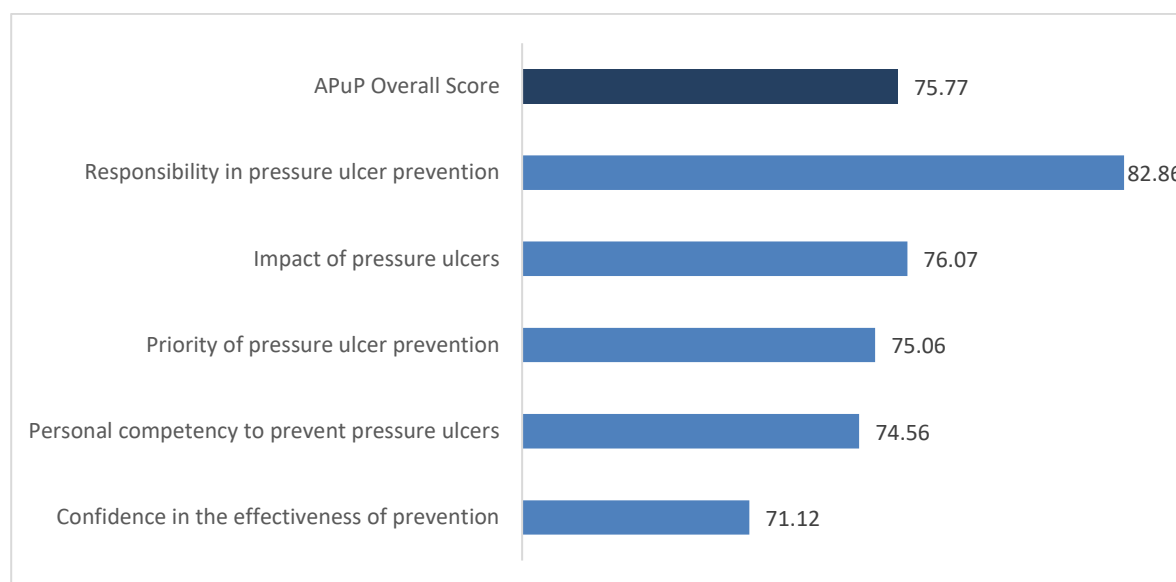


Fig (3): Mean Result of APuP Components among Nurses

Table (7) presents the results of comparing attitude mean scores among different groups of gender, nationality, and place of working, where there was no statically significant difference. However, in terms of place of work, nurses in critical areas recorded a higher mean at 76.42 % $\pm$ 8.66 (mean $\pm$ SD) compared to nurses from non-Critical working areas, which recorded a mean of 75.06 % $\pm$ 10.37 (mean $\pm$ SD).

Table (7): Mean Score of Attitude Distribution on Gender, Nationality, and Working Area.

Characteristics (n) (n=132)	Mean ± SD	Significance
Nationality		
▪ Bahraini (73)	74.8 ± 10.13	P=0.33
▪ Non-Bahraini (59)	76.9 ± 8.60	
Gender		
▪ Male (20)	76.7 ± 7.77	P=0.12
▪ Female (112)	75.6 ± 9.80	
Working areas		
▪ Critical (69)	76.42 ± 8.66	P=0.15
▪ Non-Critical (63)	75.06 ± 10.37	

Table (8) presents the results of comparing the mean of APuP among different groups of nurses. It indicates that the difference in APuP score means was statistically significant among nurses from other working units (p-Value = 0.023), where CCU recorded the highest mean score at 81.85 %, and ER nurses recorded the lowest score at 71.75 %.

In summary, Nurses' attitude toward PU was satisfactory, as 65.15% (n=86) of the participants achieved a satisfactory attitude. Nurses' attitudes could be affected by the working unit. Statistical analysis was not done for education level, current position, total working hours per week, or working schedule, as there was no variance.

Table (8): Mean Score of APuP Distribution on Age, Experience, Working Area Units

Variable	Categories	n	Score means	SD	Significance.
Age	Under 25	10	76.54	4.03	0.433
	26-35	78	74.68	10.36	
	36-45	35	77.36	7.97	
	46-55	7	76.37	12.20	
	Above 56	2	84.62	2.72	

	Total	132	75.77	9.50	
Working units	Burn Unit	7	77.75	10.52	0.023
	CCU	16	81.85	6.20	
	ER	16	71.75	10.62	
	ICU	30	75.71	6.75	
	MW	34	76.87	11.47	
	SW	29	72.94	8.63	
	Total	132	75.77	9.50	
Working Experience	Under 5	40	37.40	12.44	0.909
	5-10	45	36.89	8.82	
	11-15	24	37.83	9.06	
	16-20	14	40.00	10.98	
	21-25	6	35.33	12.24	
	Above 25	2	32.00	11.31	
	Total	131	37.40	10.37	

Part IV: Nurses' Perceived Barriers to PU Prevention

Results showed that the most recognized barrier was “Lack of preventive devices (such as special mattresses, cushions, skin care products)” from the cluster of motivation and priority because it has the highest recognition rate as it was reported as a barrier by 40.15 % (n=53) of the participants. It has the highest sum score at 187. Moreover, it has the highest mean at 1.42. Results also reported that “Difficulty to understand the recommendations and/or its level of evidence, from the guidelines or protocols” from the cluster of knowledge is the least recognized barrier as it was recognized as a barrier by 10.61 % (n=14) of the participants, with a sum score of 118 and mean of 0.89.

Although “Difficulty to understand the recommendations and/or its level of evidence, from the guidelines or protocols” recorded the least recognition percentage, it does not have the lowest sum score; the reason is that 86 participants responded with “Sometimes,” which counted as 1. However, “Low priority for the prevention of pressure injuries by nursing professionals” was documented as the lowest from a cluster of Motivation and priority, recorded with the lowest sum score at 87 and the lowest mean at 0.66 (Appendix IV).

Most of the barriers reported by nurses were related to staff collaboration, as this group recorded the highest mean among other groups of barriers, as illustrated in table (9).

Table (9): Mean Score of PIPB subcategories

	Mean (%)
Management and organization, Max score of 36	11.70 (32.51)
Motivation and Priority, Max score of 18	5.84 (32.45)
Knowledge, Max score of 12	3.30 (27.46)
Staff and Collaboration, Max Score of 9	3.13 (34.76)

The mean number of recognized barriers is 5.12 ± 5.58 out of 25 for each nurse. Results revealed a statistically significant weak negative correlation between the number of recognized barriers and the overall score of the attitude questionnaire (APuP) (Pearson correlation (r) = - 0.256, p Value = 0.003). Additionally, the mean number of recognized barriers by critical care nurses is 3.7, which differs from the mean of non-critical care nurses at 6.9 with statistical significance (p value < 0.001).

Chapter Summary

The results of the study aided in answering the research questions, which were illustrated in Chapter I. In summary, this study's results revealed that nurses have insufficient knowledge of PU, as only 12.1% (n =16) answered correctly on more than half of the questions. Moreover, the results indicated that nurses had less knowledge of prevention than any other component of the PUKAT 2.0 questionnaire, with a correct answer rate of 28.6 %. Additionally, 18.9 % (n=28) of nurses answered correctly on more than half of the questions related to prevention. The results indicated no correlation between the level of knowledge and nationality or working areas; however, it suggests that male nurses may have a higher level of knowledge.

Despite the majority of nurses having an unsatisfactory level of knowledge, most nurses had a positive attitude toward PU. Furthermore, critical care nurses presented a higher level of positivity, with 68.1 % (n=47) considered to have a positive attitude. Most of the reported barriers were from the category “Management and organization.” However, participants reported a relatively low number of barriers by each nurse at a mean of 5.12 barriers.

Chapter V

Discussion

DISCUSSION

Chapter overview

This cross-sectional study included 132 nurses from various units at SMC, intending to explore the perception of nurses on PU in terms of knowledge, attitude, and perceived barriers to PU prevention. This chapter discusses the results of this study context in relation to other studies tackling the same research problems.

Nurses' knowledge regarding PU.

The study results showed that only 12.1 % (n=16) of nurses answered correctly on more than half of the questions in PUKAT 2.0 questionnaire that assesses nurses' knowledge of PU. This result is consistent with Qaddumi & Khawaldeh, (2014), who reported that only 27% of nurses passed the test; however, Qaddumi & Khawaldeh (2014) used the dated version of PUKAT and considered 50 % of the passing score. A study from China used PUKAT 2.0, the same tool used for the present study, and considered 60 % as a passing score, had reported that only 17.1 % of nurses passed the test (Z. Li et al., 2022b). Consistently, Cukljek et al. (2022), who used PUKAT 2.0 and considered 60 % as the passing score, reported that only 4.8 % of nurses have a satisfactory level of knowledge.

The present study result showed that nurses had insufficient knowledge of PU, with a mean number of correct answers of 9.37 out of 25 questions; This result is consistent with Rodríguez & Gamboa (2020), who declared that nurses generally have insufficient knowledge of PU. This result aligns with Usher et al. (2018), who proclaimed that nurses have inadequate knowledge, as they reported that 23 % of the participants had scored $\geq 60\%$. Batiha (2018) wrote that the top 25 % of the nurses have a mean number of correct answers at 15.75 out of 25, which is a higher results score than the present study. However,

this difference could be explained by the fact that Batiha (2018) surveyed critical care nurses only, unlike the present study, which included nurses from different units; moreover, 48.5 % of the participants in the Batiha (2018) study confirmed receiving training on PU prevention. This difference indicates the superiority of critical care nurses in the knowledge of PU and the importance of training to improve the level of knowledge. This importance was confirmed by Seo & Roh (2020), as the mean knowledge score was significantly improved after training.

The present study results indicated no statistically significant difference between nurses from critical and non-critical units; however, the conclusion that critical area nurses have superior knowledge was suggested by De Meyer et al. (2019), and in accordance with the present study results, where 14.5 % (n=10) of critical areas nurses answered correctly on $\geq$ 13 questions out of 25 compared to 9.5 % (n=6) from non-critical areas.

In line with the previous results, more recent studies used PUKAT 2.0 reached a similar conclusion that nurses have an unsatisfactory level of knowledge regarding PU (Cukljek et al., 2022; Z. Li et al., 2022b; Sari et al., 2021)

The present study suggested that nurses' knowledge regarding PU prevention is the lowest among all other PU knowledge themes, as only 18.94 % (n= 25) of the participants answered correctly on more than half of the questions related to prevention. This indicated a higher rate of incorrect answers, as the mean number of correct answers was 2.9 correct answer out of 8 questions (28.6 %). The previous conclusion is consistent with the results of a systematic review (Dalvand et al., 2018), which reported that the lowest mean of correct answers by nurses was 49.5 %, for the prevention measures theme, compared to the overall standard of 55.4 %. These results mirrored the findings of Usher et al. (2018), who concluded that

prevention is the lowest, resulting in an overall knowledge mean score of 51% and subtitle prevention at 44.1%. Additionally, more recent studies confirmed the previous results, including De Meyer et al. (2019), where knowledge of PU prevention recorded the lowest mean at 42.7 % compared to a mean total score of 50.7 %; and Cukljek et al. (2022), where nurses scored a mean of 27.30% in the prevention of PU, while the overall mean was 45.48 %. More studies used PUKAT 2.0 (Z. Li et al., 2022b) reported that the mean number of correct answers was 2.5 out of 8 questions regarding PU prevention, and only 2.7 % of the participants scored 60% or more in the theme of PU prevention, compared to an overall mean of correct answers number at 11.6 out of 25, and 17.1 % of the participants passing 60% score. The previous readings indicated a knowledge deficit on PU prevention among nurses; considering the importance of prevention to limit the impact of PU on patients' overall health urges the nursing management to investigate the reasons behind such a deficit.

In summary, the results of the present study are consistent with the previous studies that most nurses have insufficient knowledge regarding PU in general and PU prevention in particular, which could result from inadequate training. However, this study did not investigate that component, and further studies are needed to detect the root causes for the low level of knowledge. Moreover, those results confirmed the need to educate nurses on PU prevention by different means, such as hands-on training workshops and educational seminars and sessions. Yet, the literature is inconsistent regarding the PU knowledge theme of which the nurses scored highest.

Results of the present study reported that nurses were able to answer correctly the questions related to risk assessment more than any other theme, as 91.7 % (n=121) nurses scored 50 % and more, compared to 63.64 % (n=84) nurses passed 50 % score for the next in order theme namely Classification and Observation. The previously mentioned results were

reflected in the mean score, as nurses recorded the highest mean score in Risk Assessment compared to other themes, at 1.24 (61.74 %) correct answers out of 2 questions, compared to 1.5 (50.25 %) correct answers out of 3 questions reported for the theme second in order namely, Nutrition. Those results align with Cukljek et al. (2022), who reported similar results to the present study, where the risk assessment had the highest mean at 71.49 %, followed by Classification and Observation at 58.55 %, then Nutrition, at 58.47 %. Such readings indicate that SMC nurses have an increased ability to assess the risk of PU, which could be invested to decrease the prevalence of PU among SMC nurses in combination with the dominant positive attitude and the relatively low number of reported barriers.

Nutrition was reported to have the highest mean by Batiha (2018) and Usher et al. (2018), which were inconsistent with a systematic review and meta-analysis conducted by Dalvand et al. (2018). Dalvend et al. (2018) reported that among all themes of PU knowledge, nurses have the highest level of knowledge on the theme of Nutrition, as it has the highest mean at 68 %, followed by risk assessment with a mean of 67.3 %, on the other hand, nutrition recorded the second highest mean in the present study. In a more recent study, nutrition was also reported to have the highest mean, as nurses achieved a mean score of 59.6 % (De Meyer et al., 2019). However, in 2022 Z. Li et al. (2022b) reported that nurses recorded the highest mean in the theme of Classification and Observation as 62.5 % ().

Nurses Attitude Toward PU

The present study reported that 65.15 % (n= 86) of nurses have a positive attitude toward PU as measured by APuP; moreover, the study reported a sample mean of 75.8 %, which is higher than the cut-off for positive attitude at 75.0 %, this result is consistent with Usher et al., (2018) and Batiha (2018) who reported a mean score at 78 %, and 76.6% respectively. Those results were confirmed by more recent studies, including Jiang et al. (2020) and Parisod

et al. (2022). Those results showed a dominant positive attitude, indicating a positive perception among nurses at SMC about their ability to control and manage PU. Such positivity could reflect the nursing education curriculum in Bahrain, which focuses on the importance of nursing in promoting the patient's well-being and holistic care. Moreover, the structure of the health care system in Bahrain contributes to a generally positive attitude among nurses as it follows the recommendation adopted by AHRQ (Phillips et al., 2021). So the nurse is not overloaded with a heavy workload, especially in CCU and ICU, where the nurse is usually responsible for one or two patients (Louri et al., 2021).

In contrast to the previous conclusion, Etafa et al. (2018) concluded that most nurses demonstrated a negative attitude toward PU; however, the high number of reported barriers to prevention could explain this result. Moreover, Etafa et al. (2018) used an outdated tool to assess attitude. Additionally, Khong et al. (2020), who used APuP, found that nurses have unsatisfactory attitudes, as only 35.6 % of the nurses reached the satisfactory level of 75 % and reported a mean score of 74.6 %. Those results are congruent with Halász et al. (2021), who declared that nurses have unsatisfactory attitude based on the calculated mean of 67.9 %; however, more than half (56.4 %) of the study sample passed the cut-off of 75 %.

In general, nurses' attitude toward PU prevention is moderate to positive, as described by two systematic reviews (Avsar et al., 2019; Rostamvand et al., 2022). Rostamvand et al. (2022) studied a collective sample of 7824 participants from 21 articles and calculated an overall mean of 70.11 % (2022). This mean result is lower than the reported mean in the present study, indicating that nurses in SMC have a relatively more positive attitude.

The tool used for the present study included five diminutions for attitude, where the proportionate score reflects the nurses' attitude toward that specific dimension. The present

study reported the order of the five dimensions as the following: (1) Responsibility in pressure ulcer prevention, a proportionate score of 82.86 %, (2) Impact of PU, a proportionate score of 76.07 %, (3) Priority in PU prevention, proportionate score 75.06 %, (4) Personal competency to prevent PU, proportionate score 74.56 %, and (5) Confidence in the effectiveness of prevention, proportionate score 71.12 %. The conclusion that nurses have a more positive attitude toward the dimension “responsibility in pressure ulcer prevention” compared to other dimensions of attitude toward PU is consistence with recent studies (Halász et al., 2021; Jiang et al., 2020; Khong et al., 2020; Parisod et al., 2022).

On the other hand, Rostamvand et al. (2022) concluded via meta-analysis a different order of the attitude components where the first and second in order were (1) Attitude towards the priority of pressure ulcer prevention and (2) Attitude towards the impact of pressure ulcers with a proportionate score of 78.83 % and 77.79 % respectively., and Attitude towards responsibility in pressure ulcer prevention reported to be in third position with a proportionate score of 73.47 %.

As seen from the above, the results of the present study suggested that SMC nurses had a relatively higher sense of responsibility, more understanding of the impact of PU, and the importance of prioritizing PU prevention, which mean that nurses are ready for change and willing to cooperate as they truly perceive PU as a serious threat to health. Moreover, they believe in their abilities to control PU.

Following Rostamvand et al. (2022), the present study reported that nurses have the least desirable attitude on the two components related to prevention which are (1) Personal competency to prevent PU and (2) Confidence in the effectiveness of PU prevention. Additionally, the previous section in this chapter, Nurses’ knowledge regarding PU,

concluded that nurses have less understanding of PU prevention than any other component of Nurses' knowledge regarding PU. Based on that, PU prevention should be the focal point of any training program designed to elevate nurses' knowledge of and attitude toward PU. For those training programs to be successful, they may take the form of hands-on training (Z. Li et al., 2022b), to improve nursing practices. In addition, PU training should be incorporated into the hospitals' continuous education programs offered to nurses (Dalvand et al., 2018; Rostamvand et al., 2022). To ensure the proper implementation, monitoring and follow-up measures may be included in the hospital's policies (Jankowski & Nadzam, 2011).

The present study results indicated that most critical care nurses have a positive attitude toward PU, which is consistent with (Batiha, 2018; Khong et al., 2020; J. Li et al., 2023; Tayyib et al., 2016). However, other studies contradict such indications, including Ghazanfari et al., (2022) and Yilmazer et al., (2019), who declared that most intensive care unit nurses scored less than 75 % in APuP.

In addition, to that the present study results suggested that critical care nurses are superior to non-critical care nurses in terms of their attitude toward PU prevention, as 68.1 % (n=47) of critical care nurses achieved a score equal to or more than 75 %, the cut off positive attitude, compared to 61.2 % (n=39) from non-critical care nurses. Moreover, the critical care nurses achieved a higher overall mean score than those from non-critical care units. This conclusion was supported recently by Khojastehfar et al. (2020), who reported a statistically significant difference between critical and non-critical care nurses. However, evidence provided by Grešš Halász et al. (2021) suggested otherwise, as they concluded the absence of difference between critical and not critical care nurses regarding their attitude toward PU prevention. The variance in the readings could be referred to as the difference in

health care settings, mainly the workload of nurses. Moreover, nurses at critical care units are more exposed to PU, which positively affects their involvement in care.

Despite this contradiction, both Ghazanfari et al. (2022) and Khojastehfar et al. (2020) reported a statistically significant positive relationship between the number of years of experience in the critical care units and the nurses' attitude toward PU prevention; such a relationship was not investigated in the present study.

Barriers to Implementation of PU Prevention guidelines

Results of the present study identified “the lack of preventive devices (such as special mattresses, cushions, skin care products)” as the most recognized barrier to PU Prevention. The most identified barrier was recognized by a minority of nurses, i.e., 40.15% (n=53), which could be steamed from the fact that nurses do not perceive their work environment at SMC as confining environment, contributing to their dominant positive attitude. This result is inconsistence with Ebi et al. (2019), who reported a lack of appropriate devices as the most recognized barrier, as it was stated as a barrier by 55.2 % of the participants. Furthermore, a lack of instruments and equipment was reported as the nurses' second most recognized barrier to PU prevention practice implementation (Etafa et al., 2018; Mwebaza et al., 2014). Unlike the present study, both previous studies reported circumstances related to lack of time, shortage of staff, or heavy workload as the most recognized barrier (Etafa et al., 2018; Mwebaza et al., 2014).

In addition, to the previous studies, Qaddumi & Khawaldeh (2014) reported a lack of time as the most recognized barrier. Moreover, Everett Day et al. (2022); and Z. Li et al. (2022a) reported heavy workload or shortage of staff, a component related to time, as the most recognized barrier by nurses, which is consistence with Al-khazali, (2023) who reported

shortage of staff as the second most identified barrier following lack of training. However, the present study reported lack of time as the ninth most recognized barrier, as only 21.21 % (n=28) reported it as a barrier. Only two participants marked “always” when asked how frequently that lack of time limits their PU prevention practice. This indicates an opportunity to improve with training, especially considering that 31.06 % (n=41) of the participants considered lack of training on the equipment as a barrier to PU prevention practices. Moreover, this result put forward the need for PU training at SMC as a need recognized by the nurses themselves and not only as a need implied by the low level of knowledge; this will improve the nurses' involvement in such training, which could be workshops, seminars, and lectures (Dalvand et al., 2018; Z. Li et al., 2022b).

The present study results showed that the lack of family cooperation was the second most recognized barrier by the study participants, despite the importance of the family's role in preventing PU. Moreover, family members were involved in updating the current clinical practice guidelines under the name “informal caregivers” (Kottner et al., 2019). The previous results are consistent with Taylor et al. (2021), who reported the lack of family engagement in PU management as a barrier to PU prevention according to nurses, who consider family cooperation an influential element in PU management. Based on that, elevating the awareness of the patient's family on PU prevention may improve the patient's outcome (Gould et al., 2019). Furthermore, family member education is vital in advanced cases of PU (Chen et al., 2020).

Even though the present study reported that nurses have a low level of knowledge, most participants in the present study did not consider lack of knowledge as a barrier when they were asked directly about lack of knowledge; only 12.12 % (n=16) of the participants recognize lack of knowledge as a barrier. Moreover, 46.2% (n=61) stated that lack of

knowledge is never a barrier. This is consistent with Qaddumi & Khawaldeh (2014), where most nurses did not consider lack of knowledge a common barrier. However, some scholars considered a lack of knowledge as a barrier, including Huang & Saensom (2022) and J. Li et al. (2023); moreover, Heerschap & Woo (2022); and McNally & Blay (2022) demonstrated the importance of training and education to improve nurses knowledge and attitude regarding PU. Furthermore, the present study reported that knowledge-related barriers are the least recognized barriers, which reflects the importance of a training program.

In general, nurses at SMC reported a relatively low number of barriers; the average number of reported barriers was 5.12 for each nurse out of a possible 25, which indicates the opportunity to improve the outcome by training.

Chapter Summary

The present study reported that nurses at SMC have insufficient knowledge regarding PU management, especially knowledge required for PU prevention, which is consistent with multiple publications. Even though critical care nurses have a higher level of knowledge, it is still under the requirement, which indicates the need for specific training programs that elevate knowledge on PU with more focus on prevention. Such a program may have a high success rate, especially considering the reported results that a positive attitude is dominant among SMC nurses.

The literature review indicated that nurses' attitude toward PU is moderate to positive. The present study suggests that SMC nurses are mainly on the positive side, especially regarding the responsibility to manage PU, the impact of PU, and the importance of prioritizing PU. Such observations reflect a high sense of responsibility and awareness; however, nurses at SMC reported lower readings regarding competency and confidence, which further call for

an organized training program that arms the nurses with the necessary knowledge and skills to improve their competency and confidence. Which ultimately will promote patient health. However, nurses have reported several barriers that may limit such promotion.

SMC nurses have reported the lack of devices as the most common barrier for PU management, which differs from some publications; such a barrier could be overcome by providing the necessary equipment. On the other hand, SMC nurses did not recognize widely recognized barriers such as lack of time or heavy workload as common barriers, which further indicates the opportunity for improvement.

Chapter VI

Conclusion, Limitation and Recommendations

CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

Conclusion

Based on the present study's findings, it is concluded that nurses SMC from all units have an unsatisfactory level of knowledge regarding PU management in general and on PU prevention in particular. Even though critical care nurses' responses indicated a relatively higher level of knowledge than nurses from other units, their knowledge level is still unsatisfactory. Despite the lack of knowledge, nurses' responses to APuP indicated a positive attitude toward PU; the main leverage of this positivity is the high sense of responsibility and awareness. Moreover, nurses at critical care units demonstrated a higher rate of positive attitude, especially CCU nurses.

Based on SMC nurses' responses to the PIPB questionnaire, the following are the most common barriers to PU prevention as perceived by the nurses (1) lack of devices; (2) lack of family cooperation, and (3) lack of continuity across health care facilities. However, nurses did not recognize the lack of time, the lack of knowledge, or the heavy workload as barriers. Generally, the reported barriers are controllable, as nurses demonstrated a positive attitude, which contributes to further involvement.

Limitation

The researcher faced the challenge of recruiting participants considering the fact that data collection was conducted during the pandemic, as access to the hospital was limited. Moreover, the study participants were from several working areas, and because the study sample included 132 nurses, the number of participants from each unit was limited and did not allow detailed analysis to compare nurses' performance from different departments.

Another challenge related to study design is that the study followed a cross-sectional method, which cannot recognize the causal relationship and limit the findings to correlation and association. Furthermore, the study used a self-reporting questionnaire which may induce biased. Moreover, the study data collection tool included three questionnaires with a sum of 63 questions, which was reflected in a relatively extended time to complete the study tool, which may affect the integrity of the answers and induce boredom with answering so many questions. The study tool did not include questions on three factors affecting nurses' knowledge and attitude: previous training, access to updated guidelines, and years of experience in a critical care unit. This may be taken into consideration in future research.

Recommendations

Based on the findings of the current study, the following recommendations are suggested:

- Training programs should be provided for nurses about PU management focusing on prevention, intending to provide nurses with appropriate knowledge and skills. A copy of this thesis will be offered to the nursing management at SMC, providing a more comprehensive understanding of the nursing perspective of PU. Nursing management may use the findings to design the program in cooperation with the continuing education center. Training should take the form of a workshop with a theoretical and practical component.
- Provide the necessary equipment required to prevent and manage PU to the critical care units and units where patients are expected to develop PU. Moreover, provide nurses with specialized training in efficiently using that equipment.
- As part of patient-family education, develop a brief brochure that explains the importance of PU prevention and several PU prevention and management measurements that the

family and the patients could perform; this may necessitate the inclusion of family education about PU as a community services activity. Moreover, including the patient and the primary caregiver in the development of the discharge plan, with a concentration on PU prevention and management measures, may grant a better engagement in PU management.

- Review the PU prevention guideline and policies periodically by a multidisciplinary team to incorporate continuity across healthcare facilities; moreover, include follow-up measures in the policy that may consist of field visits and start a registry to record all cases of PU. Creating a PU registry will facilitate the efforts of preventing PU, as it will provide a comprehensive view of the PU situation in SMC. Moreover, it will highlight the weaknesses and strengths of the current strategy of PU management.
- Establish a multidisciplinary team specialized in PU management that includes members from different specialties, including nursing and dermatology, to guide nursing care and oversee training. Such a team may supervise the PU registry's structuring and its completion.
- Conduct a study to evaluate the training program's effectiveness and highlight other needs.

Chapter VII

Summary

SUMMARY

This study aimed to describe SMC nurses' perspective of PU prevention and management in terms of knowledge, attitude, and perceived barriers. The study followed a descriptive, cross-sectional design. The study was conducted at SMC, one of the biggest public hospitals in the Kingdom of Bahrain; the study population was all SMC nurses from critical and non-critical working areas. The study sample was selected via probability simple random sampling using random number tables; head nurses were the gatekeepers to prevent disclosing participant confidentiality. Study participants were requested to complete the study data collection tool, which was in the English language. They included three validated questionnaires (1) PUKAT 2.0 to evaluate knowledge, (2) APuP to assess attitude, and (3) PIPB, to indicate perceived barriers. Anonymous completed questionnaires were handed to the researcher for data entry, and SPSS 27.0 was used to enter and analyze data.

Data analysis revealed the nurses at SMC have an unsatisfactory level of knowledge regarding PU prevention and management, which an appropriate training program could correct. Moreover, the nurses demonstrated a positive attitude, improving learning outcomes. Nurses at SMC recognized several barriers to PU prevention guidelines implementation; however, those barriers mainly were external, for example, lack of devices and uncooperative patient families, as the nurses did not recognize their lack of knowledge as a barrier; moreover, nurses have reported a relatively low number of barriers for each nurse, especially the critical care nurses

The main recommendation of this study is to invest in the nurse's positive attitude and high sense of responsibility by providing an appropriate training program that elevates nurses' level of knowledge, which will enhance the implementation of EBP. Moreover, formulate a

specialized team for PU, and incorporate continuity across healthcare facilities into PU guidelines. Furthermore, nurses should educate the patient and his family regarding PU prevention and management.

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APPENDICES

Appendix I

Ethics Committee
approval

APPENDICES

Appendix I: Ethics committee approval



Research Proposal Approval

Dear **Mr. Hussein Hifnawi** ,
UOB, Master Student , Nursing

We would like to inform you that the **Research & Research Ethics Committee for Government Hospitals** has approved the research proposal for your master research project:

" Knowledge, Attitudes and Barriers towards Prevention of Pressure Ulcer among Nurses in Critical Areas : a cross sectional study"

Approval date 15/11/2021.
Research approval serial no: 132151121

We all wish you a successful research and request you to update us with its progress.

Regards,

Eman Farid

Dr. Eman Farid
Consultant Immunologist
Pathology Department SMC
Code No. 413





**University of Bahrain
College of Health and Sports Sciences
Scientific Research and Publication Committee**



November 3, 2021

To: Dr. Ahmed AlAnsari,
CEO of governmental hospitals.
Kingdom of Bahrain

Dear Madam/Sir,

Greetings from the College of Health and Sport Sciences, University of Bahrain!

RE: Research study on "Knowledge, Attitudes, and Barriers Towards Prevention of Pressure Ulcer Among Nurses in Critical Areas: A Cross Sectional Study"- CHSS SRPC Recommendation No: 1/2021-22 dt. Oct 17,2021.

The Scientific Research and Publication Committee, College of Health and Sport Sciences (CHSS), University of Bahrain (UOB), has reviewed and recommended the research proposal (CHSS SRPC Recommendation No: 1/2021-22 dt. October 17, 2021) entitled "Knowledge, Attitudes, and Barriers Towards Prevention of Pressure Ulcer Among Nurses in Critical Areas: A Cross Sectional Study" to the MoH RTST. Mr. Hussein Hifnawi ALHafnawi, a student enrolled in M.Sc Adult Health Nursing -Nursing Program of CHSS, UoB would be carrying out the study under the supervision of Dr. Leena Mohammad Khonji, Chairperson, Nursing Department, CHSS, UoB as Master's Thesis. Notably, the outcome of the research is expected to benefit the patients admitted in the hospitals of the Kingdom of Bahrain. Therefore, I request to do the needful considering the paucity of time to complete the Master's Thesis.

Thank you for supporting scientific research at the CHSS, UOB.

Kind Regards,

Chairperson, Scientific Research and Publication Committee
College of Health and Sport Sciences
University of Bahrain

Appendix II

Data Collection form

Appendix II: Self Reporting Electronic-Data Collection Form

Knowledge, Attitudes, and Barriers towards Prevention of Pressure Ulcer Among Nurses in

Critical Areas: A Cross Sectional Study.

Self-Reporting Electronic Data Collection Form

Introduction

As a registered nurse working at SMC, you are kindly invited to participate in this research by answering the following questionnaire. This research is one of the requirements for a master degree for Master in Adult Health Nursing program student Hussein AL-Hafnawi, at University of Bahrain (UoB), Collage of Health and Sport Sciences (CHSS), under supervision of Dr. Leena Khonji.

This research aims to explore the nurses' perception of Pressure Ulcer (PU) prevention in terms of knowledge, attitude, and barriers of best practice implementation. The following questionnaire contains the following: (1) Participant approval and inclusion criteria; (2) Demographic data; (3) updated version of Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0); (4) Attitude towards Pressure ulcer Prevention instrument; and (5) Pressure Injury Prevention Barriers (PIPB) questionnaire.

The anonymity and confidentiality of the data will be maintained, as the responsible committees at SMC, UoB, and CHSS have approved the research. If you agree to participate kindly, complete the questions below:

(1) Demographic and work setting

- 1.1 Gender ☐ Male ☐ Female
- 1.2 Age _____
- 1.3 Nationality ☐ Bahrain ☐ Others _____
- 1.4 Education ☐ BCs. ☐ Master ☐ Other: _____
- 1.5 Current Position ☐ RN ☐ Other: _____
- 1.6 Years of Experience _____
- 1.7 Working area ☐ CCU ☐ ICU ☐ AKU ☐ ER ☐ burn unit.
- 1.8 Total weekly working hours _____
- 1.9 Working schedule ☐ Fixed ☐ Shifts.

(2) PU Knowledge Assessment (PUKAT 2.0)**2.1 AETIOLOGY**

2.1.1. There are several causal factors in the development of pressure ulcers. Which of the following factors is one of them?

- a. Diabetes.
- b. Incontinence.
- c. Fever.
- d. Reduced level of activity.

2.1.2. A patient sits with the head of bed elevated to 60°. What happens when his skin sticks to the underlying surface when he slides down in bed?

- a. The pressure increases.
- b. Problems with the microclimate occur (temperature and relative humidity).
- c. Shear increases.
- d. Friction/rubbing increases.

2.1.3 What is the average percentage of patients with pressure ulcers in European hospitals?

- a. Between 1% and 5%.
- b. Between 5% and 10%.
- c. Between 10% and 15%.
- d. Between 15% and 20%.

2.1.4 Excessively moist skin (due to e.g., incontinence or wound exudate) combined with increased body temperature are associated with pressure ulcer development. Is this statement correct?

- a. Yes, excessive skin moisture and raised temperature cause pressure ulcers.
- b. Yes, excessive skin moisture and raised temperature are risk factors for the development of pressure ulcers.
- c. No, wounds that occur in a moist and warm environment are always defined as incontinence- associated dermatitis (IAD).

Manderlier, B., Damme, N. V., Vanderwee, K., Verhaeghe, S., Hecke, A. V., & Beeckman, D. (2017). Development and psychometric validation of PUKAT 2·0, a knowledge assessment tool for pressure ulcer prevention.

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d. No, an increased temperature results in better blood flow and thus decreases the risk of pressure ulcers.

2.1.5. CASE: A patient is sitting in a chair in the morning and in the afternoon, each time for 2 hours. The rest of the day he spends in bed. He cannot mobilize himself. When does this patient have the highest risk of developing a pressure ulcer (if no prevention is applied)?

a. There is no higher risk to develop a pressure ulcer if a seated position in chair is combined with a lying position in bed.

b. The risk to develop a pressure ulcer is highest when he is seated in a chair because high pressure is applied during a short period of time.

c. The risk to develop a pressure ulcer is highest when he is lying in bed because lower pressure is applied during a longer period of time.

d. The risk to develop a pressure ulcer is high in this specific case, both when seated in a chair and lying in bed. A short-term high pressure can have the same effect as a long-term low pressure.

2.1.6. Which statement is correct?

a. The use of moisture-absorbing pads decrease the risk of pressure ulcers.

b. The use of water and soap can erode the skin barrier, thereby increasing the risk of superficial skin damage.

c. Massaging the skin (during washing and drying) is effective to prevent pressure ulcers.

d. Dressing the heels (with a bandage) will decrease the risk of heel pressure ulcer development.

2.2 CLASSIFICATION AND OBSERVATION

2.2.1 CASE: You observe a new blister on the heel of a patient who can reposition himself in bed. You take a look at his file, but you colleagues never reported a non-blanchable erythema or a wound. Which statement is correct?

a. The blister is not a pressure ulcer.

Manderlier, B., Damme, N. V., Vanderwee, K., Verhaeghe, S., Hecke, A. V., & Beeckman, D. (2017). Development and psychometric validation of PUKAT 2·0, a knowledge assessment tool for pressure ulcer prevention.

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- b. The blister is a Category II pressure ulcer.
- c. The blister is a Category I pressure ulcer as long as it remains intact.
- d. There is insufficient information to know if this is

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2.2.2. Which of these pictures is a pressure ulcer category I?



2.2.3. In which of these categories can necrotic tissue be present?

- a. Category I, II, III and IV.
- b. Category II, III and IV.
- c. Category III and IV.
- d. Category IV only.

2.2.4. CASE: The nurse observes a bony structure in a wound. In which category can you classify this pressure ulcer?

- a. Category IV.
- b. Category IV if there are signs of undermining of the adjacent tissue.
- c. Category IV if there is necrosis.

Manderlier, B., Damme, N. V., Vanderwee, K., Verhaeghe, S., Hecke, A. V., & Beeckman, D. (2017). Development and psychometric validation of PUKAT 2·0, a knowledge assessment tool for pressure ulcer prevention.

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d. Category IV if there are signs of a reduction of the supply of blood to the tissue.

2.3. RISK ASSESSMENT

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2.3.1. CASE: A patient is recently admitted to your nursing unit. The patient has no signs of skin redness (blanchable/non-blanchable), but is bedridden. When completing the Braden risk assessment tool, the score indicates that there is no risk for pressure ulcer development. No prevention is needed. However, you are very surprised because your clinical experience tells you that this patient is at risk. What are you going to do now?

- a. You do not implement a prevention plan because both the skin assessment and the scoring tool indicated that there is no increased risk.
- b. You do not implement a prevention plan because risk assessment instruments are developed to replace clinical judgment.
- c. You take preventive measures because your clinical judgment is as important as the result of the risk screening using the tool.
- d. You decide to reassess the patient on a daily basis (using the instrument) and to start prevention if the Braden risk assessment instrument indicates an increased risk to develop a pressure ulcer.

2.3.2. Which of these statements about the frequency of skin assessment on pressure points in hospitals is correct?

- a. The frequency of skin assessment is a medical decision (made by a medical doctor).
- b. Skin areas with an increased risk for pressure ulcer development should be inspected at least once a week.
- c. The skin of patients at risk should be inspected at least twice a week.
- d. The skin of all patients should be inspected at least daily.

2.4. NUTRITION

2.4.1. CASE: A 23-year-old previously healthy male was recently admitted to the hospital with a spinal cord injury (car accident). He is immobile and has no problems eating or drinking. Is nutritional supplementation needed to reduce the risk for pressure ulcers?

- a. Yes, I provide nutritional supplementations (vitamin tablets) to prevent pressure ulcers.

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- b. Yes, I provide nutritional supplementations (drinks enriched with the amino acid arginine) to prevent pressure ulcers.
- c. No, I will not change the nutrition of this patient as long as no signs of pressure ulcers are observed (redness or skin breakdown).
- d. No, I will not change the nutrition of this patient as long as nutritional intake is adequate.

2.4.2. Which nutritional elements are the most essential to prevent pressure ulcers?

- a. Carbohydrates, fats and proteins.
- b. Proteins and fluids.
- c. Carbohydrates and proteins.
- d. Fat, fluids and protein.

2.4.3. What type of patients (in terms of body weight) have an increased risk to develop pressure ulcers?

- a. Extremely thin patients.
- b. Obese patients.
- c. Both extremely thin and obese patients.
- d. Body weight and BMI are not associated with pressure ulcer risk.

2.5. PREVENTION OF PRESSURE ULCERS

2.5.1. What is the percentage of patients with an increased risk to develop pressure ulcers that receive adequate prevention in a chair and in bed in hospitals?

- a. <20%.
- b. Between 20% and 50%.
- c. Between 50% and 70%.
- d. >70%.

2.5.2. CASE: Your colleague informs you that she positioned a patient in bed in a semi Fowler position. What does this mean?

- a. The patient lies on his side in an angle of 30°.
- b. The patient lies on his side in an angle of 45°.

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- c. The patient lies in a supine position, with both head of bed and upper legs elevated up to an angle of 30°.
- d. The patient lies in a supine position, with the head of bed elevated up to an angle of 45°.

2.5.3. Which repositioning protocol is most effective to prevent pressure ulcers? Starting with the patient supine, then...

- a. Lateral 30° left – supine – lateral 30° right – supine – lateral 30° left – ...
- b. Lateral 90° left – supine – lateral 90° right – supine – lateral 90° left – ...
- c. Lateral 30° left – supine – lateral 30° right – supine – lateral 90° left – supine – lateral 90° right – ...
- d. Lateral 30° left – lateral 90° left – supine – lateral 30° right – lateral 90° right – supine – ...

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2.5.4. The use of a ring cushion (donuts) is effective to prevent pressure ulcers when patients are seated in a chair or wheelchair. Is this statement correct?

- a. Yes, because the pressure near the bony prominence is reduced.
- b. Yes, because it redistributes pressure and shear effectively around the area at risk.
- c. No, because the contact surface between the patient's skin and the surface is smaller.
- d. No, as it is only effective if a patient had a pressure ulcer in the past.

2.5.5. How should bed linen be used to prevent pressure ulcers?

- a. Do not secure the sheets under the mattress so they can move along with the patient.
- b. Do not secure the blanket under the mattress, so it can move along with the patient.
- c. Make sure the sheets are stretched tight.
- d. Put moisture-absorbing pads under the patient.

2.5.6. Which is the most effective technique to position a patient when seated?

- a. In an upright position with the knees in a 90° angle and the feet not touching the ground.
- b. In an upright position with the legs being supported so that an angle of more than 90° is created at the knees.

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- c. In a semi-reclined position with the knees in a 90° angle with the feet not touching the ground.
- d. In a semi-reclined position with the legs being supported so that an angle of more than 90° is created at the knees.

2.5.7. CASE: Your patient is lying on a pressure redistributing foam mattress. Do you take other measures to prevent pressure ulcers on the heels?

- a. No. A pressure redistributing foam mattress is sufficient.
- b. No. A pressure redistributing foam mattress combined with repositioning is sufficient.
- c. Yes. I will place a pillow from the knee to the Achilles tendon to off-load the heels.
- d. Yes. I will place a pillow under the Achilles tendon to off-load the heels.

2.5.8. How does repositioning prevent pressure ulcers?

- a. The amount of pressure and shear will be reduced.
- b. The amount and duration of pressure and shear w
- c. The duration of pressure and shear will be reduced.
- d. It reduces friction at the bony prominences.

2.6. SPECIFIC PATIENT GROUPS

2.6.1. Which of these statements is correct about the development of pressure ulcers in the operating room?

- a. Pressure ulcers are not likely to occur during surgery. If redness is observed just after surgery, it is most likely to be a burn wound.
- b. Immobilization after surgery causes pressure ulcers to develop, not the immobilization during the surgery itself.
- c. When pressure ulcers develop during surgery the first visible signs appear a few days later; making people think they developed after surgery.
- d. A pressure ulcer appearing postoperatively is always the result of immobilization during surgery.

2.6.2. Which is the location on the body where babies have the highest risk to develop a pressure ulcer?

- a. Occiput.

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- b. Heels.
- c. Shoulders.
- d. Sacrum.

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(3) Attitude towards Pressure ulcer Prevention instrument (APuP)

		Strongly agree	Agree	Disagree	Strongly Disagree
3.1	Personal competency to prevent pressure ulcers (three items) (maximum score = 12)				
3.1.1	I feel confident in my ability to prevent pressure ulcers.	O	O	O	O
3.1.2	I am well trained to prevent pressure ulcers.	O	O	O	O
3.1.3	Pressure ulcer prevention is too difficult. Others are better than I am.	O	O	O	O
3.2	Priority of pressure ulcer prevention (three items) (maximum score = 12)				
3.2.1	Too much attention goes to the prevention of pressure ulcers.	O	O	O	O
3.2.2	Pressure ulcer prevention is not that important.	O	O	O	O
3.2.3	Pressure ulcer prevention should be a priority.	O	O	O	O
3.3	Impact of pressure ulcers (three items) (maximum score = 12)				
3.3.1	A pressure ulcer almost never causes discomfort for a patient.	O	O	O	O
3.3.2	The financial impact of pressure ulcers on a patient should not be exaggerated.	O	O	O	O
3.3.3	The financial impact of pressure ulcers on society is high.	O	O	O	O
3.4	Responsibility in pressure ulcer prevention (two items) (maximum score = 8)				

3.4.1	I am not responsible if a pressure ulcer develops in my patients.	O	O	O	O
3.4.2	I have an important task in pressure ulcer prevention.	O	O	O	O
3.5	Confidence in the effectiveness of prevention (two items) (maximum score = 8)				
3.5.1	Pressure ulcers are preventable in high-risk patients.	O	O	O	O
3.5.2	Pressure ulcers are almost never preventable.	O	O	O	O

(4) Pressure Injury Prevention Barriers questionnaire (PIPB)

INSTRUCTIONS

Following, there are a number of situations and circumstances than potentially could prevent nursing professionals to provide the standard of care for the prevention of pressure Injuries, as recommended by guidelines. Please read each statement carefully and tick the box that fits best with how often you consider that this situation or circumstance is a barrier for PI prevention in your actual practice / setting. There are no good or bad answers, so try to tick the options that best represent your perception. Please, try not to leave any item blank.

		Never	Sometimes	Frequently	Always
4.1	Difficulty to understand the recommendations and/or its level of evidence, from the guidelines or protocols !!!!	☐	☐	☐	☐
4.2	Lack of motivation of nursing professionals. !!!	☐	☐	☐	☐
4.3	Difficulty to understand the findings from research. ! ! ! !	☐	☐	☐	☐
4.4	Low priority for prevention of pressure injuries by nursing professionals.	☐	☐	☐	☐
4.5	Lack of preventive devices (such as special mattresses, cushions, skin care products). !!!!	☐	☐	☐	☐
4.6	Lack of knowledge about pressure injuries prevention.	☐	☐	☐	☐
4.7	Lack of time to carry out preventive care. ! ! ! !	☐	☐	☐	☐
4.8	Incorrect use of equipment and devices due to lack of staff training. ! ! ! !	☐	☐	☐	☐

		Never	Sometimes	Frequently	Always
4.9	Lack of evaluation by facility management of the preventive interventions provided by the nursing team.!!!	O	O	O	O
4.10	Lack of job satisfaction	O	O	O	O
4.11	Lack of patient cooperation in applying preventive measures.	O	O	O	O
4.12	Lack of multidisciplinary team for prevention.	O	O	O	O
4.13	Incomplete recording of the interventions provided to the patients.	O	O	O	O
4.14	Difficulty to understand the pressure injury risk assessment scales	O	O	O	O
4.15	Lack of awareness of possible legal responsibility of the professionals when patients develop pressure injuries during the stay at the hospital.	O	O	O	O
4.16	Variability in implementation and poor adherence of care plans.	O	O	O	O
4.17	Lack of communication within the multidisciplinary team.	O	O	O	O
4.18	Difficulty to record the interventions in patients at risk of pressure injuries, due to the format of the form or register	O	O	O	O
4.19	Lack of protocols or clinical guidelines for pressure injuries prevention, in the workplace.	O	O	O	O
4.20	Lack of availability of courses for specific training on pressure injuries prevention, at the workplace.	O	O	O	O

		Never	Sometimes	Frequently	Always
4.21	Lack of continuity of care across different settings (hospitals, nursing homes, primary care centers)	O	O	O	O
4.22	Lack of cooperation from family caregivers at the hospital.	O	O	O	O
4.23	Persistence of traditional, non-evidence-based, cares ("it has always been done this way")	O	O	O	O
4.24	Lack of a clear definition of who are the professionals responsible for the prevention of pressure injuries.	O	O	O	O
4.25	High in-service turnover of nursing professionals.	O	O	O	O

Appendix III

Responses to
PUKAT 2.0

Appendix III: Responses to PUKAT 2.0

Item	Correct		Not-correct	
	Count	%	Count	%
Etiology sum	228	28.8%	564	71.2%
PUKAT 2.0 Q1	38	28.8%	94	71.2%
PUKAT 2.0 Q2	12	9.1%	120	90.9%
PUKAT 2.0 Q3	34	25.8%	98	74.2%
PUKAT 2.0 Q4	90	68.2%	42	31.8%
PUKAT2.0Q5	49	37.1%	83	62.9%
PUKAT 2.0 Q6	5	3.8%	127	96.2%
PUKAT 2.0 Q7	51	38.6%	81	61.4%
PUKAT 2.0 Q8	81	61.4%	51	38.6%
PUKAT 2.0 Q9	64	48.5%	68	51.5%
PUKAT 2.0 Q10	60	45.5%	72	54.5%
Classification and observation sum	256	48.5%	272	51.5%
PUKAT 2.0 Q11	57	43.2%	75	56.8%
PUKAT 2.0 Q12	106	80.3%	26	19.7%
Risk Assessment sum	163	61.7%	101	38.3%
PUKAT 2.0 Q13	45	34.1%	87	65.9%
PUKAT 2.0 Q14	74	56.1%	58	43.9%
PUKAT 2.0 Q15	80	60.6%	52	39.4%
Nutrition sum	199	50.3%	197	49.7%
PUKAT 2.0 Q16	50	37.9%	82	62.1%
PUKAT 2.0 Q17	28	21.2%	104	78.8%
PUKAT 2.0 Q18	72	54.5%	60	45.5%
PUKAT 2.0 Q19	11	8.3%	121	91.7%
PUKAT 2.0 Q20	6	4.5%	126	95.5%
PUKAT 2.0 Q21	37	28.0%	95	72.0%

PUKAT 2.0 Q22	61	46.2%	71	53.8%
PUKAT 2.0 Q23	37	28.0%	95	72.0%
Prevention sum	302	28.6%	754	71.4%
PUKAT 2.0 Q24	12	9.1%	120	90.9%
PUKAT 2.0 Q25	77	58.3%	55	41.7%
Specific patient groups	89	33.7%	175	66.2%
PUKAT 2.0 Overall sum	1237	37.5%	2063	62.5 %

Appendix IV

Responses to PIPB questionnaire

Appendix IV: Responses to PIPB questionnaire

	Never		Sometime		Frequently		Always		sum	Mean	Recognized as barrier by
	Count	%	Count	%	Count	%	Count	%			
1	32	24.2%	86	65.2%	10	7.6%	4	3.0%	118	0.89	10.61%
2	34	26.0%	65	49.6%	26	19.8%	6	4.6%	135	1.03	24.43%
3	26	19.7%	80	60.6%	22	16.7%	4	3.0%	136	1.03	19.70%
4	63	47.7%	53	40.2%	14	10.6%	2	1.5%	87	0.66	12.12%
5	17	12.9%	62	47.0%	34	25.8%	19	14.4%	187	1.42	40.15%
6	61	46.2%	55	41.7%	13	9.8%	3	2.3%	90	0.68	12.12%
7	32	24.2%	72	54.5%	20	15.2%	8	6.1%	136	1.03	21.21%
8	32	24.2%	80	60.6%	17	12.9%	3	2.3%	123	0.93	15.15%
9	37	28.0%	73	55.3%	17	12.9%	5	3.8%	122	0.92	16.67%
10	40	30.3%	71	53.8%	11	8.3%	10	7.6%	123	0.93	15.91%
11	20	15.2%	97	73.5%	13	9.8%	2	1.5%	129	0.98	11.36%
12	26	19.7%	68	51.5%	34	25.8%	4	3.0%	148	1.12	28.79%
13	36	27.5%	73	55.7%	22	16.8%	0	0.0%	117	0.89	16.79%
14	63	47.7%	50	37.9%	16	12.1%	3	2.3%	91	0.69	14.39%
15	44	33.3%	62	47.0%	24	18.2%	2	1.5%	116	0.88	19.70%

16	29	22.0%	78	59.1%	24	18.2%	1	0.8%	129	0.98	18.94%
17	36	27.5%	60	45.8%	27	20.6%	8	6.1%	138	1.05	26.72%
18	57	43.2%	49	37.1%	24	18.2%	2	1.5%	103	0.78	19.70%
19	60	45.5%	53	40.2%	17	12.9%	2	1.5%	93	0.70	14.39%
20	39	29.5%	52	39.4%	28	21.2%	13	9.8%	147	1.11	31.06%
21	33	25.0%	58	43.9%	27	20.5%	14	10.6%	154	1.17	31.06%
22	24	18.2%	65	49.2%	31	23.5%	12	9.1%	163	1.23	32.58%
23	23	17.4%	77	58.3%	30	22.7%	2	1.5%	143	1.08	24.24%
24	46	34.8%	58	43.9%	26	19.7%	2	1.5%	116	0.88	21.21%
25	37	28.0%	68	51.5%	14	10.6%	13	9.8%	135	1.02	20.45%

Appendix V

Cover Page, Abstract,
and Summary in
Arabic

جامعة البحرين

كلية العلوم الصحية
والرياضية



قسم
التمريض

المعارف والتوجهات والعوائق نحو الوقاية من تقرحات السرير في وحدات العناية الحرجة – دراسة مقطعية

في إطار الإيفاء بمتطلبات الحصول على درجة ماجستير العلوم في تمريض صحة البالغين

تقديم

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مملكة البحرين

يناير 2023

Abstract

المقدمة: تقرحات السرير حالة صحية خطيرة ترهق العاملين بالقطاع الصحي، وخاصة الممرضات والممرضين حيث ان الإقامة الطويلة بالمستشفى تعتبر اهم العوامل المساعدة على ظهورها على الرغم من انها حالة يمكن الوقاية منها. بالإضافة الى ذلك لدى الممرضات والممرضين دور حاسم في منع ومعالجة تقرحات السرير وذلك من خلال تطبيق الارشادات السريرية الخاصة بمعالجة والحد من تقرحات السرير. تقترح الدراسات السابقة ان تطبيق هذه الارشادات يعتمد بشكل كبير على ماهية إدراك الممرضين لتقرحات السرير. تركز هذه الدراسة على ثلاث عناصر لإدراك الممرضين ألا وهي (1) مستوى المعرفة بخصوص تقرحات السرير (2) الموقف نحو تقرحات السرير (3) العوائق التي تحد من إجراءات الوقاية من تقرحات السرير كما يراها الممرضين.

الهدف: هدفت هذه الدراسة الى تحديد مستويات المعرفة والمواقف بخصوص تقرحات السرير والعوائق المحتملة لإجراءات الوقاية من تقرحات السرير ومعالجة تقرحات السرير لدى الممرضات والممرضين في مجمع السلمانية الطبي.

منهجية البحث: تبعت الدراسة تصميمًا وصفيًا مقطعيًا. أجريت الدراسة في مجمع السلمانية الطبي وضمت 132 ممرضة من وحدات العناية الحرجة وغير الحرجة. تم استخدام طريقة عشوائية بسيطة لاختيار عينة الدراسة، وتم استخدام ثلاثة استبيانات معيارية لتقييم متغيرات الدراسة: (1) أداة تقييم معرفة قرحة السرير (PUKAT 2.0)، (2) الموقف تجاه أداة الوقاية من قرحة الضغط (APuP) و (3) عوائق الوقاية من الإصابة بتقرحات السرير (PIPB).

النتائج: أظهرت النتائج أن 12.1% (العدد = 16) من الممرضين والممرضات لديهم مستوى معرفة مرضي حول تقرحات السرير، وحوالي 65.15% (العدد = 86) أظهروا موقفًا إيجابيًا تجاه الوقاية من تقرحات السرير. لم يكن هناك فرق معتد به إحصائيًا بين ممرضين وممرضات في اقسام الرعاية الحرجة وأقسام الرعاية غير الحرجة فيما يتعلق بمعرفة تقرحات السرير (قيمة احتمالية = 0.84) أو الموقف تجاه تقرحات السرير (قيمة احتمالية = 0.45). كان نقص الأجهزة هو أكثر عوائق الوقاية من تقرحات السرير التي تم الإبلاغ عنها، يليها عدم تعاون افراد عائلة المريض.

الاستنتاج: أظهر الممرضون والممرضات معرفة غير كافية بخصوص تقرحات السرير، خاصة فيما يتعلق بالوقاية من تقرحات السرير؛ ومع ذلك، فقد أظهرت الممرضات والممرضون موقفًا إيجابيًا تجاه تقرحات السرير وأبلغوا عن عدد منخفض من العوائق التي تحول دون الوقاية من تقرحات السرير؛ وعليه قد يساهم برنامج تدريبي منظم في رفع مستوى معرفة الممرضات والممرضين حول تقرحات السرير ويحسن الرعاية.

Summary

هدفت هذه الدراسة إلى وصف منظور وإدراك الممرضين وممرضات في مجمع السلمانية الطبي نحو تقريحات السرير من ناحية الوقاية منها ومعالجتها من حيث المعرفة والتوجهات والعوائق المتصورة. اتبعت الدراسة تصميمًا وصفيًا مقطعيًا. أجريت الدراسة في مستشفى السلمانية الطبي، أحد أكبر المستشفيات العامة في مملكة البحرين. شكل الممرضات والممرضين من وحدات الرعاية الحرجة وغير الحرجة مجتمع الدراسة. تم اختيار عينة الدراسة عن طريق أخذ عينة عشوائية بسيطة باستخدام جداول الأرقام العشوائية. كان لرؤساء التمريض دور مهم لمنع الكشف عن سرية هوية المشاركين. طُلب من المشاركين في الدراسة تعبئة أداة جمع بيانات الخاصة بالدراسة، والتي كانت باللغة الإنجليزية وتضمنت ثلاثة استبيانات تم التحقق من صحتها وهي: (1) PUKAT 2.0 لتقييم المعرفة الخاصة بتقريحات السرير (2) APuP لتقييم الموقف تجاه تقريحات السرير (3) PIPB، لتحديد العوائق التي تحول دون معالجة تقريحات السرير والوقاية منها كما يراها الممرضون والممرضات. تم تسليم الاستبيانات المكتملة غير المعرّفة للباحث لإدخال البيانات، وتم استخدام برنامج SPSS 27.0 لإدخال البيانات وتحليلها.

كشف تحليل البيانات أن الممرضين والممرضات في مجمع السلمانية الطبي لديهم مستوى غير مرضٍ من المعرفة فيما يتعلق بالوقاية من تقريحات السرير ومعالجتها، والتي يمكن لبرنامج تدريبي مناسب تصحيحها. علاوة على ذلك، أظهر الممرضون والممرضات موقفًا إيجابيًا، مما قد يساهم في تحسين نتائج التعلم. تعرّف الممرضون والممرضات في مجمع السلمانية الطبي على عدد من العوائق التي تحول دون تنفيذ إرشادات الوقاية من تقريحات السرير وعلاجها؛ ومع ذلك، كانت هذه الحواجز خارجية بشكل أساسي، على سبيل المثال، نقص الأجهزة وعدم تعاون عائلات المرضى، حيث لم تدرك الممرضات أن افتقارهم إلى المعرفة يمثل عائقًا؛ علاوة على ذلك، أبلغت الممرضون والممرضات عن عدد قليل نسبيًا من العوائق، وخاصة ممرضو وممرضات الرعاية الحرجة.

التوصية الرئيسية لهذه الدراسة هي الاستثمار في الموقف الإيجابي للممرضين والممرضات وشعورهم العالي بالمسؤولية من خلال توفير برنامج تدريبي مناسب يرفع مستوى المعرفة، والذي سيعزز تنفيذ الارشادات السريرية المعتمدة لمعالجة والوقاية من تقريحات السرير. علاوة على ذلك، القيام بتشكيل فريق متخصص لتقريحات السرير والعمل على دعم الاستمرارية في تطبيق الارشادات السريرية المعتمدة لمعالجة والوقاية من تقريحات السرير عبر مرافق الرعاية الصحية وابرار دور الممرضات والممرضين في تثقيف المريض وعائلته فيما يتعلق بالوقاية من تقريحات السرير ومعالجتها.