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MASTER OF ARTS IN NURSING

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**Knowledge, Attitude and Compliance on Pressure Injury Prevention among
Nurses in the Teaching-Training Public Hospital in Cebu City, Philippines**

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KNOWLEDGE, ATTITUDE AND COMPLIANCE ON PRESSURE INJURY PREVENTION AMONG NURSES IN THE TEACHING-TRAINING PUBLIC HOSPITAL IN CEBU CITY, PHILIPPINES

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Acceptance Page

This thesis titled "**KNOWLEDGE, ATTITUDE AND COMPLIANCE ON PRESSURE INJURY PREVENTION AMONG NURSES IN THE TEACHING-TRAINING PUBLIC HOSPITAL IN CEBU CITY, PHILIPPINES**" is hereby accepted by the Faculty of Management and Development Studies, U.P. Open University, in partial fulfillment of the requirements for the degree Master of Arts in Nursing.

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Biographical Sketch

My name is Sherwin C. Garces and I was born in Malitbog, Southern Leyte, Philippines. I am a registered nurse. I have affiliation with the Philippine Nurses Association, Inc., Perioperative Registered Nurses Association of the Philippines, Inc (ORNAP), Philippine Hospital Infection Control Society, Inc. and Occupational Health Nurses Association of the Philippines (OHNAP), Inc.

I finished Master of Arts in Nursing, major in adult health at the University of the Philippines-Open University and graduated Bachelor of Science in Nursing at the University of the Visayas, Cebu City, Philippines.

I was awarded as “Most outstanding Nurse in Southern Leyte” during RNheals deployment project of Department of Health (DOH) in 2012 awarded by Gov. Damian Mercado.

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Dedication

To my co-faculty at Cebu Institute of Technology University, College of Nursing, my co-nurses at Vicente Sotto Memorial Medical Center, and to all nursing students and nurses, past and future, you may find this study an inspiration. Lastly, to my daughter, Irina Kate B. Garces, you are most valued and keeps me motivated every single day.

I personally dedicate to all of you this research study.

SHERWIN CAPILITAN GARCES, RN

Abstract

Introduction: Pressure injuries are a traditional nursing issue. This study determines the nurses' knowledge, attitude and compliance on pressure injury prevention.

Materials and Methods: A descriptive correlational quantitative design was used in the study. A total of 196 nurses were selected using stratified random sampling. The knowledge was measured using the Pieper pressure ulcer knowledge test, while the nurses' attitude was measured by the staff attitude scale, and compliance on pressure injuries was assessed using the pressure injury prevention care bundle. Participants were nurses assigned to the medical–surgical units in the teaching-training public hospital in Cebu City, Philippines. The participants were asked using a paper-to-pen test.

Results: In this study, among all indicators, 88.15% of the nurses were knowledgeable in terms of the use of devices, followed by other preventive measures with 87.46% and lastly, 85.86% of the nurses knew how to identify risk factors that causes PI. On the other hand, 67.86% of the nurses were least knowledgeable in determining stages I, II, III, IV and classification of pressure injuries, followed by mobility with 75.92% then skin care with 77.30%. Majority of the nurses had a favorable attitude with a mean score of $m=4.03$ ($SD=0.13$). In terms of compliance of nurses on PI prevention, across all indicators, nurses were highly compliant in risk assessment ($m=3.51$, $SD=0.74$), but least performed in moisture/incontinence management ($m=3.11$, $SD=0.79$). The following variables had a significant relationship with each other; knowledge vs compliance ($X^2=1230.954^a$, $p=0.00$), attitude vs compliance ($X^2=1389.378^a$, $p=0.00$), knowledge vs length of service ($\rho=.162^*$,

p=0.02), attitude vs length of service ($\rho = -.144^*$, p=0.04), length of service vs compliance ($\rho = -.145^*$, p=0.04), training on PI vs compliance ($X^2=22.534^*$, p=0.03).

Conclusion/Implications: As a result of their high level of knowledge, favorable attitude with high level of compliance, development of pressure injuries among patients in the medical-surgical units in the teaching-training public hospital in Cebu City, Philippines, may be prevented through proper application by the nurses of the preventive measures or interventions to prevent PI. The correlation between variable is deemed necessary for the nurses assigned to the units so that they can provide a quality skin care, thus, control the occurrence of pressure injuries.

Keywords: Pressure injury; Knowledge pressure injury; Attitude pressure injury prevention; Compliance on pressure injury; Demographic profile

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CHAPTER I

THE RESEARCH PROBLEM

Background of the Study

Pressure injuries are a significant burden to every single person, impacting their mental, social, and physical well-being. It is considered a traditional nursing issue. (Clarkson P, Worsley PR, Schoonhoven L, Bader DL, 2019). It is a burden for healthcare professionals. (Gress Halász et al., 2021).

The researcher was interested in assessing the knowledge, attitude, and compliance on pressure injury prevention in a teaching-training public hospital in Cebu City, Philippines, considering the number of cases of pressure injuries in this health facility. As per records from the nursing service department, there were 165 recorded cases in the last 18 months, and approximately 9 - 10 pressure injuries developed every month as per record (Nursing Service Department level III hospital, 2024). As a Nurse Supervisor in the institution, the researcher wanted to assess nurses' knowledge, attitude, and compliance toward pressure injuries to promote excellent patient care outcomes and minimize or control the further development of pressure injuries among patients. This facility is a referral hospital (tertiary hospital) that caters to and treats chronic wounds, which include pressure injuries. Indeed, this government-owned Level III teaching-training public hospital, which has a 1,500-bed capacity, is the site for this study. This facility has an existing policy on pressure injury prevention. In any case of pressure injury, the patient safety department or an appointed committee is in charge of investigating and implementing preventive measures and monitoring. The institution utilizes the pressure ulcer monitoring form,

which identifies the pressure injury's onset, size, location, and outcome. The researcher is interested in addressing this traditional nursing issue because it is costly and can delay patient discharge.

Worldwide, in 2019, the prevalence of pressure injury cases was 0.78 to 0.94 million. The rate increases with age, peaking in those > 95 years age group among females and males. The following countries recorded a significant increase in the age-standardized prevalence rate at the national levels: Malaysia, Saudi Arabia, and Thailand. (Zhang et al., 2021).

In a research study in the United States of America, most hospital-acquired pressure injuries can be prevented; approximately 2.5 million individuals in acute care institutions develop pressure injuries each year. The affected populations are the elderly, those hospitalized for an extended period, and those malnourished. These pressure injuries may result in a vast amount of harm, including chronic wounds, and increase the mortality rate to approximately 60,000 deaths every year. (Padula & Delarmente, 2019).

Pressure injury is due to prolonged or severe pressure from friction and shear forces. In some hospitals and long-term care facilities, it reduces the quality of life and contributes to high costs for the healthcare setting and the patient. In addition, it increased mortality and morbidity rates. (Mondragon N, Zito PM, 2022). Pressure injury occurs in the bony prominences, including the malleoli, inner knees, shoulders, elbows, ears, back of the head, ischial tuberosity, and greater trochanter. (Al A., Manna B. (2023).

The researcher sought to find out if there is any existing relationship between knowledge, attitude, compliance, and demographic profiles. This study evaluated

respondents, such as nurses. Does that mean they comply with pressure injury prevention if they are knowledgeable? Or, if the nurses are compliant, does that mean they are knowledgeable about pressure injuries? On the other hand, this study will also find out if the demographic profiles of the respondents are a vital or significant factor for a nurse to be knowledgeable or highly compliant about pressure injury prevention. The researcher wanted to know if gender, educational attainment, and length of service also influence knowledge and compliance on pressure injury prevention among nurses. Compliance with pressure injury prevention as a dependent variable for the study relates to the empirical study in 2019 using the Pressure Ulcer Prevention Care Bundle. A care bundle is an organized set of interventions.

The purpose of this bundle is to encourage the nurses to comply with pressure injury prevention. It has designed guidelines to improve the quality of care among patients. In the University Hospital in Turkey, the care bundle has been used. Ninety-five employed nurses in eight intensive care units participated and utilized the care bundle. In this bundle, there were 48 statements, which were divided into eight categories. Item-by-item content validation of the said care bundle was rated on a 4-point Likert scale using 'I agree,' and 'I do not agree' on responses. This care bundle assisted the nurses in creating the correct interventions for patients. (Yilmazer, T., 2019)

Statement of the Problem

Indeed, the researcher has selected this government-owned Level III teaching-training public hospital, which has a 1,500-bed capacity hospital in Cebu City, Philippines, for the study to assess the nurses' knowledge, attitude, and compliance

on pressure injury prevention. The 165 cases of pressure injuries in the last 18 months seemed alarming; approximately 9 to 10 pressure injuries developed every month, according to the record (Nursing Service Department Level III Hospital, 2024). This institution is a referral hospital that caters to complex cases of chronic wounds, including pressure injuries. Despite their training, no existing tool is available to evaluate nurses on pressure injury prevention. In addition, not all nurses have attended the training on pressure injury prevention. The researcher has been very interested in pressure injury prevention in this hospital setting, particularly regarding how knowledgeable the nurses are regarding pressure injuries. Also, to determine their attitude towards preventing pressure injuries and their compliance with preventing it. This study determined the knowledge, attitude, and compliance with pressure injury prevention among nurses in this Level III teaching-training medical facility in Cebu City, Philippines.

Objectives of the Study

Specifically, the study will answer the following questions:

1. What is the profile of the respondents in terms of:
 - 1.1. sex;
 - 1.2. highest educational attainment;
 - 1.3. length of service in the hospital;
 - 1.4. training on pressure injury prevention;
 - 1.5. area of assignment.
2. What is the level of knowledge in pressure injury prevention of the respondents according to subscales/indicators:
 - 2.1 stages and classification;

- 2.2 risk factors;
- 2.3 skincare;
- 2.4 mobility;
- 2.5 use of devices; and,
- 2.6 other preventive measures.

3. What is the attitude of nurses on pressure injury prevention?

4. What is the level of compliance of nurses on pressure injury prevention in terms of the following indicators:

- 4.1 participation in education;
- 4.2 risk assessment;
- 4.3 skin assessment
- 4.4 skincare;
- 4.5 nutrition management;
- 4.6 activity management;
- 4.7 moisture/incontinence management;
- 4.8 support surface management

5. Is there a significant relationship between knowledge, attitude, and compliance with pressure injury prevention?

6. Is there a significant relationship between knowledge of pressure injury prevention and the following demographic profiles:

- 6.1 sex;
- 6.2 highest educational attainment;
- 6.3 length of service in the hospital;
- 6.4 training on pressure injury prevention.

7. Is there a significant relationship between attitude toward pressure injury prevention and the following demographic profiles:

7.1 sex;

7.2 highest educational attainment;

7.3 length of service in the hospital;

7.4 training on pressure injury prevention.

8. Is there a significant relationship between compliance with pressure injury prevention and the following demographic profiles:

8.1 sex;

8.2 highest educational attainment;

8.3 length of service in the hospital;

8.4 training on pressure injury prevention.

Significance of the Study

This study will be beneficial to the following:

Patients – The findings of the study will benefit patients when the nurses are compliant with pressure injury prevention, if not minimize or avoid the risk of developing pressure injury while in the hospital, which may neither harm nor be a contributing factor to their health as a threat, such as putting them at risk of wound infection and eventually leading to sepsis.

Nurses – This study will aid the nurses in devising continuing education and programs related to pressure injury prevention, thus improving the knowledge and broadening

the skills of these nurses so that they can provide exceptional medical care to their patients.

Nurse Supervisors/Charge Nurses/Chief Nurse – The administration in charge will assist the staff nurses in understanding and promoting the effective way of preventing pressure injury to patients with limited mobility, older or geriatric patients, and patients in a comatose state.

Nurse Educators – This study will assist nurse educators in identifying the training needs of the nurses in the institution.

Researchers – This study will help researchers understand and determine the knowledge level of pressure injury prevention among staff nurses in a Level III public hospital in Cebu City, Philippines. The researcher will utilize this study to address the staff nurse's knowledge, attitude, and compliance with pressure injury prevention.

Future researchers – This study will serve as a reference in conducting further studies and in making some improvements, which could provide the basis for future research and point out the relevance of the study to help strengthen the existing health condition of patients.

Scope and Limitation of the Study

This study focused on determining the knowledge, attitude, and compliance on pressure injury prevention of the nurses working in the teaching-training 1,500-bed capacity public hospital in Cebu City, Philippines. The scope of the study covered nurses assigned over six months to patients with medical and surgical conditions. These nurses will answer the questionnaire or survey.

One of the limitations of the study was that some nurses needed to answer the survey questionnaire online due to rampant scam-related incidents. Thus, a paper-pen test was utilized by the researcher. At some point, when the paper pen type of questionnaire was provided, some nurses delayed or refused to answer, either because they were rushing home after work or they arrived late to the nurse's station. Thus, the researcher sought the assistance of the immediate supervisor of the nurses to facilitate the data-gathering process. Meanwhile, the researcher has explained to them the importance of the study and its favorable effects on the current practice of nurses regarding pressure injury and its prevention.

Moreover, the following criteria were used to exclude participants or respondents: first, those who obtained a doctorate were not included in the study; second, those nurses who hold administrative work and tasks; and third, those who do not have direct patient care. In addition, nurses assigned to the OPD, NICU, Cath lab, operating room, labor, and delivery room were not included. These nurses cared for the patients for a limited or short period only.

CHAPTER II

THEORETICAL BACKGROUND

Review of Related Literature

This chapter presents the knowledge and findings from existing literature on pressure injury prevention. The review enumerates, describes, summarizes, objectively evaluates, and clarifies the previous literature. The research databases used are PubMed, Sigma, Science Direct, Google Scholar, and Core.

The keywords are *pressure injury, attitude, knowledge, compliance, and demographic profiles.*

Pressure Injury

Pressure injuries are a significant burden to every single person, impacting their mental, social, and physical well-being. It is considered a traditional nursing issue. (Clarkson P, Worsley PR, Schoonhoven L, Bader DL, 2019). It is a burden for healthcare professionals, and it happens to immobile patients, causing severe complications. Its prevalence and incidence remain alarming (Gress Halász et al., 2021)—lastly, broken skin results in the loss of skin integrity. Pressure injury has various stages, including stages from Stage I, II, III, and IV (Al A., Manna B. (2023)

Pressure Injury Prevention

A study conducted in a public health center (Pukskemas) Bandung, West Java, Indonesia, amongst community nurses aimed to assess the knowledge and attitude of these nurses regarding pressure injury prevention. The knowledge was measured utilizing the Pressure Ulcer Knowledge Assessment Tool (PUKAT 2.0). On the other

hand, attitudes were measured using a predesigned instrument with 11 statements on a five-point Likert scale. In conclusion, "prevention" had the lowest percentage of correct answers, about 20.8%. (Sari SP, Everink IH, Amir Y, Lohrmann C, Halfens RJ, Moore Z, Beeckman D, Schols JM, 2021).

A previous study in the pediatric intensive care unit at Benhan Specialized Pediatric Hospital aims to study and evaluate the effect of prevention bundle guidelines on nurses' knowledge and compliance with pressure injuries among children who are critically ill. It was found that there was a significant and highly statistical difference before and after using the bundle of interventions. It can be concluded that implementing the preventive bundle guidelines has proven that the bundle is practical and improves the nurses' knowledge and compliance with pressure injury prevention. (Rawia Abd Elghany Mohamed, Seham Mohamed Abd Elaziz, Hanan Nabawy Elaasar, 2019).

Knowledge of Pressure Injury Prevention

A study was conducted to determine the knowledge and attitudes toward preventing pressure injuries among nurses in Slovak hospitals, and it aimed to find any relationships and differences. Of approximately 460 randomly chosen nurses, 225 (49%) were participants. The result showed that these nurses must gain more knowledge and attitudes on preventing pressure injuries. Thus, it is vital to focus on continuing education and general education, specifically the practice of nurses. (Gress Halasz B, Beresova A, Tkacoya L, Magurova D, Lizkova L., 2021)

A group of researchers conducted another study to develop a questionnaire in Spanish. Its purpose was to measure knowledge on pressure injury prevention based

on recent guidelines internationally. The PIPK (Pressure Injury Prevention Knowledge) questionnaire, a 31-item shows a reliability of 0.98 for items and 0.72 for people and is a good fit. Due to its development based on international guidelines has been translated into English, which can be used in further studies. (Lopez-Franco et al., 2020).

Attitude on Pressure Injury Prevention

In the United Kingdom, this study demonstrated that most healthcare professionals in a community setting showed satisfactory knowledge and attitudes regarding pressure injury prevention. (Clarkson et al., 2019).

A cross-sectional study was conducted in the units of a tertiary hospital in China; the researcher used an MDRPI (medical device-related pressure injuries) knowledge, attitude, and practice questionnaire. There were 2236 nursing staff respondents from the 164 different units. The study explored the knowledge, attitude, and practice of preventing medical device-related pressure injuries among nurses in China. The study found that while nurses' attitudes and practices score in preventing MDRI are high, there is room for improvement in their knowledge score. Some factors, including the position of the nurses and training, were identified as promoting MDRPI prevention. (Fang P., Wanfan W., Zhu X., Cao Y., et al., 2024).

Another study from Croatian nurses' and nursing students' attitudes towards pressure ulcer/ injury prevention in 2020 – 2021 aimed to validate the Croatian version of the attitude towards a Pressure Ulcer Prevention Instrument (APUP) and determine the attitudes of students and nurses. The cross-sectional study included 440 participants (114 nurses and 326 nursing students). The study determined that nurses

and nursing students in Croatia have positive attitudes toward pressure injury prevention. (Cukljek, S, et al., 2023.)

Compliance on Pressure Injury Prevention

A study conducted by the wound and management prevention program under the wound care learning network uses a pressure injury prevention care bundle. It is an organized set of interventions to improve quality of life that encourage compliance. A cross-sectional study was conducted at a university in Turkey, in which 95 nurses were employed in the eight intensive care units who use and assess the care bundle based on the pressure injury guidelines developed by the researchers. The content of the pressure injury care bundle included 48 statements divided into eight categories. The care bundle aims to help the nurses develop appropriate patient interventions. (Yilmazer T.. (2019).

Another study was made in China entitled "Implementing a Pressure Injury Care Bundle in Chinese Intensive Care Units" that aims to assess if the pressure injury prevention care bundle is effective. The locale setting of the study was intensive care units, and its goal was to identify the nurses' compliance rates during the implementation process. The design used was a quasi-experimental, pre-and post-intervention study that measures the outcome indicators in intensive care units. Among the strategies used were training and auditing during care bundle use. The pressure injury care bundle comprises critical elements: risk identification, skin assessment, patient repositioning, skincare, nutrition, and pressure-reducing devices. The compliance rate was measured at two points using a compliance checklist during the implementation process. Based on the result, pressure injuries decreased

significantly from 13.86% to 10.41%; hospital-acquired pressure injuries reduced by 29.5% within a 6-month. Lastly, when it comes to nurses' compliance rate, it increased significantly from 55.15% to 60.15% before and after the implementation of the pressure injury prevention care bundle. This standardized care bundle is indicated to be effective in decreasing the incidence of pressure injuries (Zhang X et al., 2021).

Cobos-Vargas et al.. presented compliance with preventive measures recommended by an international study group for pressure injuries in critically ill adult patients in October 2022. A study was carried out in a multipurpose ICU for critically ill patients with a 27-bed capacity. It is a cross-sectional observational study obtained over three days in three consecutive months. All ICU patients were included. The study's main findings are: The results vary when different preventive measures are applied in clinical practice. Notably, the highest degree of compliance in the unit was the use of active mattresses and incontinence pads, and nurses followed the assessment of pressure injuries. However, the lowest degree of compliance is the pressure injury reduction in the heels and the use of dressings in support areas such as the sacrum, heels, and trochanters in high-risk patients. Meanwhile, the nurses have not accepted the loading devices, specifically the pillows. In conclusion, the study suggested improving sacral dressings and heel-protective devices. (Cobos-Vargas et al, 2022).

Relationship between Knowledge, Attitude, and Compliance on Pressure Injury Prevention

There is a relationship between knowledge, attitude, and compliance or nurses' perspective toward preventing pressure injury. A previous study by Sari et al. (2021) where the outcome of the study shows that even though respondents were

knowledgeable in some items, e.g., in the theme "nutrition," which is the highest score, the overall results reflected that they need to improve the fundamental understanding of PI prevention. Thus, prevention on prevention injury had the lowest percentage of correct answers, about 20.8%. This result demonstrated a favorable attitude of nurses toward pressure injury prevention.

In Slovaks Hospitals in 2021, it has been proven that if the nurses have an attitude to comply with the appropriate practices for preventing pressure injuries, there is no need for any continuing education program to be conducted specifically on pressure injury prevention. A study by Gress, Beresova, et al. in 2021 shows that inadequate compliance with pressure injury prevention can lead to more severe complications, and the prevalence is still alarming. These complications create a burden amongst healthcare workers in the workplace. Indeed, there is a relationship between knowledge and compliance with pressure injury prevention.

Relationship between Knowledge on Pressure Injury Prevention and selected Demographic Profiles

The Department of Nursing in Purwokerto, Indonesia at the Universitas Jenderal Soedirman has a study about pressure injury prevention to predict Indonesian nurses' knowledge and attitude working in hospital settings. The respondents were nurses working in a hospital setting. The study selected demographic profiles such as age, level of education (vocational degree, bachelor's degree, master's degree), income, and professional position. They separately categorized predictors between knowledge and attitude. Predictors of knowledge were age, level of education, and income (Sari et al., 2021).

Meanwhile, the predictors for attitude are the level of education and professional position. Based on the analysis, the results show that level of education is the strongest predictor of pressure injury prevention. Another significant predictor of nurses' attitudes in our study was their professional position. Regarding attitude towards PI prevention, head nurses had a favorable attitude compared to staff nurses. The correlation analysis demonstrated that head nurses understood more about the importance of pressure injury prevention than staff nurses. While, when it comes to education level, nurses who hold a bachelor's degree or higher have better knowledge of PI (pressure injury) prevention than those who hold a vocational degree. According to Sari Et al., 2023.

On May 19, 2019, in a public hospital in Wollega, Oromiya, Ethiopia. A total of 220 eligible nurses participated in the study to determine their knowledge of pressure injury and assess perceived barriers to prevention in this public hospital. The response rate was 96.3%, and most were male (61.8%). Amongst the respondents were graduates of a diploma in nursing (69.8%). And those nurses with 5-7 years of clinical experience. This study reported that, when it comes to gender, there is a significant difference between males (5.67%) and females (3.3%) about the pressure injury knowledge score. The study also indicated that respondents with higher education obtained a higher knowledge score. The outcome was that nurses with more years of employment and previous training experience and nurses working in Level III hospitals or with critical care experience had a higher knowledge score. (Ebi, W.E., Hirko, G.F., & Mijena, D.A., 2019). Indeed, there is a significant relationship between knowledge and compliance in pressure injury prevention and the demographic profiles of nurses,

such as gender, education attainment, and length of service as a nurse, based on the outcome of the study.

A descriptive study in 2023 is an analytical and cross-sectional type of study. This study was carried out between 10.08.2012 to 31.11.2021 in the Training and Research Hospital in Ankara, located in Central Anatolia, Turkey. With a sample size of $n=183$, nurses working in the ICU participated in the study. The outcome of the study presents the level of education and work experience in the ICU affected nurses' knowledge of PI prevention. In addition, gender variables were used as adjustments in the analysis. The mean age of the nurses participating was 25.85 ± 3.43 years, and 86.2% were female. Lastly, nurses with a bachelor's degree or higher were likelier to have adequate PI injury prevention knowledge, according to Korkmaz S., Sönmez M., Kısacık O.G., 2023. In 2024, a study conducted by John, A.M., Nayak K.R., Lobo, G., Thaleppaddy, M. (2024). in a tertiary hospital in India involved 320 nurses working in a teaching hospital from March 2023 until June 2023. Nurses answered a questionnaire on PI management. A total of 273 nurses completed both the pre-and post-tests. Most participants were female (95.2%), most graduated from a diploma program (60.4%), 32.6% had less than five years of experience, and 23.1% had more than 20 years of experience as a nurse. The total scores were classified into low, moderate, and high scores. The outcome was that most respondents had a moderate score, about 71.8% out of the total sample. Among all participants, it was found that females had better knowledge of PI prevention than males. Regarding the job category, the assistant nursing superintendents and charge nurses had better knowledge than other positions.

Relationship between Attitude on Pressure Injury Prevention and Selected Demographic Profiles

There was a study to determine perioperative unit nurses' knowledge, attitude, or compliance and identify associated factors. The respondents were nurses who work in various branches (orthopedics, neurosurgery, obstetrics, and general surgery). Data was gathered using a questionnaire prepared on the Google Forms platform and eventually sent to nurses via WhatsApp, Instagram, and Facebook. The participating nurses are female, hold bachelor's degrees, and work in the university hospital. It was determined that mean scores for knowledge about preventing PI injury were insufficient. The scores of knowledge of PI prevention were higher amongst female nurses and those who graduated from undergraduate and graduate programs. It was also found that male nurses obtain lower knowledge scores than female nurses. The study indicates that even though the nurses had insufficient knowledge of PI prevention, they still had a favorable attitude toward PI prevention (Cigdem et al., 2023).

Approximately 300 nurses were eligible and participated in the study in the Kingdom of Saudi Arabia, assigned to the intensive care unit. Both local nurses and foreign-trained nurses were the respondents. Some nurses' educational attainment was diplomas. However, there is an increasing number of nurses with bachelor's degrees or higher working in the country and registered under the Saudi Commission for Health Specialties. The study aims to explore the nurses' knowledge and determine if the interventions are effective before and after implementing educational interventions on PI prevention (Alshahrani, B., et al., (2023). The outcome of the study was that, during pre-intervention, the mean score was 43.77% and 74.77%, while post-

intervention, the score increased to 51.22% and 79.02%, reflecting both the knowledge and attitude of nurses when it comes to the implementation of interventions. Nursing experience, length of experience and age of nurses were identified as factors that correlated with knowledge of PI prevention. Lastly, Bachelor's degree or higher educational attainment had better knowledge and attitudes towards PI prevention. (Alshahrani B. et al., 2023).

A study conducted in Java, Indonesia, utilized the demographic profile of the nurses. Overall, 235 community nurses participated in this study. Among the participants, nurses had more than five years of working experience (80%; n=188), majority of whom were female (77.9%; n = 183) and more than half of the participants (67%; n = 158) were over 35 years old. While 65.0% (n=152) were graduates of vocational courses (Sari et al., 2021).

The study compared the scores between nurses' different lengths of work experience. The study shows that the highest scores in the groups were those with 6–20 years and 6–10 years of working experience and those with 6–10 years of working experience, respectively. The analysis shows a difference in the nurses' attitude towards preventing pressure injuries based on their education level. The higher their education, the more they have a favorable perspective on pressure injury, according to Sari et al., 2021.

Relationship between Compliance on Pressure Injury Prevention and selected Demographic Profiles

In 2019, Mohamed S. and Rawia Ali Ibraheem conducted a study on the effect of pressure injury care bundle Care in the Intensive Care Unit. Nurses answered

interview questionnaires to assess their knowledge regarding pressure injury prevention. The researcher used a pressure ulcer-bundle compliance checklist to evaluate nurses' compliance on pressure injury prevention. There was a significant difference statistically regarding the nurse's level of knowledge and compliance pre- and post-intervention. Remarkably, after the pressure injury bundle care implementation, there is a notable high statistical difference and an improvement in nurses' knowledge and compliance with pressure injury prevention. It decreases the incidence of pressure injuries among patients.

A study in 2019 with an aimed to know the effect of pressure injury care bundle among critically ill children in the pediatric intensive care unit showed the nurses' characteristics, such as females, which are considered the majority participants (86%) When it comes to nurses' education, there are more than one-third, or (34.9%) obtained education from a technical institute of nursing. In addition, this study uses demographic profiles to correlate knowledge with compliance on PI prevention among nurses in Egypt. The research found that, among the nurses, about two-fifths (41.9%) had an experience of 8 years or more. (Rawia et al., 2019).

Another multi-site, quantitative, cross-sectional study was performed in China. This study's locale is the ICUs of 16 tertiary general hospitals in five major cities in the province of Liaoning. ICU nurses joined the study as respondents; 473 nurses working in the ICU were included. Most respondents are female (84.1%) and hold bachelor's degrees (89.6%). Nurses are those with six years of working experience in the ICU. The study's findings show that among the variables, nurses with better adherence to PI prevention were younger, those with a few years of experience in the ICU, those who work in smaller ICUs, and those who undergo training. (Song B. et al., 2024).

A study by Dalli, O.E., Girgin N.K., (2024) stated that it was performed between May and July 2023 and was participated in by the ICU nurses. The survey included questions about socio-demographics such as age, sex, education status, and work experience. The 89 ICU nurses who completed the pre- and post-training phases were female (84.3%), and 86.5% had a bachelor's degree. The study outcomes include the patients' and nurses' characteristics, and the prevalence studies before and after the training were similar in gender, age, and chronic disease status. The ICU nurses' pre-test knowledge score was 1.43, and the post-test score was 1.30; these scores were statistically significant. While the nurses' scores in using devices in PI prevention from prior training to the post-training period are 1.01 and 1.65, respectively, it shows that post-training nurses had higher knowledge and compliance on PI prevention in this study.

Synthesis

There was a similar study conducted in West Java, Indonesia that aimed to determine the knowledge and attitude of community nurses on (PI) prevention. The result of the study was that Indonesian nurses need to be more knowledgeable on PI prevention. However, their attitude towards how to prevent it is incredibly high. (Sari et al., 2021). The researcher's takeaway from the study is that the previous study is very similar to this one, as it measures the nurse's knowledge on the prevention of pressure injury, and the demographic profiles used such as age, gender, education level, and length of work experience, were similar to the study. The strength of the previous study is that it was conducted in a large city in Indonesia, which means that it covers various health centers in the community. The previous study included

demographic profiles such as age, gender, education, and length of work experience to correlate nurses' knowledge and attitude toward pressure injury prevention, according to Sari et al., 2021. What should have been done in this study is that they did not assess compliance with pressure injury prevention; the previous study only assessed the attitude of the nurses in the community setting, not in the acute care setting. Also, the study did not include the compliance level for pressure injury prevention. Thus, the researcher decided to conduct a study in a hospital setting in contrast to a community setting, and to assess the compliance level of nurses instead of their attitude when it comes to pressure injury prevention.

Theoretical Framework

The study utilized the Neuman Systems Model. The theory describes that a client is affected by a physiologic factor which is a stressor. In this study the stressor is the pressure injury. There are levels of prevention in dealing with the stressors according to Betty Neuman, such as primary, secondary and tertiary prevention. As such, the pressure injury care bundles are a set of interventions to control or prevent pressure injuries among patients. Indeed, the theory of Betty Neuman was a strong fit for the study on nurses; knowledge, attitude and compliance on pressure injury prevention. It is a system-focused. The Neuman models views the patient as a whole systems with psychological, physiological, sociocultural, environmental and developmental factors influencing their health. Pressure injuries are complex issue that impacted by these factors thus emphasizes patient factors. This emphasizes patient factors, with the patient system contributing to stress and potential system instability. Lack of motivation and knowledge to follow pressure injury prevention

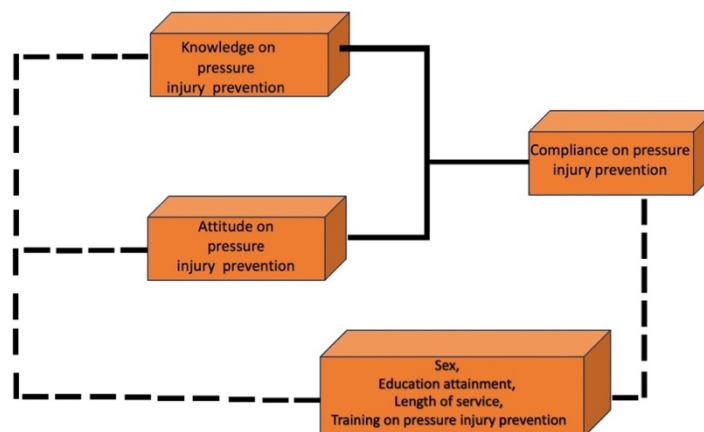
protocols can be seen as patient factors affecting their risk. The Neuman model provided a framework for understanding how the nurses' knowledge, attitude and compliance on pressure injury prevention can impact patient outcomes. Therefore, by examining these factors within the holistic system, the researcher gained a deeper understanding of the complex issues on pressure injury prevention.

Conceptual Framework

The conceptual framework shown in Figure 1 showed the interrelationship of variables in the study. The independent variables are knowledge, attitude, and demographic profiles such as sex, education attainment, length of service, and training on pressure injury prevention were intervening variables. In comparison, the dependent variable is compliance with pressure injury prevention. Based on the illustration below, the independent variable was anticipated to influence the nurses' compliance with pressure injury prevention in the medical facility. Knowledge, attitude, and demographic profiles are considered factors that affect nurses' compliance with pressure injury prevention.

Figure 1.

Interrelationship of Variables



This study assumes that when nurses are more knowledgeable and have a favorable attitude toward pressure injury prevention, they are more compliant with pressure injury prevention practices.

Operational Definition of Terminologies

Knowledge of pressure injury prevention - This refers to nurses' understanding of how to prevent pressure injuries. Their knowledge will be assessed by the researcher using matching scoring.

Compliance on pressure injury prevention - This refers to nurses' adherence to the prevention of pressure injuries. Their degree of compliance will be evaluated by the researcher using matching scores.

Attitude on pressure injury prevention - This refers to the nurses' thinking and action on preventing pressure injury.

Pressure Injury - This refers to the breaking of the skin. It will determine whether the nurses employed in the medical center know pressure injuries and the best ways to avoid them.

Nurse - This describes a medical professional who has received scientific training in skin assessments and nursing interventions for patients with pressure ulcers or injuries and is assigned to care for patients with medical and surgical conditions or illnesses. Nurses will be the study's respondents, according to the researcher.

Sex - Either male or female.

Education Attainment - This refers to the highest education level of the nurse respondent.

Length of service - This refers to the nurses' months or years of experience working in medical centers.

Training on pressure injury - This refers to the continuing education acquired by the nurses on pressure injury prevention.

Statement of Hypothesis

The following hypotheses were tested in the study:

Ho₁: There is no significant relationship between nurses' level of knowledge, attitude, and compliance with pressure injury prevention.

Ho₂: There is no significant relationship between the level of knowledge of pressure injury prevention and selected demographic profiles: sex, educational attainment, length of service, and training on pressure injury prevention among nurses.

Ho₃: There is no significant relationship between the attitude of nurses on pressure injury prevention and selected demographic profiles: sex, educational attainment, length of service, and training on pressure injury prevention.

Ho₄: There is no significant relationship between compliance level on pressure injury prevention and selected demographic profiles: sex, educational attainment, length of service, and training on pressure injury prevention.

CHAPTER III

RESEARCH METHODOLOGY

Research Design

The study used a descriptive-correlational, quantitative design to determine the nurses' level of knowledge, attitude, and compliance to pressure injury prevention. Furthermore, this study correlates to nurses' knowledge, attitude, and compliance with pressure injury prevention. Through the study, the researcher ought to correlate the nurses' knowledge and attitude with their compliance level on pressure injury prevention as well as to find out whether there is a relationship between their demographic profile, such as sex, education attainment, length of service, and training on pressure injury prevention.

Sampling Technique

The researcher utilized stratified random sampling. The researcher obtained a total population of nurses of 363, divided into homogenous groups in the form of strata, namely, nurses assigned to the medical and surgical units. The total population of nurses assigned to medical units was 199, while in surgical units was 164. The researcher selected members from the population to participate in the survey by answering the paper-and-pen questionnaire.

The participants of this study were the staff nurses working in the Level III teaching-training public hospital in Cebu City, Philippines. The inclusion criteria of the study were those nurses who have been working for over six months and those who have handled medical and surgical cases of patients admitted or inpatients. On the

other hand, excluded from the study were nurses who obtained doctorate degrees, were assigned to administrative positions, and did not provide direct patient care.

Sample Size

The sample size was from the total population of nurses working in medical and surgical units. The sample size of 237 nurses was computed or calculated utilizing Cochran’s equation, a software online calculator with a precision level of +5%, confidence level of 95%, and estimated proportion of 0.5, under small proportion. The researcher included only 237 nurses out of 339 total population of nurses. According to records from the HR Department and Nursing Office Department, the total population is the total number of nurses employed in the facility. Stratified random sampling was used in selecting the samples for each stratum.

Table 1

Sample Size in Surgical and Medical Units

	Population	Sample size
Surgical Unit	N= 158	n= 113
Medical Unit	N=181	n= 124
Total Population: N=339		Total Sample Size: n= 237

Sample Size: The sample size of n=124 nurses was from the total population of nurses assigned to patients to the medical units. On the other hand, the sample size of n=113 nurses was the total number of nurses assigned to patients to the surgical units. Overall, there are a total of 237 nurses working in this level III medical facility who are

qualified or eligible to answer the questionnaire. However, only 196 questionnaires were returned. 41 nurses unwillingly take part in the study voluntarily.

Table 2

Sample Size in Various Units

SURGICAL UNITS	Population Nurses (N)		MEDICAL UNITS	Population Nurses (N)
SP	34		ND	34
Neuro	14		Annex A	13
HRU	12		Annex B	11
VND extension	31		ED – IM	17
ED – GS	18		ED Resus/ISO	7
Burn Center	9		ED blotter	5
Ward 8	14		PhilHealth Male	12
CCU extension	10		Ward 9	13
PACU	16		CFI	11
			ICU	25
			3B and 4B	15
			Renal	18
TOTAL NURSES assigned to surgical cases:	158		TOTAL NURSES assigned to medical cases:	181

Study Setting

This study was conducted in a teaching-training public hospital in Cebu City, Philippines, a Level III public hospital. Level III hospitals are departmentalized hospitals that provide tertiary clinical care and management. For this study, the respondents were nurses assigned to the medical and surgical units of this 1,500-bed capacity medical center, a public hospital.

This medical center is a Level III government-owned hospital in Cebu City, Philippines, under the Department of Health. A tertiary medical center is a teaching-training medical facility under the ownership of the Philippine Government. As a teaching-training public hospital, there is only one existing training on pressure injury that is usually conducted every three to four months interval. The institution has an ISO 9001 Quality Management System accredited by TUV. The hospital aims to provide health care services to all, regardless of social status, ensuring that services are available, affordable, accessible, and acceptable. It offers OPD, ER, OR, DR, NICU, ICU, PICU, hemodialysis, wards, and private rooms. At present, they have a patient safety committee that monitors and investigates cases of pressure injuries and evaluates preventive measures implemented or prepares preventive measures on pressure injuries intended for implementation. They utilized a pressure injury monitoring sheet or form that monitors the development or progress of an existing pressure injury in each unit.

On the other hand, forms still need to be developed to assess or evaluate nurses' knowledge and attitude on pressure injury and how to measure their compliance level on pressure injury prevention. Per the record at the training office of the institution, one training or continuing education was created for nurses regarding

pressure injury. However, not all nurses have been trained in pressure injury prevention. In addition, what they had at the moment was the pressure ulcer monitoring form, which was used to monitor any pressure injury in the patients, as to its size, location, severity, and progression of the extent of the pressure injury. This form is the basis for the patient safety committee on the investigation and incident reporting. (Patient Safety Committee, 2023).

Data Collection Method and Procedures

Step 1: Submit a proposal to the Ethics committee

The proposal was submitted as a soft copy to the Ethics Committee of the research locale as a requirement. After evaluation, the request to conduct the study was approved. Afterward, the researcher forwarded the approval letter to the Medical Director, the Research Institute, and the Chief Nurse.

Step 2: Courtesy call to the Medical Director and Chief Nurse

The researcher made an appointment with the Chief Nurse of the hospital. Then, the researcher shared with them the relevant details and objectives of the study to be conducted at their institution. During the meeting, certain conditions were discussed, such as the forms to be utilized, the nursing personnel involved in the study, the questionnaire to be used, when to start the study, and when it will end.

Step 3: Train selected personnel or research assistants

In the absence of the researcher or if there is a time constraint, the researcher instructed the trained selected research assistants on conducting the survey and giving out questionnaires to the respective samples or respondents in the study. They

were advised to familiarize themselves with how to fill out the sheets given, as well as how to give instructions to the selected participants of this study.

Step 4: Assess the status of nursing personnel and check if they are qualified for the research study.

Nurses were randomly selected to answer the questionnaire, and the instructions for filling out the form were explained in detail. The Pieper Pressure Ulcer Knowledge Test, Staff Attitude Scale, and the Pressure Injury Prevention Care Bundle were used.

Step 5: Treatment of Data / Data Processing

The following statistical data were utilized: Part II of the questionnaire is the 47-item test, which served as the study's parameter. Sub-scales/themes: Stages and Classification (13 items), Risk factors (7 items), Skincare (6 items), Mobility (5 items), Use of devices (9 items), Other preventive measures (7 items). The Pieper Pressure Ulcer Knowledge Test questionnaire was given. For each question, the respondent checked the box next to the options 'True,' 'False,' or 'Do not know.' The scores were based on each correct answer. Each correct answer scored 1 point. However, a 'Do not know' answer is counted as incorrect. A total score is tabulated by summing correct answers across the 47 items. The researcher utilized a “percentage” scoring. The test's correct scores are typically examined. The content validity and reliability of this tool were tested in the study of Furtado et al. in 2022.

Meanwhile, Part III of the questionnaire is the Staff Attitude Scale. This tool measured the attitudes of nurses in terms of PI prevention. Moore and Price designed the tool and will use a 5-point scoring system that ranges from 1 to 5 (strongly disagree

to strongly agree). Mean scores on this scale range from 1.00 to 3.99 (non-favorable attitude) to be considered "non-favorable attitude." However, agree and strongly agree with a mean score range from 4.00 to 5.00 (favorable attitude) to be considered "favorable attitude." (Werku et al., 2018).

On the other hand, Part IV, which utilized the Pressure Ulcer Prevention Care bundle, referred to the adopted tool to measure the compliance level with the indicators or the following subscales: participation in education; risk assessment; skin assessment; skin care; nutrition management; activity management; moisture/incontinence management and support surface management. The researcher used a 4-point Likert scale; the researcher used a scoring system that ranges from (1) never, (2) rarely, (3) often, and (4) always. The Likert scale was interpreted by computing the weighted mean scores. The range was identified, which is the following: 3.25 – 4.00 (always compliant), 2.50 – 3.24 (often compliant), 1.75 – 2.49 (rarely compliant), 1.00 – 1.74 (never compliant). Then, participants rated statements in the pressure ulcer prevention bundle using this tool (Tuba Yilmazer, 2019).

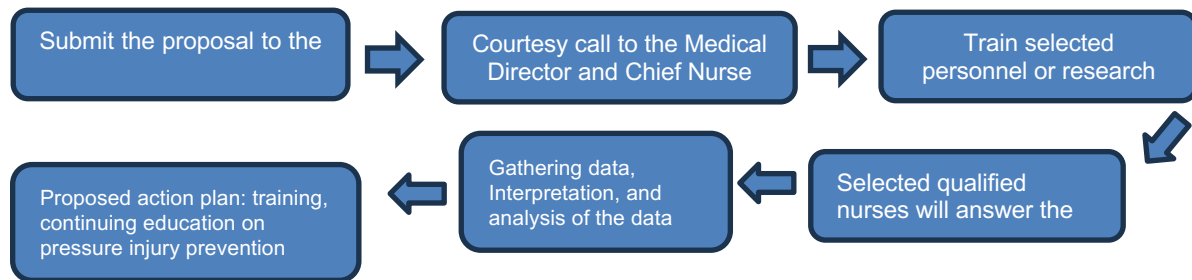
Step 6: Data Analysis and Interpretation. The data was analyzed and interpreted using the selected statistical formula using SPSS software.

Step 7: Proposed Action Plan. Considering the outcome of the gathered data, the researcher formulated a proposed action plan. It is in the form of training or recommendation of suitable nurses to be assigned to patients with pressure injuries, depending on the result of the study, in terms of demographic profiles such as sex, years of experience, and educational attainment, or any continuing education program, or the creation of a policy on how to prevent and enhance or improve, the

nurses' knowledge, attitude, and compliance on pressure injury prevention in the institution.

Research Flow Chart

Figure 2. Research Flow Chart



Research Instrument

There were three parts in the tool utilized: Part II, Part III, and Part IV, respectively. Part I is the demographic profile of the respondents, where nurses filled out their sex, highest educational attainment, length of service in the hospital, training on PI prevention, and area of assignment. Firstly, the purpose of the first part of the tool (Part II), which is the Pieper Pressure Ulcer Knowledge Test questionnaire, is to assess the knowledge of the nurses on pressure injury prevention. Secondly, (Part III) is the Staff Attitude Scale determining nurses' attitudes regarding PI prevention. Lastly, the third part (Part IV), an adapted tool, the Pressure Injury Prevention Care Bundle, measures the nurses' compliance with pressure injury prevention. It took only 8 (eight) minutes to complete the survey form. Data gathering took place in the nurse's station, before or after the duty hours of the participants.

This study utilized the 47-items standardized questionnaire, the Pieper Pressure Ulcer Knowledge Test (Part II) to examine the knowledge of nurses on

pressure injury prevention. Sub-scales/themes: Stages and classification (13 items), Risk factors (7 items), Skincare (6 items), Mobility (5 items), Use of devices (9 items), Other preventive measures (7 items). The Pieper Pressure Ulcer Knowledge Test questionnaire was given. The respondent checked the box next to 'True,' 'False,' or 'Do not Know' for each question. The scores were based on each correct answer. Each correct answer scored 1 point. However, a "Do not know" answer was counted as incorrect. The respondent checked the box next to True, False, or Do not Know for each question. A total score is tabulated by summing correct answers across the 47 items. The researcher utilized a "percentage" scoring. The test's correct scores are typically examined. The content validity and reliability of this tool was tested in the study of Furtado et al., 2022. The purpose of this tool is to evaluate nurses knowledge in terms of each indicator. The researcher identified which indicators nurses are less knowledgeable of thus made recommendations for the training department on which topic they have to focus on.

Meanwhile, Part III of the questionnaire was the Staff Attitude Scale. This tool measured the attitudes of nurses in terms of PI prevention. The researcher used the tool of Moore and Price, which uses a 5-point scoring system. The mean score was obtained from the scale used to measure nurses' attitudes. The numeric value for each attitude test item is 5 = strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, and 1 = strongly disagree. The questions on the staff attitude scale comprise both favorable and negatively worded statements or questions. The question numbers 2, 3, 4, 5, 8, 9, and 10 are negatively-worded. The scores were reversed for the negatively worded questions. While the positively-worded questions are scored as is, the attitude mean was obtained by collapsing the Likert scales

strongly disagree, disagree, and neither agree nor disagree; thus, mean scores on this scale range from 1.00 to 3.99 (non-favorable attitude) to be considered "non-favorable attitude." However, agree and strongly agree with a mean score that ranges from 4.00 to 5.00 (favorable attitude) to be considered "favorable attitude." (Werku et al., 2018).

Finally, the last instrument that the researcher utilized was an adopted tool to measure the compliance level of the nurses on pressure injury prevention. This tool was called the Pressure Injury Prevention Care Bundle (Part IV). An ordered collection of interventions called a "care bundle" promotes adherence to rules intended to raise the standard of care. Respondents answered the pressure ulcer prevention bundle statements, and the researcher used a 4-point Likert scale developed by Yilmazer T. (2019). The care bundle includes 35 statements divided into eight categories. The categories are: 1. Participation in education (1 item), 2. Risk assessment (3 items), 3. Skin Assessment (4 items), 4. Skincare (5 items), 5. Nutrition management (5 items), 6. Activity management (9 items), 7. Moisture/incontinence management (6 items), and 8. Support Surface Management (with 2 items). The researcher used a 4-point Likert scale. The highest score is 4 (always), followed by 3 (often), 2 (rarely), and 1 (never) as the lowest score. (Tuba Yilmazer, 2019). Mean scores were interpreted as follows:

3.25-4.00	-	Always compliant
2.50-3.24	-	Often Compliant
1.75-2.49	-	Rarely Compliant
1.00-1.74	-	Never Compliant

Data Analysis and Interpretation

Table 3

Research Instrument Used, Level of Measurement and Statistical Test

Research Question	Part of the Tool	Variables and Level of Measurement	Statistical Test
1. What is the profile of the respondents in terms of: 1.1. sex; 1.2. highest educational attainment; 1.3. length of service in the hospital; 1.4. training on pressure injury prevention 1.5. area of assignment	Part I	Sex (Male or Female) -Nominal Highest educational Attainment - Ordinal Length of service – Ordinal Training on PI prevention – (Yes/No) – Nominal	Descriptive Frequency Percentage
2. What is the level of knowledge in pressure injury prevention of the respondents according to subscales/indicators: 2.1 stages and classification; 2.2 risk factors; 2.3 skincare; 2.4 mobility; 2.5 use of devices; 2.6 other preventive measures.	Part II	Knowledge – Nominal (Knowledgeable or Not)	Descriptive Percentage
3. What is the attitude of nurses on pressure injury prevention?	Part III	Attitude – Interval (Favorable or Non-favorable)	Descriptive Mean Standard deviation
4. What is the level of compliance of nurses on pressure injury prevention in terms of the following indicators:	Part IV	Compliance – Interval (Compliant or Not compliant)	Descriptive Mean Standard deviation

4.1 participation in education; 4.2 risk assessment; 4.3 skin assessment 4.4 skincare; 4.5 nutrition management; 4.6 activity management; 4.7moisture/incontinence management; 4.8 support surface Management			
5. Is there a significant relationship between knowledge, attitude, and compliance with pressure injury prevention?	Part II, III, IV	Knowledge – Nominal Attitude – Nominal Compliance - Nominal	Chi-Square
6. Is there a significant relationship between knowledge of pressure injury prevention and the following demographic profiles: 5.1 sex; 5.2 highest educational attainment 5.3 length of service in the hospital; 5.4 training on pressure injury prevention	Part I, II	Knowledge – Nominal Versus: -Sex (chi-square) - Educational Attainment (spearman) - Length of Service (Spearman) - Training on PI prevention (Chi-Square)	Chi-Square Spearman
7. Is there a significant relationship between attitude toward pressure injury prevention and the following demographic profiles: 6.1 sex; 6.2 highest educational attainment 6.3 length of service in the hospital; 6.4 training on pressure injury prevention	Part I, III	Attitude – Nominal Versus: -Sex (chi-square) - Educational Attainment (spearman) - Length of Service (Spearman) - Training on PI prevention (Chi-Square)	Chi-Square Spearman rho
8. Is there a significant relationship between	Part I, IV	Compliance – Nominal	Chi-Square Spearman rho

compliance with pressure injury prevention and the following demographic profiles: 6.1 sex; 6.2 highest educational attainment 6.3 length of service in the hospital; 6.4 training on pressure injury prevention		Versus: -Sex (chi-square) - Educational Attainment (spearman) - Length of Service (Spearman) - Training on PI prevention (Chi-Square)	
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There are four parts of the tool or survey questionnaire: Parts I, II, III, and IV, respectively. The researcher presented the independent variables: knowledge and attitude. Meanwhile, the dependent variable is compliance. In addition, intervening variables are the demographic profiles such as sex, highest educational attainment, length of service, and training on pressure injury prevention. Lastly, the data was analyzed and interpreted using the following statistical tests: descriptive, percentage, frequency, mean, standard deviation, and chi-square and Spearman rho to distinguish the relationship (Significant at *p <0.05) between variables.

Data Management

The researcher ensured that all information collected relative to the study was handled with the strictest confidence and that the Data Privacy Law, the university and hospital IRB, and the requirements for data collection under National Ethical Guidelines for Health Research were followed.

The survey questionnaires were coded with numbers to track the completion and return of the forms. It did not have any request for the nursing respondents to write

their names, particularly in the portion where the demographic profile of respondents will have to be stated. Anonymity was guaranteed during the whole research process as the collected data did not in any way reveal the identity of the individual respondents.

Additionally, the researcher kept the computer databases and printed copies of the survey questionnaires secure. During the data processing phase, the survey questionnaires were stored in a locked cabinet at the researcher's home until it will be destroyed in time after five (5) years. Password-protected computer database and encoded data from the software programs were kept on the researcher's laptop. This laptop was used only for the purpose of keeping all the data collected during the research project.

Ethical Considerations

This research study has been reviewed and approved by the Vicente Sotto Memorial Medical Center Research Ethics Committee, a committee tasked to ensure that research participants are protected from harm and that the study does not violate human dignity. A transmittal letter was submitted to the Chief Nurse, and informed consent was obtained from the informants to ensure confidentiality and anonymity. Compliance with informed consent from the informants was necessary as it is one of the most critical ethical issues that must be considered to establish trust, and the privacy of the respondents will be protected. The researcher was expected to be worthwhile and provide value that outweighs any risk or harm to maximize the benefit of the research and minimize the potential risk of harm to participants. The Ethics Committee reviewed it to ensure the appropriate ethical standards are upheld. To

maintain the ethical soundness of this study, the researcher strictly observed the following ethical principles to protect the rights of the research informants.

First, beneficence pertains to the obligation of the researcher to maximize benefits and minimize risks for the informants and society. It is simply doing well. Minimizing risks and maximizing benefits were discussed in the succeeding paragraphs. The nature of this study is non-experimental. Thus, harm was avoided as no interventions or treatments were given to the informants. Instead, the informants only responded to a standardized questionnaire on pressure injury prevention. These principles included the following: voluntary participation, informed consent, anonymity, confidentiality, potential for harm, and results-based communications.

Next is respect for the informants. Human dignity was one of the priorities of the researcher. The informants have the right to self-determination and free choice of action without external compulsion. They also have the right to full disclosure; the researcher will not withhold any information on the study.

Third is privacy and confidentiality. Privacy and confidentiality are the prime ethical considerations of this study. The research informants duly informed and educated them that all their responses and identities were to remain private. Consent to participate will be acquired before the data gathering. It emphasized that the research informants could terminate the data gathering at any time. Initials of names are used to maintain confidentiality, which the researcher stated clearly to the informants.

Fourth is Respect. The researcher respected the autonomy of the informants, which, by obtaining full informed consent, will give the informants the right to refuse and be respected for their decision and free will. Before obtaining informed consent,

the researcher gave full disclosure to the informants of the study, its procedures, and the risks and benefits involved while maintaining strict confidentiality and privacy. This action ensured that the informants were not coerced in any way or form to participate in the study. It emphasized how the researcher is duly informed and educated about the study before gathering data. It allowed the informants to agree or terminate the data gathering at any time of their own free will.

Fifth is justice, which demands an equitable selection of informants, i.e., avoiding informant populations that may be unfairly coerced into participating, such as vulnerable subjects. This study excluded vulnerable subjects as part of the exclusion criteria. The principle of justice requires that those who undertake the burdens of research be likely to benefit from the research. All informants are subjected to the same procedure of answering a standardized questionnaire about their challenges and coping strategies. Considering that the researcher is a Nurse Supervisor in the institution, it is therefore guaranteed that non-participation of the nurses nor withdrawal from the study does not affect any subjective or objective rating of the staff performance. The ratings will be justified in the IPCR comment section of the IPCR grade if they are low or below the required rating.

The researcher explained to the informants that all the data collected was for educational purposes only and was required for the researcher's study defense. Informants were also informed of the time frame of data gathering, the research study's funding, the possible risks, their selection as informants, their benefits, incentives, compensation, the confidentiality pledge, and their voluntariness in participating in this study. Lastly, the researcher informed the respondents that the researcher is a Nurse Supervisor in the research locale where the staff are being investigated. On the other

hand, the researcher trained RA's (Research Assistants) to avoid coercion for moral ascendancy.

CHAPTER IV

RESULTS AND DISCUSSIONS

This chapter discussed the results of the study. It illustrated the nurses' knowledge, attitude, and compliance with pressure injury prevention. The results were analyzed using descriptive and correlational statistical tests with the assistance of the SPSS software.

This part presented the respondents' profiles, including their sex, highest educational attainment, length of service in the hospital, training on pressure injury prevention, and area of assignment.

Table 4

Demographic Profile, Frequency, and Percentage Distribution of Participants (n=196)

Characteristics	Frequency	Percentage (%)
Sex		
Male	63	32.1
Female	133	67.9
Highest Educational Attainment		
Bachelor's Degree Holder	181	93.2
Master's Degree Holder	15	7.7
Length of Service of Respondents		
Six months to 11 months	39	19.9
1 to 3 years	54	27.6
4 to 6 years	36	18.4
7 to 9 years	23	11.7
10 years above	44	22.4
Training on Pressure Injury Prevention		
Nurses with training	94	48.0
Nurses without training	102	52.0

Based on the findings above regarding the demographic profile of the nurse respondents, the majority were female, at 67.9%. Most nurses with a Bachelor's

degree in Nursing accounted for 93.2 % of the respondents, while 7.7% had a Master's degree in Nursing holder. A study conducted in the nursing department of Universitas Jenderal Soedirman, Purwokerto, Indonesia about pressure injury prevention among nurses working in the hospital settings. The respondents were nurses working in a hospital setting. The study selected demographic profiles similar to this study, such as age, level of education (vocational degree, bachelor's degree, master's degree), income, and professional position (Yunita et al., 2023).

The findings showed that those with work experience from 1 to 3 years accounted for 27.6 %, while the remaining 11.7% had work experience of 7 to 9 years. This finding is contrary to the study on May 19, 2019, in a public hospital in Wollega, Oromiya, Ethiopia, where the response rate was 96.3%; those nurses with 5-7 years of clinical experience account for the majority of the nurse respondents (Ebi et al., 2019).

94 out of 196 nurses acquired training on PI prevention in the teaching-training public hospital. On May 19, 2019, in a public hospital in Wollega, Oromiya, Ethiopia, the outcome was that those nurses with more years of employment duration and previous training experience, as well as nurses who work in Level III hospitals or have critical care experience, had a higher knowledge score. (Ebi et al., 2019).

On the other hand, when it comes to education level, nurses who hold a bachelor's degree or higher have better knowledge of PI (pressure injury) prevention than those who hold a vocational degree. According to Yunita et al., 2023.

This study highlighted that even brief, targeted educational interventions could lead to measurable improvements in clinical practice. The findings supported the idea that ongoing training is essential to maintain high standards of care and prevent

pressure ulcers. Meanwhile, these nurse respondents were assigned to the medical-surgical units at the teaching-training public hospital in Cebu City, Philippines.

Table 5

Distribution of Nurses in Terms of Knowledge Scores on PI Prevention

Indicators	NURSES KNOWLEDGE			
	CORRECT		INCORRECT	
	N	%	N	%
STAGES AND CLASSIFICATION:				
1. Stage 1 pressure ulcers are defined as intact skin with non-blanchable erythema in lightly pigmented persons.	175	89.29	21	10.71
6. A Stage III pressure ulcer is a partial thickness skin loss involving the epidermis and dermis.	116	59.18	80	40.82
9. A Stage IV pressure ulcer is a full-thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structure.	189	96.25	7	3.75
20. Stage II pressure ulcers are full-thickness skin loss.	80	40.82	116	59.18
26. Slough is yellow or creamy necrotic tissue on a wound bed.	167	85.20	29	14.80
27. Eschar is good for wound healing.	124	63.27	72	36.73
30. Undermining is the destruction that occurs under the skin.	172	87.76	24	12.24
31. Escar is healthy tissue.	87	44.39	109	55.61
32. Blanching refers to whiteness when pressure is applied to a reddened area.	176	89.80	20	10.20
35. Pressure ulcers are sterile wounds.	89	45.41	107	54.59

Indicators	NURSES KNOWLEDGE			
	CORRECT		INCORRECT	
	N	%	N	%
36. A pressure ulcer scar will break down faster than unwounded skin.	168	85.71	28	14.29
37. A blister on the heel is nothing to worry about.	37	18.88	159	81.12
45. Stage II pressure ulcers may be excruciating due to exposure to nerve endings.	149	76.02	47	25.98
RISK FACTORS:				
2. Risk factors for developing pressure ulcers are immobility, incontinence, impaired nutrition, and altered level of consciousness.	194	98.99	2	1.01
7. All individuals should be assessed on admission to a hospital for risk of pressure ulcer development.	189	96.25	7	3.75
23. A low-humidity environment may predispose a person to pressure ulcers.	143	72.96	53	26.04
34. Skin macerated from moisture tears more easily.	172	87.76	24	12.24
41. Shear is the force that occurs when the skin sticks to a surface and the body slides.	183	93.37	13	6.63
42. Friction may occur when moving a person up in bed.	175	89.29	21	10.71
43. A low Braden score is associated with increased pressure ulcer risk.	122	62.24	74	37.76
SKINCARE:				
3. All hospitalized individuals at risk for pressure ulcers should have a systematic skin inspection daily and those in long-term care at least once a week.	132	67.35	64	32.65

Indicators	NURSES KNOWLEDGE			
	CORRECT		INCORRECT	
	N	%	N	%
4. Hot water and soap may dry the skin and increase the risk of pressure ulcers.	140	71.43	56	28.57
5. It is essential to massage bony prominences.	99	50.51	97	49.49
21. The epidermis should remain clean and dry.	188	95.92	8	4.08
24. To minimize the skin's exposure to moisture on incontinence, underpads should absorb moisture.	163	83.16	33	16.84
46. For incontinent persons, skin cleaning should occur at the time of soiling and at routine intervals.	187	95.41	9	4.59
MOBILITY:				
11. Persons confined to bed should be repositioned every 3 hours.	54	27.55	142	72.45
12. A turning schedule should be written and placed at the bedside.	192	97.96	4	2.04
17. A person who cannot move should be repositioned every 2 hours while sitting in a chair.	143	72.96	53	18.04
18. Persons who can be taught should shift their weight every 30 minutes while sitting in a chair.	169	86.22	27	13.78
19. Chair-bound persons should be fitted for a chair cushion.	186	94.90	10	5.10
USE OF DEVICES:				
13. Heel protectors relieve pressure on the heels.	189	96.25	7	3.75
	176	89.80	20	10.20

Indicators	NURSES KNOWLEDGE			
	CORRECT		INCORRECT	
	N	%	N	%
14. Donut devices/ring cushions help to prevent pressure ulcers.				
15. In a side-lying position, a person should be at a 30-degree angle with the bed unless inconsistent with the patient's condition and other care needs that take priority.	160	81.63	36	18.37
16. The head of the bed should be maintained at the lowest elevation (hopefully, no higher than a 30-degree angle) consistent with medical conditions.	149	76.02	47	23.98
28. Bony prominences should not have direct contact with one another.	184	93.88	12	6.12
29. Every person assessed to be at risk for developing pressure ulcers should be placed on a pressure-redistribution bed surface.	188	95.92	8	4.08
33. A pressure redistribution surface reduces tissue interface pressure below capillary closing pressure.	181	92.35	15	7.65
38. Elevating them off the bed is A good way to decrease heel pressure.	164	83.67	32	16.33
40. Devices that suspend the heels protect the heels from pressure.	164	83.67	32	16.33
OTHER PREVENTIVE MEASURES:				
8. Cornstarch, creams, transparent dressings (e.g., Tegaderm, Opsite), and hydrocolloid dressings (e.g., DuoDerm, Restore) <u>do not</u> protect against the effects of friction.	74	37.76	122	62.24
10. An adequate dietary intake of protein and calories should be maintained during illness.	186	94.90	10	5.10
	182	92.86	14	7.14

Indicators	NURSES KNOWLEDGE			
	CORRECT		INCORRECT	
	N	%	N	%
22. The incidence of pressure ulcers is so high that the government has appointed a panel to study risk, prevention, and treatment.				
25. Rehabilitation should be instituted if consistent with the patient's overall goals of therapy.	184	93.88	12	6.12
39. All care to prevent or treat pressure ulcers must be documented.	188	60.20	8	39.80
44. The skin is the largest organ of the body.	192	97.96	4	2.04
47. Educational programs may reduce the incidence of pressure ulcers.	194	98.98	2	1.02

As the researcher and the supervisor in this research locale, my observations were the following: the nurses in the ICU mostly were diligent in repositioning or turning patients to different positions; in terms of pressure ulcer-prone areas such as sacral area, the nursing attendant who changed the diaper failed to assess the manifestation of a developing pressure injury; and lastly, at times the hydrocolloid dressing materials were limited in stocks and were consumed faster at any time.

Stages and classification were the first indicators. The table above illustrated that most nurses were knowledgeable on the stages of pressure injuries, precisely stage I, where 89.29% of the nurses got the correct answers, and in stage IV, where 96.25% answered correctly regarding classification of P.I. injuries. Nurses knew how to identify blanching; thus, 89.80% got the correct answer. However, 40.82% of the nurses did not see the description of stage II pressure injury, 44.39% did not know what it is eschar, and the least number of nurses got the lowest score on the question

that asked them if a blister on the heel is nothing to worry, which about 18.88% of nurses answered. The implication of this would be that nurses who do not know how to identify blisters and stage II PI may harm patients, as it may lead to the rapid progress of pressure injuries toward stage IV. These nurses should know the early signs of PI so that it will be treated early.

In terms of assessing risk factors, 98.99% of nurses correctly identified that immobility, incontinence, impaired nutrition, and altered level of consciousness are factors that cause PI, and 96.25% nurses were aware that on admission all patients should be assessed for risk of pressure ulcer development. In contrast, 62.24% nurses were aware that low Braden score is associated with increased pressure injury risk, and 72.96% knew that a low-humidity environment may predispose a person to develop pressure injuries. The researcher agreed that the nurses should use the Braden scale diligently, considering that this is a standard assessment tool for identifying patients at risk of developing pressure injuries in the unit. This assessment tool is essential and highly recommended to use.

Skincare was included in the indication; findings stated that 95.92% of nurses were aware that the epidermis should remain clean and dry, and 95.41% of nurses said that for persons who have incontinence, skin cleaning should occur at the time of soiling and routine intervals. The lowest percentage of nurses obtained correct answers for the following questions: It is essential to massage bony prominences 50.51%, and all hospitalized individuals at risk for pressure ulcers should have a systematic skin inspection at least daily, and those in long-term care at least once a week 67.35%. When it comes to massaging the bony prominences, the researcher firmly understood that it helps to prevent PI because massage creates adequate tissue

perfusion, leading to rapid healing of any skin breakdown; as a researcher, I agree that this should be practiced or implemented by nurses.

Mobility was another factor that caused pressure injuries. 27.55% of nurses answered that patients lying on bed should be repositioned every 3 hours, then 72.96% of nurses thought that a patient who cannot turn or move should be repositioned as well every 2 hours while sitting on any chair. Nurses least correctly answered these two questions. The most answered questions by nurses were: Chair-bound persons should be fitted for a chair cushion 94.90%, and a turning or moving schedule of patients should be posted at the bedside 97.96%.

The use of devices is necessary to prevent pressure injuries. The findings of this study stated that nurses got the three highest scores under the use of devices indicator. According to the result finding, 96.25 of nurses used heel protectors relieves pressure on the heels. 95.92% of nurses believed that every patient should be assessed if at risk of developing pressure injuries should be placed on a pressure-redistribution bed surface and 93.88% of nurses agreed that bony prominences should not have direct contact with another bony prominence to prevent skin breakdown. On the other hand, the nurses got the lowest scores on the following: 76.02% of nurses were aware that in terms of bed angle, the head of bed should be maintained at the lowest degree of elevation or not higher than a 30-degree angle. 81.63% of the nurses knew that if the patients is on a side-lying position, a patient should be at a 30-degree angle on the bed unless inconsistent with the patient's medical condition and other care needs that take priority; 83.67% nurses thought that good way to decrease pressure is to elevate the heels off the bed. A previous study was conducted in a multipurpose ICU for critically ill patients with a 27-bed capacity. This study was similar

to the Cobos-Vargas survey because it was conducted in a critical or hospital setting. It is a cross-sectional observational study obtained over three days in three consecutive months. All ICU patients were included. The study's main findings are: The results vary when different preventive measures are applied in clinical practice. Notably, the highest degree of compliance in the unit was the use of active mattresses and incontinence pads, and nurses followed the assessment of pressure injuries. (Cobos-Vargas et al, 2022).

Other preventive measures were asked from the respondents. The three highest-scored by nurses were: 98.98% of nurses believed that educational programs may reduce the incidence of PI. Also 97.96% of nurses were knowledgeable that the skin is the largest organ of the body, and 94.90% of nurses were aware that sufficient intake of calories and protein should be ordered by the dietician during illness. But the two questions incorrectly answered by nurses were: hydrocolloid dressings examples: DuoDerm, cornstarch, creams, transparent wound dressings example tegaderms and opsite do not protect against the effects of friction with 37.76% and 60.20% of nurses believed that all care and treatment given to to prevent PI must be documented. Which implied that nurses do not know the importance of the wound dressing materials and on how to apply it among patients. Similarly, A study was carried out in a multipurpose ICU for critically ill patients with a 27-bed capacity. All ICU patients were included. Notably, the highest degree of compliance in the unit was the use of active mattresses and incontinence pads, and nurses followed the assessment of pressure injuries. However, the lowest degree of compliance is the pressure injury reduction in the heels and the use of dressings in support areas such as the sacrum, heels, and trochanters in high-risk patients. Meanwhile, the nurses have not accepted the loading devices,

specifically the pillows. (Cobos-Vargas et al, 2022). This made this similar to this study because it uses devices to prevent pressure injuries.

Table 6

Nurses' Knowledge of Pressure Injury Prevention Per Indicator

INDICATORS	CORRECT		INCORRECT	
	n	%	n	%
Stages and Classification	1729	67.86%	819	32.14%
Risk Factors	1178	85.86%	194	14.14%
Skin Care	909	77.30%	267	22.70%
Mobility	744	75.92%	236	24.08%
Use of Devices	1555	88.15%	209	11.85%
Other Preventive measures	1200	87.46%	172	12.54%

In summary, among all indicators, 88.15% of the nurses were knowledgeable in the use of devices, followed by other preventive measures with 87.46%, and lastly, 85.86% of the nurses knew how to identify risk factors that cause P.I. On the other hand, 67.86% of the nurses were least knowledgeable in determining stages I, II, III, and IV and classification of pressure injuries, followed by mobility with 75.92%, then skin care with 77.30%. This study was similar to the survey conducted in a public health center (Pukskemas) in Bandung, West Java, Indonesia, where the knowledge was measured utilizing the pressure ulcer knowledge assessment tool (PUKAT 2.0). (Sari et al., 2021).

This result was supported by another study by researchers who utilized a Spanish questionnaire. Its purpose was to measure knowledge on pressure injury prevention based on recent guidelines internationally. The P.I.P.K. (Pressure Injury Prevention Knowledge) questionnaire, a 31-item questionnaire, shows a reliability of 0.98 for items and 0.72 for people and is a good fit. Due to its development based on international guidelines has been translated into English, which can be used in further studies. (Lopez-Franco MD, Parra-Anguila L, Comino-Sanz IM, Pancorbo-Hidalgo PL, 2020). Overall, the predominance of women in nursing is a multifaceted issue rooted in historical, cultural, and societal factors. Addressing these challenges requires a concerted effort to change perceptions, promote gender diversity, and implement policies that support and encourage men to join and thrive in nursing.

Table 7

Nurses Attitude Scale Mean and Standard Deviation

Indicators	Mean	Standard Deviation
1. All patients are at potential risk of developing pressure injuries	4.11	0.98
2. Pressure injury prevention is time-consuming for me to carry out.	3.67	1.05
3. In my opinion, patients tend not to get as many pressure injuries nowadays.	3.41	0.98
4. I do not need to concern myself with pressure injury prevention in my practice	4.41	0.71
5. Pressure injury treatment is a greater priority than pressure injury prevention	3.98	1.03
6. Continuous assessment of patients will give an accurate account of their pressure injury risk.	4.43	0.72

7. Most pressure injuries can be avoided	4.22	0.77
8. I am less interested in pressure injury prevention than other aspects of care	3.97	0.87
9. My clinical judgment is better than any pressure injury risk assessment tool.	3.66	0.93
10. pressure injury prevention is a low priority for me compared with other care areas.	4.07	0.83
11. Pressure injury risk assessment should be regularly carried out on all patients during their stay in the hospital.	4.40	0.67
OVERALL AVERAGE:	4.03	0.13

As the researcher and the supervisor in this research locale, my observations include the following: some nurses showed a favorable attitude, mostly female nurses and senior nurses and those with more extended work experience. I also noticed that most nurses showed a favorable attitude, as evidenced by identifying patients taking the time to assess their skin and pressure points.

Table 6 shows that high scores correspond to the favorable attitude of nurses toward pressure injury prevention. Nurses have scored high on “continuous assessment of patients will give an accurate account of their pressure injury risk” with a (mean=4.43, SD-0.72) followed by I do not (reversed scored-negative question) need to concern myself with pressure injury prevention in my practice with (mean=4.41, SD-0.71) (then Pressure injury risk assessment should be regularly carried out on all patients during their stay in hospital (mean=4.40, SD-0.67). These three indicators assessed the attitude of nurses in terms of P.I. prevent this, which implied that nurses were continuously assessed with patients with a higher chance of developing PI in the unit. A study in the United Kingdom was similar to this regarding

respondents, which were nurses. However, it was conducted in a community setting, contrary to the research locale, in the hospital setting. A study demonstrated that most healthcare professionals in a community setting showed satisfactory attitudes regarding pressure injury prevention. (Clarkson et al., 2019). This, in the hospital, showed that nurses had a satisfactory level of attitude or favorable attitudes toward PI prevention.

In contrast, nurses showed a non-favorable attitude and had the lowest scores on the following questions: In my opinion, patients tend not to get as many pressure injuries nowadays (mean=3.41, SD-0.98), My clinical judgment is better than any pressure injury risk assessment tool available to me (mean=3.66, SD-0.93), Pressure injury prevention is time-consuming for me to carry out (mean=3.67, SD-1.05), I am less interested in pressure injury prevention than other aspects of care (mean=3.97, SD-0.87), Pressure injury treatment is a greater priority than pressure injury prevention (mean=3.98, SD-1.03) were the lowest scores which made nurses obtained a non-favorable attitude on PI prevention. About this study's findings, there was a study conducted in a public health center (Pukskemas) in Bandung, West Java, Indonesia, amongst community nurses, which aimed to assess the knowledge and attitude of these nurses regarding pressure injury prevention. Attitudes were measured using a predesigned instrument with 11 statements on a five-point Likert scale. In conclusion, "prevention" had the lowest percentage of correct answers, about 20.8%. This study was similar to Sari's because both used the same research instrument. (Sari et al., 2021) what made it similar in this study was that the attitude was measured using a designed instrument with eight statements on a numeric value for each attitude test item: strongly agree, agree, neither agree nor disagree, disagree, and strongly

disagree. The questions on the staff attitude scale comprised both favorable and negatively worded statements or questions. The question numbers 2, 3, 4, 5, 8, 9, and 10 were negative questions, which was different from the study of Sari in Indonesia in 2021.

Finally, based on the mean scores of these nurses, the findings described that most nurses had a favorable attitude, with a mean score of 4.03, SD-0.13.

Table 8

Nurse's Compliance Mean and Standard Deviation

Indicators/Subscales	Mean	Standard Deviation
1. PARTICIPATION IN EDUCATION Training on pressure injury prevention	3.18	0.92
2. RISK ASSESSMENT Using a valid assessment tool (Braden scale, etc.) <ul style="list-style-type: none"> • Upon admission or within the 1st 8 hours • The Daily • If there is a change in the patient's condition 	3.49 3.52 3.51	0.71 0.65 0.66
3. SKIN ASSESSMENT With head-to-toe skin inspection; <ul style="list-style-type: none"> • Inspection Upon admission or within the 1st 8 hours • Then, every 8 hours • Inspection on heat, color, turgor, moisture, edema, redness • Assessment of skin around/underneath medical devices every 12 hours 	3.49 3.31 3.51 3.57	0.68 0.63 0.58 0.63
4. SKINCARE <ul style="list-style-type: none"> • I protect the skin of my patient with barrier products every 8 hours • I keep the skin clean and at normal moisture 	3.29 3.43	0.69 0.62

<ul style="list-style-type: none"> • Clean the skin with a Ph stabilizing product 	3.13	0.80
<ul style="list-style-type: none"> • Do not rub vigorously on the skin, do not massage 	3.39	0.78
<ul style="list-style-type: none"> • The sheets are kept clean, stretched, and dry 	3.56	0.59
5. NUTRITION MANAGEMENT		
<ul style="list-style-type: none"> • Establish daily nutritional goals with a dietician/nutritional nurse. 	3.39	0.68
<ul style="list-style-type: none"> • Provide special nutrition (preferably ^{first} enteral, then parenteral) 	3.41	0.68
<ul style="list-style-type: none"> • Meet daily goals 	3.37	0.65
<ul style="list-style-type: none"> • Follow the weekly albumin/CRP values 	3.17	0.78
<ul style="list-style-type: none"> • Evaluate the state of dehydration 	3.59	0.57
6. ACTIVITY MANAGEMENT		
Positioning;	3.32	0.63
<ul style="list-style-type: none"> • In bed: every two hr., in chair; every 1 hr. 		
<ul style="list-style-type: none"> • Give position at 30 degrees angle, right side/left side, respectively 	3.29	0.63
<ul style="list-style-type: none"> • Unless contraindicated, place in the supine position 	3.18	0.75
<ul style="list-style-type: none"> • Prevent skin friction and shear 	3.52	0.58
<ul style="list-style-type: none"> • Elevate heels off all surfaces using pillows 	3.33	0.67
<ul style="list-style-type: none"> • Apply barrier products to the pressure area 	3.37	0.66
<ul style="list-style-type: none"> • Do not position at 90 degrees angle 	2.87	0.94
<ul style="list-style-type: none"> • Do not position directly on the area of redness 	3.14	0.92
<ul style="list-style-type: none"> • Do not position directly on medical devices 	3.15	0.91
7. MOISTURE/INCONTINENCE MANAGEMENT		
<ul style="list-style-type: none"> • Use barrier product after every episode of urinary incontinence 	3.31	0.74
<ul style="list-style-type: none"> • Consider the use of a fecal pouch or a Texas/urinary catheter 	3.01	0.90
<ul style="list-style-type: none"> • Avoid using diapers 	2.57	0.88

<ul style="list-style-type: none"> • Avoid plastic bed pads or chucks. If they must be used, place them under a sheet; they cannot touch the skin 	2.92	0.89
<ul style="list-style-type: none"> • Minimize skin contact with urine/feces 	3.43	0.69
<ul style="list-style-type: none"> • Avoid excessive skin moisture 	3.42	0.62
8. SUPPORT SURFACES MANAGEMENT		
<ul style="list-style-type: none"> • Use a support surface for at-risk individuals 	3.34	0.64
<ul style="list-style-type: none"> • Use a support surface that matches the characteristics and risk factors of the individual 	3.37	0.67
OVERALL MEAN SCORE:	3.30	0.11

As the researcher and the supervisor of this research locale, I have observed, among others, that the training on pressure injuries was conducted every 3 to 4 months intervals, and only a few nurses were able to attend the training; the hospital has limited stocks of a Ph stabilizing product to clean the skin with no available barrier products to protect the skin of the patient every 8 hours; and the hospital does not use a fecal pouch that predisposes the patient to develop pressure injuries.

Among all indicators in Table 7, participation in training had a mean=3.18 of SD-0.92, which means that nurses are often compliant with PI prevention in terms of acquiring continuing education in the institution. This implied that not all nurses had obtained pressure injury prevention training; the demographic data result illustrated that only ninety-four nurses had acquired training among all 196 respondents. To support this finding, post-training nurses had higher knowledge and compliance with PI prevention in this study. (Korkmaz S., et al., 2024).

Risk assessment's highest score was mean=3.52, SD-0.65, which means that nurses assessed risk for developing PI daily, followed by If there is a change in patient's condition mean=3.51, SD-0.66 and the lowest percentage was assessment

upon admission or within the 1st 8 hours in-patient mean=3.49, SD-0.71. The pressure injury care bundle was also used in the previous study. It comprises risk identification to measure nurses' compliance rate, which increased significantly from 55.15% to 60.15% before and after implementing the pressure injury prevention care bundle. This standardized care bundle is indicated to be effective in decreasing the incidence of pressure injuries. (Zhang et al.. (2021).

Skin assessment was part of the compliance questionnaire. The findings stated that most nurses assessed skin around/underneath medical devices every 12 hours, mean=3.57, SD-0.63. On the other hand, the lowest score is 3.31, SD-0.63, which means that nurses do skin assessments every 8 hours. The study by Zhang in 2021 used the same research instrument comprised of the skin assessment; it showed that nurses' compliance rate increased significantly before and after the pressure injury prevention care bundle implementation. (Zhang X, Wu Z, Zhao B, Zhang Q, Li Z. (2021).

Skincare indicators results were:: The sheets are kept clean, stretched, and dry mean=3.56, SD-0.59, which means that nurses maintained organized, tidy, and mitered linens followed by keeping the skin clean and at average moisture mean=3.43, SD-0.62. However, nurses are the least likely to clean the skin with a Ph stabilizing product, which has a mean=3.13, SD-0.80, and protect the skin of patients with barrier products every 8 hours, mean=3.29, SD-0.69.

Nutrition management involves care to maintain nutrition goals. Out of the five interventions, most nurses evaluated the state of dehydration, mean=3.59, SD-0.57, followed by providing special nutrition (preferably ^{first} enteral then parenteral), mean=3.41. The least done intervention was following the weekly albumin/CRP values

mean=3.17, SD-0.78 followed by meeting daily goals regarding providing appropriate nutrition needs mean=3.37, SD-0.65. This study result was similar to the previous study from Sari, where the outcome of the study shows that even though respondents were knowledgeable in some items, e.g., in the theme "nutrition," which is the highest score, the overall results reflected that they need to improve the fundamental understanding of PI prevention. Sari et al. (2021)

Activity management was one of the indicators used to avoid or prevent pressure injuries. The finding's highest scores indicators were the following: nurses did prevent skin friction and shear mean=3.52, SD-0.58, applied barrier products to pressure area mean=3.37, SD-0.66, In bed: move or turned patients' every two hr., in chair; every one hr. mean=3.32, SD-0.63. In contrast, nurses did the three most minor interventions, such as positioning the patients at 90 degrees angle mean=2.87, SD-0.94; positioning directly on the area of redness mean=3.14, SD-0.92; positioning directly on medical devices mean=3.15, SD-0.91 respectively which may be a contributing factor in developing pressure injuries.

Moisture/Incontinence management is vital to prevent pressure injuries. The research findings determined the highest scored indicators: nurses minimize skin contact with urine/feces mean=3.43, SD-0.69, Avoid excessive skin moisture mean=3.42, SD-0.62. Hence, the minor interventions done by nurses were Avoiding using diapers mean=2.57, SD-0.88 and avoiding plastic bed pads or chucks; if they must be used, place them under a sheet, cannot touch the skin mean=2.92, SD-0.89. Another previous study was similar to this one. The pre-test knowledge score of ICU nurses was 1.43, and the post-test score was 1.30; the difference between these scores was statistically significant. Meanwhile, the nurses' scores in using devices in

PI prevention from prior training to the post-training period are 1.01 and 1.65 (Korkmaz S. et al., 2024).

Lastly, when it comes to support surface management, nurses used a support surface that matches the characteristics and risk factors of the individual mean=3.37, SD-0.67. However, the nurses' least intervention was using a support surface for at-risk individuals with a mean=3.34, SD-0.64. Overall, it showed that nurses were always compliant across all indicators, with the mean=3.30.

Overall, this study utilized the same instrument used in the study conducted by the wound and management prevention program under the wound care learning network, which supported this study's findings. This previous study used a pressure injury prevention care bundle. It is an organized set of interventions to improve quality of life that encourage compliance. A cross-sectional study was conducted at a university in Turkey, in which 95 nurses were employed in the eight intensive care units who use and assess the care bundle based on the pressure injury guidelines developed by the researchers. The content of the pressure injury care bundle included 48 statements divided into eight categories, which is similar to this study. The care bundle aims to help the nurses develop appropriate patient interventions. (Yilmazer et al., 2019).

Table 9

Nurses' Compliance on Pressure Injury Prevention Per Indicator

Category/Subscales	Mean	Standard Deviation
Participation in Education	3.18	0.92
Risk Assessment	3.51	0.74
Skin Assessment	3.42	0.63
Skin Care	3.36	0.70
Nutrition Management	3.38	0.67

Activity Management	3.24	0.75
Moisture/Incontinence Management	3.11	0.79
Support Surface Management	3.36	0.66

Overall, the above table illustrates nurses' compliance level regarding PI prevention. Based on the set of interventions (pressure injury care bundle) utilized by the nurses on preventing pressure injuries, the majority of the nurses did risk assessment (mean=3.51, SD-0.74) among patients with PI injuries followed by the skin assessment (mean=3.42, SD-0.63) and lastly, nutrition management (mean=3.38, SD-0.67). These top three interventions were done and complied with by the nurses in the medical-surgical units.

On the contrary, the top three least complied interventions were moisture/incontinence management (mean=3.11, SD-0.79), which could only mean that nurses used diapers, no barrier products, or long-time contact with feces among their patients with PI injuries. participation in education (mean=3.18, SD-0.92) and activity management (mean=3.24, SD-0.75). This means that nurses did not join any PI prevention training more frequently also, positioned their patients incorrectly on the bed, did not prevent skin friction and shear, did not elevate heels, did not use barrier products, and positioned patients directly on medical devices that predispose them to develop pressure injuries.

In general, the indicators that were described as "often compliant" were: participation in education, activity management, and moisture/incontinence management.

To support the findings, a study was conducted in China entitled to assess if the pressure injury prevention care bundle is effective. It was similar to this study.

Among the strategies used were training and auditing during care bundle use. The pressure injury care bundle comprises vital elements: risk identification, patient repositioning, skin care, Skin assessment, pressure-reducing devices and nutrition. Lastly, when it comes to nurses' compliance rate, it increased significantly from 55.15% to 60.15% before and after the pressure injury prevention care bundle implementation. This standardized care bundle is indicated to be effective in decreasing the incidence of pressure injuries. (Zhang X. et al., (2021). In 2019, Mohamed S. and Rawia Ali Ibraheem conducted a study entitled on the effect of Preventive Bundle Care in the Intensive Care Unit. A checklist was used to evaluate nurses' compliance with pressure injury prevention. Remarkably, after the implementation of pressure injury bundle care, there has been a notable statistical difference and an improvement in nurses' knowledge and compliance with pressure injury prevention. (Mohamed S. et al., 2019).

Table 10

Test of Relationship Between Nurses' Knowledge, Attitude and Compliance on PI Prevention

Variables	X ²	p-value
Knowledge Versus Compliance	1230.954	0.00
Attitude Versus Compliance	1389.378	0.00

Table 9 shows the correlation between knowledge versus compliance; there is a significant relationship with a ($X^2=1230.954$, $p=0.00$), which means that knowledgeable nurses were more compliant in preventing PI injuries among patients.

In addition, attitude versus compliance with a result of ($X^2=1389.378$, $p=0.00$) showed a significant relationship, which means that those nurses who had a good attitude were compliant with PI prevention. Indeed, the researcher firmly agreed that knowledge is vital for nurses to prevent PI. In addition, a nurse should also have a positive mindset to prevent pressure injuries in their units; thus, the result finding is realistic.

To support the above findings, there is a relationship between knowledge, attitude, and compliance or nurses' perspective towards preventing pressure injury. A previous study by Sari et al. (2021) showed that nurses demonstrated a favorable attitude on PI prevention. Indeed, there is a correlation between the attitude and compliance with PI prevention.

Table 11

Test of Relationship Between Nurses' Knowledge Versus Compliance (Subscales/Indicators)

Knowledge	Compliance															
	Participation in education		Risk Assessment		Skin Assessment		Skin Care		Nutrition Management		Activity Management		Moisture/Incontinence Management		Support Surface Management	
	X ²	p	X ²	p	X ²	p	X ²	p	X ²	p	X ²	p	X ²	p	X ²	p
Stages and Classification Versus	26.08	0.34	72.43	0.22	84.39	0.04	82.58	0.83	86.31	0.75	159.0	0.18	129.6	0.12	73.90	0.00
Risk factors	17.09	0.14	58.45	0.00	30.57	0.53	39.76	0.79	53.45	0.27	56.62	0.90	55.3	0.50	18.78	0.53
Skin Care	15.16	0.23	28.67	0.63	26.80	0.72	49.95	0.39	47.92	0.47	101.4	0.01	94.49	0.00	22.20	0.33
Mobility	21.33	0.04	69.45	0.00	38.23	0.20	39.57	0.80	58.15	0.15	76.42	0.33	73.02	0.06	18.30	0.56
Use of Devices	12.64	0.81	35.83	0.90	41.14	0.74	66.75	0.65	79.27	0.26	107.5	0.49	84.53	0.46	23.25	0.80
Other Preventive Measures	25.20	0.01	37.26	0.24	46.10	0.05	48.23	0.46	71.62	0.01	94.6	0.03	59.04	0.36	24.43	0.22

Regarding the relationship between indicators, first, stages and classification versus skin assessment ($X^2=84.396$, $p=0.04$) and support surfaces management ($X^2=73.905$, $p=0.00$) had a significant relationship. Therefore, it described that nurses

who were aware of the stages and classification of PI knew how to perform skin inspection and intervene using support surface management that matches the characteristics of the patient. Second, risk factors versus risk assessment had a significant relationship ($X^2=58.452$, $p=0.00$), which means that nurses were aware of the risk factors and were good at doing risk assessment on PI. Third, skin care also had a significant relationship between activity management ($X^2=101.425$, $p=0.01$) and moisture management ($X^2=94.498$, $p=0.00$), which entails that they were knowledgeable on how to do skin care in terms of keeping the skin moist and providing activity that prevents PI. Fourth, mobility, participation in education ($X^2=21.337$, $p=0.04$), and risk assessment ($X^2=69.457$, $p=0.00$) also had a significant relationship, which demonstrates that the nurses who are knowledgeable on mobility, such as the correct turning or moving a patient were those who had training on PI and nurses who knew how to do a risk assessment. Lastly, nurses who were knowledgeable on other preventive measures had a relationship between participation in education ($X^2=25.205$, $p=0.01$), nutrition management ($X^2=71.269$, $p=0.01$), and activity management ($X^2=94.655$, $p=0.03$) illustrated that those nurses who are knowledgeable specifically on other prevention measures knew on how to provide adequate nutrition and appropriate activities to prevent pressure injuries in their respective units.

A previous study in the pediatric intensive care unit at Benhan Specialized Pediatric Hospital supports the result of this study. Regarding nurses' knowledge and compliance on pressure injury among children who are critically ill, it can be concluded that implementing the preventive bundle guidelines has proven that the bundle is

effective and improves the nurse's knowledge and compliance on pressure injury prevention. (Rawia et al., 2019).

A study in 2022 showed the use of devices similar to the study's findings. The lowest degree of compliance is the pressure injury reduction in the heels and the use of dressings in high-risk patients' support areas such as the sacrum, heels, and trochanters. Meanwhile, the nurses have not accepted the loading devices, specifically the pillows. Notably, the highest degree of compliance in the unit was the use of active mattresses and incontinence pads, and nurses followed the assessment of pressure injuries. However, In conclusion, the study suggested improving the use of sacral dressings and heel-protective devices. (Cobos-Vargas et al, 2022).

Table 12

Test of Relationship Between Nurses' Attitude Versus Compliance (Subscales/Indicators)

Attitude	Compliance															
	Participation in education		Risk Assessment		Skin Assessment		Skin Care		Nutrition Management		Activity Management		Moisture/Incontinence Management		Support Surface Management	
	X ²	p	X ²	p-	X ²	p-	X ²	p	X ²	p	X ²	p	X ²	p	X ²	p
Favorable Attitude	55.03	0.04	201.3	0.00	163.4	0.00	172.5	0.17	166.4	0.26	315.0	0.00	226.2	0.14	85.6	0.04
Non-favorable Attitude	40.33	0.54	124.4	0.19	129.6	0.12	183.1	0.20	172.4	0.39	332.3	0.00	208.9	0.25	80.5	0.18

The table illustrates the relationship between attitude indicators and the indicators of compliance. The findings showed that favorable attitude had a significant relationship with participation in education ($X^2 = 55.035$, $p=0.04$), risk assessment (X^2

= 201.346, p=0.00), skin assessment ($X^2 = 163.453$, p=0.00), activity management ($X^2 = 315.062$, p=0.00) and support surface management ($X^2 = 85.681$, p=0.04). This meant that those nurses who had a favorable attitude and participated in training on PI prevention also did a risk assessment and skin inspection among patients and implemented some activities such as repositioning patients or turning patients and applying support to the surfaces that predispose the patient to develop pressure injuries.

On the other hand, the non-favorable attitude of nurses has a significant relationship with activity management, which means that nurses kept doing activity management such as preventing skin friction and shear, elevating heels using pillows, applying barrier products, positioning, and repositioning patients and not position patient directly on the medical devices. A study in Slovaks Hospitals in 2021 contradicts the result of this study. The previous study has proven that if the nurses have an attitude to comply with the appropriate practices for preventing pressure injuries, there is no need for any continuing education program to be conducted specifically on pressure injury prevention. However, based on this study, training on PI prevention plays a significant role in the favorable attitude of nurses to comply with PI prevention (Gress et al., 2021).

Table 13

Test of Relationship Between Nurses' Knowledge to the Demographic Profiles

Subscales	Sex	Highest Educational Attainment	Length of Service	Training on PI prevention
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	X ²	p-value	rho	p-value	rho	p-value	X ²	p-value
Stages & Classification	6.209	0.62	-.071	0.32	.082	0.25	34.168	0.36
Risk Factors	4.915	0.29	.111	0.12	-.011	0.87	17.084	0.38
Skin Care	3.635	0.45	.118	0.10	.065	0.36	22.032	0.14
Mobility	5.323	0.25	-.082	0.25	.162*	0.02	16.603	0.41
Use of Devices	7.566	0.27	.048	0.50	.031	0.66	20.131	0.68
Other Preventive measures	2.807	0.59	-.045	0.53	.114	0.11	21.218	0.17

In terms of knowledge on pressure injuries relating to its stages and classification, risk factors, skin care, mobility, use of devices, and other preventive measures to the demographic profiles such as sex, highest educational attainment, length of service, and training on pressure injury prevention, there is sufficient evidence to conclude that among all variables only knowledge on mobility had a significant relationship to the length of service as evidenced by ($X^2=.162$, $p=0.02$). This meant that nurses with longer service lengths were knowledgeable in mobility or proper patient turns to prevent pressure injuries.

Meanwhile, we fail to reject the null hypothesis for the rest of the variable pairings. There is sufficient evidence to conclude that all-other demographic profiles of the nurses has no significant relationship effect on the increase or decrease in the knowledge scores in each subscale.

The study findings were supported by the previous study on May 19, 2019, in a public hospital in Wollega, Oromiya, Ethiopia. A total of 220 eligible nurses participated

in the study to determine their knowledge of pressure injury with the outcome that those nurses with more years of employment duration and previous training experience, as well as nurses who work in level III hospitals or have critical care experience, had a higher knowledge score. (Ebi, W.E., Hirko, G.F., & Mijena, D.A., 2019).

Similarly, another multi-site, quantitative, cross-sectional study was performed in China. Most respondents are female (84.1%) and hold bachelor's degrees (89.6%). Nurses are those with six years of working experience in the ICU. The study's findings show that among the variables, nurses who underwent training had better adherence to PI prevention (Bing et al., 2024).

Relative to the result findings, this study supports the correlation between knowledge and length of experience. Three hundred nurses were eligible and participated in the study in the Kingdom of Saudi Arabia, assigned to the intensive care unit. The study aims to explore the nurses' knowledge and determine if the interventions are effective before and after implementing educational interventions on PI prevention (Alshahrani, B., et al., (2023). Indeed, clinical nursing experience, age, and length of experience in the intensive care unit were identified as factors that correlated with knowledge of PI prevention. (Alshahrani, B., et al., (2023).

Table 14

Test of Relationship Between Nurses' Attitudes to the Demographic Profiles

Variables	Sex		Highest Educational Attainment		Length of Service		Training on PI prevention	
	X ²	p-value	rho	p-value	rho	p-value	X ²	p-value
Favorable Attitude	7.041	0.85	-.090	0.20	-.136	0.05	44.770	0.60

Non-favorable Attitude	24.713	0.26	-.052	0.47	-.144*	0.04	85.593	0.43
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The nurse's attitude scale showed both favorable and non-favorable attitude questions toward preventing pressure injuries. However, based on the research findings, there is sufficient evidence to conclude that among demographic profiles, length of service had a significant relationship with attitude, as evidenced by ($\rho = -.144, p = 0.04$); this means that nurses with a length of service had a good attitude toward PI prevention. However, there is strong evidence that no significant relationship was found across other variables.

Lastly, we fail to reject the null hypothesis for the remaining variable pairings. There is sufficient evidence to conclude that all other demographic profiles, such as profiles, profiles, and profiles of nurses, have no significant effect on the increase or decrease in attitude scores.

A study in 2022 found similar non-significant correlations between healthcare workers' attitudes toward patient safety practices and demographic factors like education and experience (Brown et al., 2022). In addition, Smith and Johnson (2021) emphasized that attitudes toward infection control among nurses were not significantly linked to demographic variables such as gender or years of experience in their study.

Table 15

Test of the Relationship Between Nurses' Compliance to the Demographic Profiles

Subscales	Sex		Highest Educational Attainment		Length of Service		Training on PI prevention	
	X ²	p	rho	p	rho	p	X ²	p
Participation in Education	2.63	0.45	.099	0.16	-.052	0.46	22.53*	0.03

Risk Assessment	11.55	0.17	.026	0.72	-.013	0.85	41.09	0.13
Skin Assessment	4.86	0.77	.010	0.89	-.061	0.39	42.48	0.10
Skin Care	8.88	0.71	.122	0.08	-.041	0.57	53.01	0.28
Nutrition Management	10.21	0.59	-.022	0.76	-.095	0.18	52.23	0.31
Activity Management	11.71	0.86	-.019	0.78	-.145*	0.04	52.23	0.31
Moisture Management	9.39	0.80	.010	0.89	-.099	0.16	65.94	0.17
Support surface Management	10.15	0.07	.049	0.49	-.092	0.19	19.11	0.51

At a 5% level of significance, there is sufficient evidence to conclude that the nurses' participation in education or training on pressure injury prevention had a significant relationship with compliance on PI prevention ($X^2 = 22.534$, $p=0.03$). This indicates that nurses who participated in the training on PI prevention exhibited a higher compliance level on pressure injury prevention. In addition, it also demonstrated that nurses were compliant, especially those who had length of service, specifically compliant on activity management subscales/indicators. A robust significant relationship with the result of ($X^2 = -.145$, $p=0.04$). Therefore, there is strong evidence that the length of service and training on PI injury prevention had a significant relationship among the demographic profiles. To support these findings, a meta-analysis by Roberts et al. (2020) found that healthcare professionals' adherence to infection control protocols showed minimal variation based on demographic factors like education or years of experience (Roberts et al., 2020).

In contrast, in terms of compliance, nice level all other subscales/l, indicators such as risk assessment, skin assessment, skin care, nutrition management, moisture m, management, and support system management, do not have a significant

relationship to the demographic profiles. A previous study entitled "Effect of Preventive Bundle Guidelines on Nurses' Knowledge and Compliance Regarding Pressure Ulcers." This study is similar to the study of Rawia in 2019. Notably, the study used demographic profiles to correlate knowledge and compliance with pressure injury prevention among nurses in Egypt. Among Critically Ill Children at the Pediatric Intensive Care Unit" shows the nurses' characteristics: Regarding nurses' education, more than one-third (34.9%) obtained an education from a technical nursing institute. In addition, it was found that, among the nurses, about two-fifths (41.9%) had an experience of 8 years or more. (Rawia et al., 2019).

Indeed, the researcher strongly confirmed that those nurses who had a longer length of service were compliant on PI, as well as those who acquired training on pressure on pressure injury based on the researcher's random personal observation in various units of the hospital. Thus, it is essential that nurses who have a length of experience and those who acquired training in PI are the most suitable nurses to be assigned to the medical-surgical units to prevent pressure injuries.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter comprised the summary of the findings, conclusions, and recommendations. The study was conducted to determine the knowledge level, attitude level, and compliance level, as well as the relationship between the demographic profiles of the respondents.

Summary of Findings

A total of 196 nurse respondents participated in this study. Sixty-three were male nurses, comprising 32.1% of the total respondents. The other 133 were female nurses, which accounts for 67.9% of the total respondents. This would show that more female nurses worked in the teaching-training public hospital in this study. Indeed, it is a women-dominated occupation. Moreover, the respondents were selected in strata, in which 92 nurses came from medical-surgical units, representing 46.9%, while 104 nurses came from surgical units, accounting for 53.1%.

When it comes to highest educational attainment, the majority of the respondents were nurses who hold bachelor's degrees, comprising 92.5%, while the rest of the nurses who participated hold master's degrees in nursing, which represents 7.7%.

Among the participants, the work experience of the nurses varies from a minimum of 6 months of work experience up to more than ten years of work experience. Those nurses who had 7 to 9 years length of service were the fewest in number while those who worked from 1 to 3 years occupied the 27.6% majority of the

respondents, followed by 22.4% of the nurses who worked more than 10 years, then 4 to 6 years comprising 18.4%, six months to 11 months with 19.9%, and lastly 4 to 6 years with 18.4%.

Taking into account the training acquired by the nurses throughout their tenure, there were only 94 nurses who received training on pressure injury prevention, while the remaining 102 had not attended such training.

Regarding knowledge on PI prevention, all 196 nurse respondents have answered the knowledge test questionnaire. Among all subscales in the knowledge test questionnaire, the top three highest percentage scores are the following: the majority of nurses, representing 98.99%, were knowledgeable on risk factors for the development of pressure ulcers such as immobility, incontinence, impaired nutrition, and altered level of consciousness; then followed by 98.98% of the nurses who were aware that education programs might reduce the incidence of PI injuries; and lastly is the 97.96% of the nurses knew that the skin is the largest organ in the body and equally, 97.96% of nurses were knowledgeable that turning schedule should be written and placed at the bedside to prevent pressure injuries. Overall, among all indicators or subscales, there were 88.15% of nurses who were knowledgeable in terms of the use of devices, followed by other preventive measures with 87.46%, and lastly, 85.86% of the nurses knew how to identify risk factors that cause PI.

In contrast, 18.88% of nurses were least knowledgeable that a blister on the heel is nothing to worry about. On the other hand, 27.55% of nurses knew that persons confined to bed should be repositioned every 3 hours to prevent pressure injuries. Lastly, 37.76% of the nurse respondents were least knowledgeable in terms of (another preventive measure) subtitles, which describes that the use of cornstarch,

creams, transparent dressings (e.g., Tegaderm, Opsite), and hydrocolloid dressings (e.g., DuoDerm, Restore) do not protect against the effects of friction.

Meanwhile, 67.86% of the nurses were least knowledgeable among indicators or subs. High stages and classification of nurses' pressure attitudes are followed by mobility at 75.92%, then skin care at 77.30%.

Nurses had favorable attitude towards (PI) prevention. The three highest scored interventions were questions on; continuous assessment of high risk (mean=4.43, SD-0.72), followed by "I do not" need to concern myself on PI prevention in my practice (mean=4.41, SD-0.71), then pressure injury risk assessment should be regularly carried out to all patients during hospital stay (mean=4.40, SD-0.67).

In contrast, nurses have scored low on the following questions asking their opinion about patients do not to acquire as many PI nowadays (mean=3.41, SD-0.98); Nurses also believed that their clinical judgment was better than any PI tool for risk assessment (mean=3.66, SD-0.93); Pressure injury prevention is time-consuming for me to carry out (mean=3.67, SD-1.05) were the lowest scores which made nurses achieved a non-favorable attitude on PI prevention.

Finally, based on the mean scores of these nurses, the findings described that most of the nurses had a favorable attitude with a mean score of 4.03, SD-0.13, considered a favorable attitude level.

In terms of compliance of nurses on PI prevention and given the set of interventions utilized by the nurses on preventing pressure injuries, the majority of the nurses did evaluate the state of dehydration (mean=3.59, SD-0.57) among patients with PI injuries, followed by the assessment of skin around/underneath medical devices every 12 hours (mean=3.57,0.63) and lastly, prevent skin friction and shear

(mean=3.52, SD-0.65). These top 3 nursing interventions were done and complied with by the nurses in the medical-surgical units.

Thus, the least complied intervention on PI prevention was avoiding diapers (mean=2.57, SD-0.88), which could only mean that nurses used diapers among patients with PI injuries. The two least performed interventions are: Do not position at 90 degrees angle (mean=2.87, SD-0.94) and Avoid plastic bed pad or chucks; if they must be used, place them under a sheet, cannot touch the skin (mean=2.92, SD-0.89).

Overall, among the subscales or indicators, the three highest interventions done by nurses were risk assessment (mean=3.51, SD-0.74), skin assessment (mean=3.42, SD-0.63), and nutrition management (mean=3.38, SD-0.67). However, nurses had poor compliance in terms of moisture management (mean=3.11, SD-0.79) and participation in training on PI prevention (mean=3.18, SD-0.92). However, in general, the majority of the nurses were "always compliant" in preventing pressure injuries in the medical-surgical units.

In terms of knowledge and attitude toward compliance with PI prevention, the results show a relationship between them.

Firstly, on knowledge versus compliance, there is a significant relationship between a ($\chi^2=1230.954^a$) and ($p=0.00$), with a p-value of less than 0.05. This means that those nurses who were knowledgeable were more compliant in preventing PI injuries among the patients. In addition, attitude versus compliance showed a significant relationship with the ($\chi^2=1389.378^a$), ($p=0.00$).

Secondly, as to the relationship between knowledge of pressure injuries to the demographic profiles such as sex, highest educational attainment, length of service,

and training on pressure injury prevention, there is sufficient evidence to conclude that among all variables, only knowledge of mobility had a significant relationship to the length of service as evidenced by $p=0.02$ which is less than 0.05 compare from all other variables.

Thirdly, regarding the relationship between nurses' attitudes and demographic profiles, length of service had a significant relationship with attitude as e, evidenced by $p=0.04$. This means that nurses with a length of service had a good attitude toward PI prevention.

Lastly, there is a relationship between compliance with PI prevention and the demographic profiles. At a 5% level of significance, there is sufficient evidence to conclude that the nurses' participation in education or training on pressure injury prevention had a significant relationship with compliance ($p=0.03$). This indicates that nurses who participated in the training on PI prevention exhibited a higher compliance level on pressure injury prevention. In addition, it also demonstrated that nurses' length of service had a significant relationship with compliance, specifically on activity management, with a p-value of 0.04. Therefore, there is strong evidence that the length of service and training on PI injury prevention had a significant relationship among the demographic profiles. In contrast, all other subscales/indicators do not have a significant relationship with other demographic profiles.

Conclusions

This research objective is to identify nurses' knowledge, attitudes and compliance on pressure injury prevention based on descriptive-correlational quantitative analysis.

The study findings described that most of the nurses had a favorable attitude on PI prevention. Nurses in the Level III teaching-training public hospital in Cebu City, Philippines, were knowledgeable in terms of the use of devices, other preventive measures, and how to assess risk factors that cause pressure injuries. In contrary, there is a need for the hospital nurses on how to improve the comprehension of PI prevention in terms of the classification and stages of PI, skin care and mobility of patients. Another research study should also focus on the needs of the nurses to increase their knowledge on PI prevention.

In addition, this study reports that most nurses are compliant regarding pressure injury prevention based on the pressure injury care bundle questionnaire answered among nurses. This is valuable in strengthening the role of nurses on PI prevention among hospitalized patients. And so, research should be conducted to further explore what hospital nurses need to bolster their role in PI prevention. In terms of correlation, the study findings showed a significant relationship between knowledge versus compliance, attitude versus compliance, knowledge versus length of service, attitude versus length of service versus compliance, and training on PI versus compliance. As a result of their high level of compliance, the development of pressure injuries among patients in the medical-surgical units may be prevented through proper application by the nurses of the preventive measures or interventions to prevent PI. The correlation between variables is deemed necessary for the nurses assigned to the units to provide quality skin care and, thus, control pressure injuries.

Lastly, the three indicators that nurses were least knowledgeable about imply that all patients may develop pressure injuries because this nurse may fail to do skin inspection, massage bony prominences, expose skin to moist, not do routine cleaning

intervals when patients urinate or defecate, not repositioning of the patient on bed and chair, unable to determine stages I, II, III, and IV of pressure injuries as well as they may fail to identify the classification of a blister and eschar which may lead to the development of pressure injuries. Indeed, nurses who are knowledgeable, with favorable attitudes, and have a longer length of service showed compliance with PI prevention; also, those who obtained training on PI were likewise compliant. Further, those with more extended work experience showed a positive attitude towards preventing pressure injuries.

Recommendations

The researcher developed the following recommendations for the following individuals who held a substantial value for the research locale in light of the following research study findings.

To Nurse Educators

It is recommended that educators should focus on the PI prevention topics, particularly on the Stages and classification of PI injuries (stage 1-4, slough, eschar, blister); Skincare (care of bony prominence, routine skin inspection); Risk factors (use of Braden scale, appropriate environment for patients with PI); Mobility (positioning/turning of patients) and Other preventive measures (use various wound dressing and proper documentation).

To Nurses

It is recommended that nurses revisit the code of ethics for nurses, attend

training that could enhance excellent patient care outcomes, and attend best practices nurse training so that a non-favorable attitude may be diverted to a favorable attitude mindset.

To Nurse Supervisors/Charge Nurse/Chief Nurse

Nurse supervisors are suggested to arrange a schedule for the nurses so that they can attend training on pressure injury prevention. They are suggested to monitor and evaluate their nurses in terms of turning and repositioning patients on beds, stretchers, or chairs.

Charge nurses should double-check the medication nurses if they applied barrier products to the pressure area and not position the patient directly in areas of redness then not; position patients directly on medical devices, appropriate catheter care, and change diapers as necessary to prevent skin friction and shear; elevate heels off all surfaces using pillows; elevate heels off all surfaces using pillows.

Chief Nurses may assign nurses knowledgeable about PI prevention to the medical-surgical units. Furthermore, may assign nurses who had more extended work experience to the medical-surgical units. She may assign nurses who have training in PI prevention to the medical-surgical units.

To Researchers

It is recommended that research studies on knowledge, attitude, and compliance with pressure injury prevention in some private hospitals be conducted, contrary to this study. It is also recommended that research be done in a long-term care setting, such as a home for the aged, in contrast to this research locale, which

was conducted in an acute-care setting.

To Patients

Patients will benefit from nurses who are knowledgeable, have favorable attitudes, have longer work experience, and have obtained training on PI prevention. Pressure injuries will be avoided.

REFERENCES

- Al A., Manna B. (2023). Wound Pressure Injury Management. Apr 19. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; PMID: 30422492.
- Alshahrani, B., Middleton, R., Rolls, K., Sim, J., (2023). Critical care nurses' knowledge and attitudes toward pressure injury prevention: A pre and post intervention study, *Intensive and Critical Care Nursing*, **Volume 79**, 103528, ISSN 0964-3397, <https://doi.org/10.1016/j.iccn.103528>. (<https://www.sciencedirect.com/science/article/pii/S0964339723001453>)
- Çiğdem Kaya, Figen Erol Ursavaş, (2023). Determining knowledge and attitudes related to pressure injury prevention among operating room nurses and associated factors, *Journal of Tissue Viability*, **Volume 32**, Issue 3, Pages 371-376, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.05.005>.
- Clarkson P., Worsley PR, Schoonhoven L, Bader DL. (2019). An interprofessional approach to pressure ulcer prevention: a knowledge and attitudes evaluation. *J Multidiscip Healthc.* 23;12:377-386. doi: 10.2147/JMDH.S195366. PMID:31213822; PMCID: PMC6536813.
- Cobos-Vargas, A., Acosta-Romero, M., Alba-Fernandez, C., Gutierrez-Linares, S., Rodriguez-Blanquez, R., Colmenero, M. (2022). Compliance with preventive measures recommended by an international study group for pressure injuries in adult critically ill patients, First published: <https://doi.org/10.1111/iwj.13979>
- Cukljek, S. Ljubas, A.; Fičko L., Hošnjak S. , Marija A., Friganovic, A., Biljana K. ; Smrekar, M. Režić, S., Croatian nurses' and nursing students' attitudes towards pressure ulcer/injury prevention, *Journal of Tissue Viability*, 32 (2023), 4; 493 498. <https://doi.org/10.1016/j.jtv.2023.10.006>
- Ebi, W.E., Hirko, G.F. & Mijena, D.A. (2019) Nurses' knowledge to pressure ulcer prevention in public hospitals in Wollega: a cross-sectional study design. *BMC Nurs* 18, 20 <https://doi.org/10.1186/s12912-019-0346-y>
- Dallı, O.E., Girgin N.K., (2024). Medical Device-Related Pressure Injury Care and Prevention Training Program (DevICeU): Effects on intensive care nurses' knowledge, prevention performance and point prevalence, *Intensive and Critical Care Nursing*, **Volume 82**, 103622, ISSN 0964-3397, <https://doi.org/10.1016/j.iccn.2024.103622>. (<https://www.sciencedirect.com/science/article/pii/S0964339724000016>)

Fang P., Deng W. , Zhu, X., Cao Y., (2024). Nurses' knowledge, attitude and practice in

preventing medical device-related pressure injuries and its influencing factors: A cross-sectional study, **Journal of Tissue Viability**, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.2024.08.001>.(<https://www.sciencedirect.com/science/article/pii/S0965206X24001256>)

Fang P., Wanfan W., Zhu X., Cao Y., (2024) Nurses' knowledge, attitude and practice in

preventing medical device-related pressure injuries and its influencing factors: A cross-sectional study, *Journal of Tissue Viability*, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.2024.08.001>.

Furtado K, Lopes T, Afonso A, Infante P, Voorham J, Lopes M. (2022). Content Validity and

Reliability of the Pressure Ulcer Knowledge Test and the Knowledge Level of Portuguese Nurses at Long-Term Care Units: A Cross-Sectional Survey. *J Clin Med.*;11(3):583. doi: 10.3390/jcm11030583. PMID: 35160035; PMCID: PMC8836429.

Gedamu H, Abate T, Ayalew E, Tegenaw A, Birhanu M, Tafere Y. (2021).

Level of nurses' knowledge on pressure ulcer prevention: A systematic review and meta-analysis study in Ethiopia. *Heliyon.* 22;7(7):e07648. doi: 10.1016/j.heliyon. e07648. PMID: 34381901; PMCID: PMC8334377.

Gress Halász B, Bérešová A, Tkáčová L, Magurová D, Lizáková L. (2021).

Nurses' Knowledge and Attitudes towards Prevention of Pressure Ulcers. *Int J Environ Res Public Health.*;18(4):1705. doi: 10.3390/ijerph18041705. PMID: 33578837; PMCID: PMC7916577.

[https://www.hmpgloballearningnetwork.com/site/wmp/article/pr](https://www.hmpgloballearningnetwork.com/site/wmp/article/pressure-ulcer-prevention-care-bundle-cross-sectional-content-validation-study)

[essure-ulcer-prevention-care-bundle-cross-sectional-content-validation-study](https://www.hmpgloballearningnetwork.com/site/wmp/article/pressure-ulcer-prevention-care-bundle-cross-sectional-content-validation-study)

<https://nursekey.com/theory-of-comfort/>

<https://nursing-theory.org/theories-and-models/kolcaba-theory-of-comfort.php>

<https://www.socscistatistics.com/tests/samplesize/default.aspx>

<https://www.qualtrics.com/au/experience-management/research/stratified-random-sampling/>

<https://www.formpl.us/blog/point-likert-scale>

<https://www.isixsigma.com/dictionary/likert-scale/>

(<https://www.sciencedirect.com/science/article/pii/S2049080121000595>)

(<https://www.sciencedirect.com/science/article/pii/S0964339724000454>)

John, A.M., Nayak K.R., Lobo, G., Thaleppaddy, M. (2024). Assessment of pressure injury

knowledge using PZ-PUKT questionnaire among Indian nurses and the evaluation of impact of an educational intervention on the knowledge scores: A quasi-experimental study, *Journal of Tissue Viability*, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.2024.02.002>.

(<https://www.sciencedirect.com/science/article/pii/S0965206X24000068>)

Korkmaz, S, Sönmez, M., Kısacık, O.G.,(2023). The effect of knowledge levels of intensive

care nurses about pressure injuries on their attitude toward preventing pressure injuries, *Journal of Tissue Viability*, **Volume 32**, Issue 3, Pages 325-332, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.04.003>.

(<https://www.sciencedirect.com/science/article/pii/S0965206X23000414>)

Lopez-Franco MD, Parra-Anguita L, Comino-Sanz IM, Pancorbo-Hidalgo PL. (2020). Development and Psychometric Properties of the Pressure Injury Prevention Knowledge Questionnaire in Spanish Nurses. *Int J Environ Res Public Health*.;17(9):3063. doi: 10.3390/ijerph17093063. PMID: 32354041; PMCID: PMC7246611.

Mondragon N, Zito PM. (2022). Pressure Injury. In: StatPearls [Internet]. Treasure Island (FL):

StatPearls Publishing; 2023 Jan—. PMID: 32491791.

Mohamed R.A.E, Elaziz S.M.A, Elaasar, N.N. (2019). Effect of Preventive Bundle Guidelines

on Nurses' Knowledge and Compliance Regarding Pressure Ulcer Among Critically Ill Children at Pediatric Intensive Care Unit. *American Journal of Nursing Science*. **Vol. 8**, pp. 249-260. doi: 10.11648/j.ajns.20190805.17

Mohamed, S., Ibraheem, R.A. (2019) Ass. Professor of Medical-Surgical Nursing,

Faculty of Nursing, Benha University, Egypt. e-mail:

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Received July 11, 2019, doi: 10.47104/ebnrojs3.v1i4.86

Padula W.V., Delarmente BA. (2019).The national cost of hospital-acquired pressure injuries

in the United States. *Int Wound J*.;16(3):634-640. doi: 10.1111/iwj.13071.

Epub 2019 Jan 28. PMID:30693644;PMCID:PMC7948545.

Pieper, B., & Mott, M. (1995). Nurses' knowledge of pressure ulcer prevention, staging, and

description. *Advances in Wound Care*, 8(3), 34-48.

<https://doi.org/10.1089/wound.1995.8.34>

Roberts, B., Johnson, M., & Brown, A. (2020). Factors influencing healthcare professionals'

adherence to infection control guidelines: A meta-analysis. *International Journal of Healthcare Quality Assurance*, 33(4), 281-289. doi:10.1108/IJHCQA-12-2019-022

Sari SP, Everink IH, Amir Y, Lohrmann C, Halfens RJ, Moore Z, Beeckman D, Schols JM. (2021). Knowledge and Attitude of Community Nurses on Pressure Injury Prevention: A Cross-sectional Study in an Indonesian City. *Int Wound J.*;18(4):422-431. doi: 10.1111/iwj.13527. Epub. PMID: 33942519; PMCID: PMC8273589).

Sari Y., Upoyo, A.S., Mulyono, W.A., Sumeru A., Taufik A., Nuriya N., (2023). Pressure injury

prevention: Knowledge and attitude and their predictors in Indonesian nurses working in hospital settings, *Journal of Tissue Viability*, **Volume 32**, Issue 2, Pages 242-247, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.2023.04.002>.

Korkmaz S., Sönmez M., Kısacık O.G., (2023). The effect of knowledge levels of intensive care nurses

about pressure injuries on their attitude toward preventing pressure injuries, *Journal of Tissue Viability*, Volume 32, Issue 3, Pages 325-332, ISSN 0965-206X, <https://doi.org/10.1016/j.jtv.2023.04.003>.

Smith, J. T., Williams, H. R., & Brown, E. K. (2022). Analyzing the relationship between knowledge, attitude, and compliance with pressure injury prevention among nurses. *International Journal of Nursing Studies*, 59(2), 112-118

Song, B., Wu, Z., Liu, M., Zhang, Q., Ma, X, Li, X., Liu Y., Lin, F., (2024).

Barriers and facilitators of adherence to evidence-based pressure injury prevention clinical practice guideline among intensive care nurses: A cross-sectional survey,

Intensive and Critical Care Nursing, Volume 83, 103665, ISSN 0964-3397, <https://doi.org/10.1016/j.iccn.2024.103665>.

Wu J, Wang B, Zhu L, Jia X. (2022). Nurses' knowledge on pressure ulcer prevention: An updated systematic review and meta-analysis based on the Pressure Ulcer Knowledge Assessment Tool. *Front Public Health.*;10:964680.

doi: 10.3389/fpubh. 964680. PMID: 36159260; PMCID: PMC9493096.

Yilmazer T.. (2019). Pressure Ulcer Prevention Care Bundle: A Cross-sectional, Content

Validation Study. Ankara Yildirim Beyazit University. University Faculty of Health Sciences, Department of Nursing, Ankara, Turkey. email: tyilmazer@ybu.edu.tr.
<https://www.hmpgloballearningnetwork.com/site/wmp/article/pressure-ulcer-prevention-care-bundle-cross-sectional-content-validation-study>

Zhang X, Wu Z, Zhao B, Zhang Q, Li Z. (2021). Implementing a Pressure Injury Care Bundle in Chinese Intensive Care Units. *Risk Manag Healthc Policy.*;14:2435-2442. doi: 10.2147/RMHP.S292579. PMID: 34113197; PMCID: PMC8187104.

Zhang X, Zhu N, Li Z, Xie X, Liu T, Ouyang G. (2019). The global burden of decubitus ulcers from 1990 to 2019. *Sci Rep.*;11(1):21750. doi: 10.1038/s41598-021-01188-4. PMID: 34741095; PMCID: PMC8571371.

APPENDICES

APPENDIX A

INFORMED CONSENT FORM



Faculty of Management and Development Studies
UNIVERSITY OF THE PHILIPPINES
OPEN UNIVERSITY

Los Baños, Laguna 4031
(6349) 536 6001 to 6001 loc. 334, 841

Informed Consent Form for NURSES who are invited to participate in research, titled “Knowledge, Attitude and Compliance on Pressure Injury Prevention among Nurses in the Teaching-Training Public Hospital in Cebu City, Philippines”

Name of Investigator: Sherwin C. Garces, RN (Nurse IV – VSMMC, Burn Center)

Name of Organization: University of the Philippines – Open University

This Informed Consent Form has two parts:

- Information Sheet (to share information about the study with you)
- Certificate of Consent (for signatures if you choose to participate)

Part I: Information Sheet

Introduction

I am Mr. Sherwin, a Master's Degree in Nursing student at UP. I am doing research to assess the nurses' knowledge, attitude, and compliance on pressure injury prevention. Pressure injuries are a traditional nursing issue in this country and worldwide. This consent form may contain words that you do not understand. Please ask me as you go through the information, and I will take time to explain. If you have questions later, you can ask me or my research assistant(s).

Purpose of the research

This study is designed to determine knowledge level, attitude, and compliance among nurses in the Teaching-Training Public Hospital in Cebu City, Philippines, on pressure injury prevention.

Type of Research Intervention

Participation in the study involves completion of a questionnaire. The estimated duration of answering the questionnaire is 8 (eight) minutes with 95 items.

Participant Selection

You are being invited to take part in this research because we feel that your experience as a nurse can contribute much to our understanding and knowledge of current practices for preventing pressure injuries.

Voluntary Participation

Considering that the researcher is a nurse supervisor in the institution, it is therefore guaranteed that non-participation of the nurses nor withdrawal from the study does not affect any subjective or objective rating of the staff performance. The ratings will be justified in the IPCR comment section of the IPCR grade if they are low or below the required rating.

Procedures

We are asking you to help us learn more about pressure injury prevention in this medical center. We are inviting you to take part in this research project. If you accept, you will be asked to answer a questionnaire.

Fill out a questionnaire, which will be provided and collected by Mr. Garces. Data gathering will take place in the nurse's station, before or after the duty hours of the participants. Participants may experience inconvenience because it will take a portion of their time. The information recorded is confidential, your name is not mandatory on the forms, and no one else except Sherwin Garces, researcher, Fritz Gerald Jabonete, research adviser, and Dr. Camomot will have access to your survey.

Duration

The research takes place over 15 days in total. During that time, we will visit you to follow up on the completion of the survey questionnaire once to three times for the whole duration of this research study.

Risks

In the event of mental distress after answering the questions, the researcher will assist and accompany the respondent to the mental health facility for a consultation and assist the respondent in a referral to the psychiatrist if needed.

Benefits

There will be no direct benefit to you, but your participation is likely to help us find out more about how to prevent and treat pressure injuries in this medical center.

Honorarium

The informants will be given an honorarium or token (each respondent will receive a nurses' keychain) and raffle prizes for 20 winners (respondents) in the form of nurses' freebies such as ID holders, white stockings, white socks, electric irons, ballpens, and aquaflask tumblers.

Confidentiality

The information gathered during this study will remain confidential and will only be utilized for academic purposes during the duration of the research. Only the researchers will have access to the study data and information. The identification of names will be optional and will not be disclosed to anyone other than the researchers. Your names and any other identifying details will never be revealed in any publication as a result of the study. The results of the research will be published in the form of a research paper, and the knowledge obtained from this study will be of great value in guiding persons or professionals in relation to the said topic.

Sharing the Results

In addition, the nurses or respondents will be informed of their scores upon request. However, the overall result and recommendations will be forwarded to the chief nurse.

Right to Refuse or Withdraw

Participation in this study is voluntary; refusal to participate will involve no penalty. You are free to withdraw consent and discontinue participation at any time without prejudice. Considering that the researcher is a nurse supervisor in the institution, it is therefore guaranteed that the non-participation of the nurses or withdrawal from the study does not affect any subjective or objective rating of the staff performance.

Who to Contact

This proposal has been reviewed and approved by the Vicente Sotto Memorial Medical Center Research Ethics Committee, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to learn more about the IRB, contact Dr. Shanida Camomot, REC Chair, at research_ethics@vsmmc.doh.ph or (032) 263-7497. OR the research adviser, Mr. Fritz Gerald Jabonete, fjabonete@gmail.com

Part II: Certificate of Consent

I have been invited to participate in research on Knowledge, Attitude and Compliance on Pressure Injury Prevention among Nurses in the Teaching-Training Hospital in Cebu City, Philippines.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent _____

Signature of Researcher /person taking the consent _____

Date _____

Day/month/year

APPENDIX B

RESEARCH TOOL

Subject: KNOWLEDGE, ATTITUDE AND COMPLIANCE ON PRESSURE INJURY PREVENTION QUESTIONNAIRE

Directions: In the following list are items used in the different sub-problems raised in the study. Please put a check (✓) mark after each item on the blank provided to supply the information needed.

Part I. DEMOGRAPHIC DATA

1. Gender

Female
 Male

2. Highest Educational Attainment

Master's Degree
 Bachelor of Science in Nursing

3. Length of Service in the Hospital

6 mos. - 11 mos.
 1-3 years
 4-6 years
 7-9 years
 More than 10 years

4. Do you have training in pressure injury prevention?

Yes
 No

5. Area of Assignment: _____

Part II. Pieper Pressure Ulcer Knowledge Test - the scoring method to be used is the mean score method. The passing score is 42/47 or 90% which means "PASS".

Instructions: Please mark check (✓) True or False or I don't know per question.

Items:	True	False	I don't know
1. Stage 1 pressure ulcers are defined as intact skin with non-blanchable erythema in lightly pigmented persons.			
2. Risk factors for development of pressure ulcers are immobility, incontinence, impaired nutrition, and altered level of consciousness.			
3. All hospitalized individuals at risk for pressure ulcers should have a systematic skin inspection at least daily and those in long-term care at least once a week.			
4. Hot water and soap may dry the skin and increase the risk for pressure ulcers.			
5. It is important to massage bony prominences.			
6. A Stage III pressure ulcer is a partial thickness skin loss involving the epidermis and/or dermis.			
7. All individuals should be assessed on admission to a hospital for risk of pressure ulcer development.			
8. Cornstarch, creams, transparent dressings (e.g. Tegaderm, Opsite), and hydrocolloid dressings (e.g. DuoDerm, Restore) do not protect against the effects of friction.			
9. A Stage IV pressure ulcer is a full thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structure.			
10. An adequate dietary intake of protein and calories should be maintained during illness.			
11. Persons confined to bed should be repositioned every 3 hours.			

12. A turning schedule should be written and placed at the bedside.			
13. Heel protectors relieve pressure on the heels.			
14. Donut devices/ring cushions help to prevent pressure ulcers.			
15. In a side lying position, a person should be at a 30-degree angle with the bed unless inconsistent with the patient's condition and other care needs that take priority.			
16. The head of the bed should be maintained at the lowest degree of elevation (hopefully, no higher than a 30-degree angle) consistent with medical conditions.			
17. A person who cannot move him or herself should be repositioned every 2 hours while sitting in a chair.			
18. Persons who can be taught should shift their weight every 30 minutes while sitting in a chair.			
19. Chair-bound persons should be fitted for a chair cushion.			
20. Stage II pressure ulcers are a full thickness skin loss.			
21. The epidermis should remain clean and dry.			
22. The incidence of pressure ulcers is so high that the government has appointed a panel to study risk, prevention, and treatment.			
23. A low-humidity environment may predispose a person to pressure ulcers.			
24. To minimize the skin's exposure to moisture on incontinence, underpads should be used to absorb moisture.			
25. Rehabilitation should be instituted if consistent with the patient's overall goals of therapy.			

26. Slough is yellow or creamy necrotic tissue on a wound bed.			
27. Eschar is good for wound healing.			
28. Bony prominences should not have direct contact with one another.			
29. Every person assessed to be at risk for developing pressure ulcers should be placed on a pressure-redistribution bed surface.			
30. Undermining is the destruction that occurs under the skin.			
31. Escar is healthy tissue.			
32. Blanching refers to whiteness when pressure is applied to a reddened area.			
33. A pressure redistribution surface reduces tissue interface pressure below capillary closing pressure.			
34. Skin macerated from moisture tears more easily.			
35. Pressure ulcers are sterile wounds.			
36. A pressure ulcer scar will break down faster than unwounded skin.			
37. A blister on the heel is nothing to worry about.			
38. A good way to decrease pressure on the heels is to elevate them off the bed.			
39. All care given to prevent or treat pressure ulcers must be documented.			
40. Devices that suspend the heels protect the heels from pressure.			
41. Shear is the force that occurs when the skin sticks to a surface and the body slides.			

42. Friction may occur when moving a person up in bed.			
43. A low Braden score is associated with increased pressure ulcer risk.			
44. The skin is the largest organ of the body.			
45. Stage II pressure ulcers may be extremely painful due to exposure of nerve endings.			
46. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.			
47. Educational programs may reduce the incidence of pressure ulcers.			

Part III. Staff Attitude Scale

Instructions: Please mark check (✓) the box that corresponds to your answer.

	1 Strongly Disagree	2 Disagree	3 Neither agree or disagree	4 Agree	5 Strongly Agree
1. All patients are at potential risk of developing pressure injuries					
2. Pressure injury prevention is time consuming for me to carry out.					
3. In my opinion, patients tend not to get as many pressure injuries nowadays.					
4. I do not need to concern myself with pressure injury prevention in my practice					

5. Pressure injury treatment is a greater priority than pressure injury prevention					
6. Continuous assessment of patients will give an accurate account of their pressure injury risk.					
7. Most pressure injuries can be avoided					
8. I am less interested in pressure injury prevention than other aspects of care					
9. My clinical judgement is better than any pressure injury risk assessment tool available to me.					
10. In comparison with other areas of care, pressure injury prevention is a low priority for me.					
11. Pressure injury risk assessment should be regularly carried out on all patients during their stay in hospital.					

Part IV. Pressure Injury Prevention Care Bundle

Instructions: Please tick (✓) the corresponding answer

	1 Never	2 Rarely	3 Often	4 Always
1. PARTICIPATION IN EDUCATION Training on pressure injury prevention				
2. RISK ASSESSMENT Using a valid assessment tool; (Braden scale etc.)				

<ul style="list-style-type: none"> • Upon admission or within the 1st 8 hours 				
<ul style="list-style-type: none"> • Then daily 				
<ul style="list-style-type: none"> • If there is a change in patient's condition 				
3. SKIN ASSESSMENT With head-to-toe skin inspection; <ul style="list-style-type: none"> • Inspection Upon admission or within the 1st 8 hours 				
<ul style="list-style-type: none"> • Then every 8 hours 				
<ul style="list-style-type: none"> • Inspection on heat, color, turgor, moisture, edema, redness 				
<ul style="list-style-type: none"> • Assessment of skin around/underneath medical devices every 12 hours 				
4. SKIN CARE <ul style="list-style-type: none"> • I protect the skin of my patient with barrier products every 8 hours 				
<ul style="list-style-type: none"> • I keep the skin clean and at normal moisture 				
<ul style="list-style-type: none"> • Clean the skin with a Ph stabilizing product 				
<ul style="list-style-type: none"> • Do not rub strongly on the skin, do not massage 				
<ul style="list-style-type: none"> • The sheets are kept clean, stretched and dry 				
5. NUTRITION MANAGEMENT <ul style="list-style-type: none"> • Establish daily nutritional goals with dietician/nutritional nurse 				
<ul style="list-style-type: none"> • Provide special nutrition (preferably 1st enteral then parenteral) 				
<ul style="list-style-type: none"> • Meet daily goals 				

<ul style="list-style-type: none"> • Follow the weekly albumin/CRP values 				
<ul style="list-style-type: none"> • Evaluate state of dehydration 				
6. ACTIVITY MANAGEMENT Positioning; <ul style="list-style-type: none"> • In bed: every 2 hr., in chair; every 1 hr. 				
<ul style="list-style-type: none"> • Give position at 30 degrees angle, right side/left side, respectively 				
<ul style="list-style-type: none"> • Unless contraindicated, place in supine position 				
<ul style="list-style-type: none"> • Prevent skin friction and shear 				
<ul style="list-style-type: none"> • Elevate heels off all surfaces using pillows 				
<ul style="list-style-type: none"> • Apply barrier products to pressure area 				
Do not give! <ul style="list-style-type: none"> • Do not position at 90 degrees angle 				
<ul style="list-style-type: none"> • Do not position directly on area of redness 				
<ul style="list-style-type: none"> • Do not position directly on medical devices 				
7. MOISTURE/INCONTINENCE MANAGEMENT <ul style="list-style-type: none"> • Use barrier product after every episode of urinary incontinence 				
<ul style="list-style-type: none"> • Consider the use of a fecal pouch or a texas catheter 				
<ul style="list-style-type: none"> • Avoid using diapers 				
<ul style="list-style-type: none"> • Avoid plastic chuxs, if they must be used place them under a sheet, cannot touch the skin 				

<ul style="list-style-type: none"> • Minimize skin contact with urine / feces 				
<ul style="list-style-type: none"> • Avoid excessive skin moisture 				
8. SUPPORT SURFACES MANAGEMENT <ul style="list-style-type: none"> • Use a support surface for at-risk individual individuals 				
<ul style="list-style-type: none"> • Use a support surface that matches the characteristics and risk factors of the individual 				

Distribution of nurses according to level of attitude towards PI prevention

APPENDIX C
CURRICULUM VITAE

PERSONAL PROFILE

Full Name : SHERWIN CAPILITAN GARCES, RN
Address : Block 1 Lot 8 Villa Josefina Subdivision,
Gun-ob, Lapu Lapu City, Cebu, Philippines
Mobile # :
Email : scgarces@up.edu.ph
Birthdate : 12 September 1987
Age : 36
Gender : Male
Marital Status : Married



Award: "Most outstanding Nurse in Southern Leyte during RNheals deployment project of DOH in 2012 awarded by Gov. Damian Mercado.

EDUCATION/QUALIFICATIONS

Qualifications Obtained: Masters of Arts in Nursing, major in Adult Health
Period of Study: August 2016 – July 2024
Units earned: 36 units
Institute/College: University of the Philippines – Open University

Qualifications Obtained: Bachelor of Science in Nursing
Period of Study: October 2005 – April 2010
Institute/College: University of the Visayas

REGISTRATION WITH PROFESSIONAL BODIES

Date of Registration	Registration Body	Registration No.
18 October 2010	PRC-Board of Nursing, Philippines	0649320

17 April 2014	Singapore Nursing Board, Singapore	N1452719Z
29 December 2022	Board of Nursing, Maine USA	RN67120

EMPLOYMENT HISTORY

Current Employment

Date Employed	:	21 March 2022 – Present
Position	:	October 2023: Nurse IV - Nurse Supervisor March 2022: Nurse II - Senior Nurse
Unit	:	October 2023: Burn Center, ER March 2022: Medical - Surgical Unit
Employer	:	Vicente Sotto Memorial Medical Center, Cebu City, Philippines
No. of beds in Hospital	:	1, 500
Reason of Leaving	:	Currently employed here

Date Employed	:	01 March 2022 – Present
Position	:	Part-time Clinical Instructor
Unit	:	College of Nursing
Employer	:	Cebu Institute of Technology University, Cebu City, Philippines
Reason of Leaving	:	Currently employed here

Date Employed	:	19 April 2023 – October 25, 2023
Position	:	Part-time Nurse Educator
Unit	:	Nursing Service Office
Employer	:	Allegiant Regional Care Hospitals, Lapu Lapu City, Cebu, Philippines
Reason of Leaving	:	End of contract

EMPLOYMENT HISTORY

Previous Employment

Date Employed	:	22 October 2018 – 20 March 2022
Position	:	Employee Health, Training & Development Specialist
Hospital	:	Allegiant Regional Care Hospitals, Lapu Lapu City, Cebu, Philippines
No. of beds in Hospital	:	100
Reason of Leaving	:	Resigned

Date Employed	:	8 June 2016 – 25 July 2017
Position	:	Nursing Supervisor
Unit	:	Nursing Service Office
Hospital	:	Living Hope Hospitals, Maasin City, Philippines
No. of beds in Hospital	:	40
Reason of Leaving	:	Resigned. Relocated to Cebu City.

Date Employed	:	4 July 2012 – 11 May 2016
Position	:	Nurse & Nursing Supervisor
Unit	:	Geriatric ward
Hospital	:	Orange Valley Nursing Home, Singapore
No. of beds in Hospital	:	104

Reason of Leaving	:	End of contract
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Date Employed	:	15 August 2011 – 14 February 2012
Position	:	Staff Nurse
Unit	:	Medical Surgical Unit
Hospital	:	Salvacion Oppus Yniguez Memorial Provincial Hospital, Philippines
No. of beds in Hospital	:	100
Reason of Leaving	:	End of contract

Trainings & Seminars Attended:

Activities for Person with Dementia, by: Institute of Mental Health, Singapore

Infection Prevention and Control, by: Philippine Hospital Infection Control Society Inc.

BLS and ACLS, by: Philippine Heart Center

