An-Najah National University

Faculty of Graduate Studies

Pressure Ulcer: Nurses Knowledge and Attitude Towards Preventive Measures in Intensive Care Units in Palestine.

By

Kefaya Mufeed Al-Shaikh

Supervisor

Dr. Jamal Qaddumi

This Thesis is Submitted in Partial Fulfilment of the Requirements for the Degree of Master of critical care nursing, at Faculty of Graduate Studies, at An-Najah National University, Nablus-Palestine.

2019

Pressure Ulcer: Nurses Knowledge and Attitude Towards Preventive Measures in Intensive Care Units in Palestine

By
Kefaya Mufeed Al-Shaikh

This Thesis was Defended Successfully on 17/10/2019 and approved by:

Defense Committee Members	**Signature**
1. Dr. Jamal Qaddumi / Supervisor	**……..……..…**
2. Dr. Emad abu khader / External Examiner	**...…….**
3. Dr. Aidah alkaissi / Internal Examiner	**…...…….**

Dedication

The sake of Allah, my Creator and my Master. My great teacher and messenger, Mohammed (May Allah bless and grant him), who taught us the purpose of life

To those who always supported me in times of happiness and frustration, to those who raised my spirits in times of despair to help me in accomplishing my work successfully.

To the spirit of my father who always surrounded, reminded us of the lasting support and hopes that we wanted, and the future talks that we have, you were a compassionate Father, I did not forget you and I will never do, you are the spectrum that supported, and protected me. You keep me confident that I will one day become what we always planned for.

My affectionate mother, I am honoured to have you as my mother. Thank you for your prayers and blessing, for giving me a chance to prove and improve myself through all my walks of life.

To the most precious in my life…….. My dearly beloved brothers and sister

To those who were closest to my heart…….. My beloved one.

To everything beautiful in this generous country

To everyone who helped and supported me.

Acknowledgment

First, I extend my sincere thanks and gratitude to God, who gave me the strength to complete this work, despite all of the difficulties.

I extend my sincere thanks and great gratitude and appreciation to my supervisor Dr. Jamal Qaddumi who made all his efforts to accomplish this work, advised, guided, and provided me with his experience and support.

I would also like to thank to my dear colleague, Ahmad kharsani for his help and assistance.

In addition, I would like to extend my thanks and appreciation to my instructors in the faculty of nursing studies at An-Najah National University for their support and devotion especially beloved Dr. Aidah Alkaisi

My Sincere gratitude to all the nurses at our hospital for their help in gathering the required data for the research

Finally, thanks and regards to all those who supported me during the completion of this work.

الإقرار

انا الموقع أدناه مقدم الرسالة التي تحمل العنوان

Pressure Ulcer: Nurses Knowledge and Attitude towards preventive measures in Intensive care units in Palestine.

أقر بأن ما اشتملت عليه هذه الرسالة إنما هي نتاج جهدي الخاص، باستثناء ما تم الإشارة إليه حيثما ورد، وان هذه الرسالة ككل آو اي جزء منها لم يقدم لنيل اي درجة او لقب علمي او بحثي لدى أي مؤسسة تعليمية او بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work and has not been submitted elsewhere for any other degree or qualification.

Student name: **الاسم:**

Signature: **التوقيع:**

Date: **التاريخ:**

Table of Contents

No.	Contents	page
	Dedication	**Iii**
	Acknowledgement	**Iv**
	Declaration	**V**
	List of Tables	**Viii**
	List of Figures	**Ix**
	List of appendices	**X**
	List of Abbreviations	**Xi**
	Abstract	**Xii**
	Chapter One: Introduction	**1**
1.1	Introduction	**1**
1.2	Background	**1**
1.2.1	Definition of a Pressure Ulcer	**1**
1.2.1	The Epidemiology of a Pressure Ulcer	**3**
1.2.2	Risk Factors of a Pressure Ulcer	**4**
1.2.3	Stages of a Pressure Ulcer	**6**
1.3	Statement of Problem and Significance of the Study	**7**
1.4	Objective of the study	**9**
1.5	Question of the study	**9**
1.6	Statistical hypothesis of the study	**10**
1.7	Operational definition	**10**
1.8	Conceptual framework	**11**
	Chapter Two: Literature Review	**13**
	Chapter Three: Research Methodology	**20**
3.1	Study Design	**20**
3.2	Study Population	**20**
3.3	Study Setting	**21**
3.4	Participants	**21**
3.5	Sample and sampling	**22**
3.6	Study period	**22**
3.7	Inclusion criteria	**23**
3.8	Exclusion criteria	**23**
3.9	Study Instrument	**23**
3.10	Educational program	**25**
3.11	Data Collection	**26**
3.12	Data Analysis Plan	**28**
3.13	Ethical Considerations	**29**
	Chapter Four: Result	**30**
4.1	Introductions	**30**

4.2	Demographic characteristics of ICU nurses in Palestine	**30**
4.3	Baseline pressure ulcer knowledge among ICU nurses in Palestine	**33**
4.4	Baseline ICU nurses' attitudes towards pressure ulcer in Palestine	**38**
4.5	Effect of education on level of knowledge about pressure ulcer among ICU nurses in Palestine	**40**
4.6	Effect of education on level of attitudes towards pressure ulcer among ICU nurses in Palestine	**43**
	Chapter Five: Discussion	**46**
5.1	Socio demographic characteristics of the participants	**46**
5.2	Nurses baseline knowledge related to pressure ulcer	**48**
5.3	Nurses baseline attitude related to pressure ulcer	**50**
5.4	Effect of an education on nurses level of knowledge about Pressure ulcer prevention.	**52**
5.5	Effect of an education on nurses attitude about PrUs prevention.	**54**
	Conclusion	**56**
	Recommendation	**57**
	Limitation of thesis	**58**
	References	**59**
	Appendix	**67**
	الملخص	**ب**

List of Tables

No.	Tables	Page
1	Demographics characteristics of intervention and control groups	**31**
2	Previous pressure ulcer Knowledge or Training of intervention and control groups	**32**
3	Comparison between intervention and control groups in regard to their baseline level of pressure ulcer knowledge	**33**
4	Frequency and percentage distribution of correct answer of pressure ulcer Knowledge (wound subscale)	**35**
5	Frequency and percentage distribution of correct answer of pressure ulcer Knowledge (staging subscale)	**36**
6	Frequency and percentage distribution of correct answer of pressure ulcer Knowledge (prevention subscale)	**37**
7	Comparison between intervention and control groups in regard to their baseline level of pressure ulcer attitudes	**39**
8	Comparison between intervention and control group in regard to their post 2 level of pressure ulcer knowledge	**41**
9	Comparison between pre and post 2 level of pressure ulcer knowledge of intervention and control groups	**42**
10	Comparison between intervention and control group in regard to their post level of pressure ulcer attitudes	**43**
11	Comparison between pre and post level of pressure ulcer attitudes of intervention and control groups	**45**

List of Figures

No.	Figures	Page
1	Conceptual Framework based on General System Theory approach by Ludwing Von Bertalantey	12
2	Distribution of correct answers at baseline pre intervention of subscales and total Pressure ulcer Knowledge questions.	34
3	Histogram shows the distribution of nurses' attitudes towards Pressure ulcer.	40
4	Distribution of correct answers at post intervention time of subscales and total Pressure ulcer Knowledge questions.	41
5	Pre and post level of Pressure ulcer knowledge in both intervention and control groups.	43
6	Distribution of answers of pre-post intervention time of total Pressure ulcer Attitudes questions for both intervention and control groups.	44
7	Pre and post level of Pressure ulcer attitudes in both intervention and control groups.	45

List of Appendices

No	Subject	Page
1	The permission from Pieper for using PZ-PUKT scale	67
2	The permission from **Z**-Moor for using attitude scale	70
3	Inform consent	71
4	Thesis tool	72
5	Approval of Faculty of Graduate Studies on the topic of the thesis	77
6	Approval letter from IRB	78
7	Facilitation form from Ministry of Health	79
8	Facilitation form for data collection at PMC	80
9	Facilitation form for data collection at Hebron hospital	81
10	Facilitation form for data collection at Rafidia hospital	82
11	Facilitation form for data collection at Istishari Arab hospital	83
12	Approval form from PMC for data collection	84
13	Approval form from Hebron hospital for data collection	85
14	Approval form from Rafidia hospital for data collection	86
15	Approval form from Istishari hospital for data collection	87

LIST OF ABBREVIATIONS

ICU	Intensive care unit
PrUs	Pressure ulcer
NPUAP	National pressure ulcer advisory panel
QOL	Quality of Life
HAPUs	Hospital – acquired pressure ulcer
AHRQ	The Agency of Health care research and quality
NDNQI	The National Database of Nursing quality indicators
UMTH	University of Maiduguri teaching hospital
CCU	Cardiac Care Units
IRB	Institutional review board
ANCC	American Nurses Credentialing Centres
ABC	Airway , Breathing, Circulation
PMC	Palestinian medical complex
USA	United States of America
UK	United Kingdom
PZ-PUKT	Pieper-Zulkowski Pressure Ulcer Knowledge Test
SPSS	Statistical Package for the Social Sciences
SD	Standard Deviation

Pressure Ulcer: Nurses Knowledge and Attitude towards preventive measures in Intensive Care Units in Palestine.

By
Kefaya Al-Shaikh
Supervisor
Dr. Jamal Qaddumi

Abstract

Background: Pressure ulcer (PrUs) is a common complication caused by immobilization, nutrition deficiency and under sedation for long periods in the ICU. PrUs are one of the major topics which are discussed among the medical field when speaking about quality of care and patient safety in almost all healthcare settings worldwide.

Purpose: This study aims to assessing the ICU nurse's knowledge and attitude towards PrUs, preventive measures, and the impact of an educational program on nurse knowledge and attitude level toward PrUs prevention.

Method: Quasi-experimental design was used. Ninety-one ICU nurses were selected from four hospitals in Palestine. Nurses' knowledge about PrUs were measured by an international scale developed by Pieper – Zulkowski. In addition, nurses attitude was measured by Moore and Price scale.

Results: The analysis of the study displayed inadequate nurses knowledge to PrUs prevention. The mean of nurses knowledge in intervention group were 36.6(SD=9.2) and 38.6 (SD=7.4) in control group, while the attitude is slightly positive. In contrast results, It appeared to be statically

significant increasing in level of knowledge in all sub scale (wound, staging, prevention) which is the mean score as 67.1(SD=5) in intervention group while to be the same at control group as 38.6 (SD=7.4) and attitude level increased which is positive. Moreover, the results of repeating the test after a month from introducing the education program showed the mean score as 49.18(SD=7.5) which is lower than post-test that occur at the end of each session of education but still more than pre education test .

Conclusion: A PrUs educational program is an effective tool for nurses. It provides a chance to improve the understanding of PrUs; it is remained aware of the evolution of knowledge in order to alleviate the suffering of the patient. Moreover, PrUs education programs can help nurses to acquire professional attitudes that will enable them to improve the quality of nursing care, thus reducing the burden on patient, family, nurses, and workplace.

Keywords: Pressure Ulcer, knowledge, attitude, assess, effectiveness, prevention, staff nurses, educational program.

Chapter One
Introduction

1.1 Introduction

An intensive care unit (ICU) is a special department of a hospital that provides intensive medical therapy using a constant and close monitoring system which includes invasive and non-invasive techniques for life threatening illness and injuries. In these departments, the patients report many physiological variables to the specialty on systemic manner so that titrated care will be provided when needed (Varon, 2010).

Critically, ill patients in ICU units are subjected to many complication related to many factors, such as deep vein thrombosis , kidney failure, liver failure , medication side effect , stomach ulcer and pressure ulcer .

Pressure ulcer (PrUs) is one of these complications which is common in patients due to several factors such as immobilization, nutrition deficiency and under sedation for long period in ICU (Minjuan et al., 2016).

1.2. Background

1.2.1 Definition of a Pressure Ulcer:

The National Pressure Ulcer Advisory Panel (NPUA) (2014) defined PrUs as a “localized injury to the skin and/or underlying tissue usually over a bony prominence, resulting from sustained pressure (including pressure associated with shear)”.

Chou et al.(2015) defined PrUs “also known as pressure injuries, pressure sores, decubitus ulcers and bed sores as areas of localized damage to the skin and underlying tissue, believed to be caused by pressure or shear or friction”.

Maintaining skin integrity is important. A few client populations are thought to be at a greater risk of developing PrUs because of immobility like orthopaedic clients with fractures, elderly with femoral fractures and prolonged bed ridden patients in nursing settings or home settings. Moreover, PrUs occurs exclusively in people with limited mobility, so it is a challenge to prevent the occurrence of PrUs. (Shrestha & Khatiwada, 2018)

PrUs significantly limit many aspects of an individual’s well-being, including general health, physical, social, financial, and the psychological quality of life. PrUs have been labelled as one of the most expensive and physically debilitating complications in the 20th century after cancer and heart diseases, PrUs is the third most expensive disorder.

Qaddumi & Khawaldeh, (2014) in a study conducted in Jordan, mention that nurses have insufficient knowledge about PrUs prevention when compared with NPUAP guidelines. Therefore, it is important for all nurses to be aware of standard guidelines in order to prevent any complications associated with PrUs to promote patient safety and better outcomes. Patients suffer from pain and discomfort; also prolong illness, delay in rehabilitation and increase in patient’s hospital stay because of PrUs may suffer disability and even death.

1.2.2. The Epidemiology of a Pressure Ulcer

According to Cooper (2013), the incidence of PrUs indicates the number of patients who have developed PrUs in a given health care setting. Cooper's study (2013) includes many studies which show that the rate of PrUs in the ICU ranges from 10% to 41 %.

The epidemiology of PrUs varies appreciably by clinical settings. In acute care settings, PrUs rate ranges from 0.4% to 38%, long-term care setting ranges from 2.2% to 39.4% and in the home care environment ranges from 0% to 17%. According to the National Healing Corporation (2005), the worldwide incidence of PrUs in ICU ranges widely from 1%- 56%. Furthermore, there is a wide variation reports in PrUs prevalence in ICUs between countries and continents: 49% across Western Europe, 22% in North America, 50% in Australia and 29% in Jordan (Tayyib et al., 2013).

According to World's top PrUs day report in 2014, PrUs affected nearly 700,000 patients each year. Around 186,617 patients develop new PrUs in acute care each year. From January 2012 to December 2013, it is shown that between 4 and 6% of patients in acute care settings and more than 5–10% of patients in non-acute care had PrUs .PrUs are accountable for 2% of preventable deaths (Durkin ,2015).

The incidence of PrUs is estimated to be (11%) in skilled care and nursing homes, (10%) in acute care and (4.4%) in home care. The (NPUAP) estimates that prevalence of PrUs in acute care is (15%) and incidence is (7%). In addition, a prevalence rate of 0.4% and up to 38% was recorded in

acute care settings in the United States(Qaseem, 2015) , while in Middle East a prevalence rate of 12% was recorded in Jordan (Tubaishat, Aljezawi& Al Qadire, 2013). In Saudi Arabia, 39.3% incidence of PrUs was reported in two ICU wards which concluded that it's also prevalent in the Kingdom(Tayyib, Coyer & Lewis, 2015)

However, the prevalence of PrUs in ICU department in Palestine was considered as 33%. Most common stage for PrUs was stage 1(73.77%), also the prevalence of PrUs stage 2 or more was 7.34%. (Qaddumi & Almahmoud, 2018).

According to Shrestha & Khatiwada (2018), the prevalence of PrUs in European hospitals ranges from 1% to 11% in medical wards and 4.7% to 66% in surgical wards. The incidence of PrUs in Asian countries was considered high, ranging from 2.1% to 31.3% in critical care units.

1.2.3. Risk Factors of a Pressure Ulcer

According to NPUAP/EPUAP (2014), the most important risk factors related to the patients are activity or mobility limitations, skin status, tissue perfusion, nutritional status and skin moisture.

A person with a high risk to develop PrUs often suffers from various physical problems. According to previous literature , there are several other risk factors affecting patients; these include diabetes, infections, acute illness, high body temperature, age and general health status (Coleman et al., 2014).

According to Berlowitz (2013), there are several factors contributing to the development of PrUs, these include prior ulcers, peripheral vascular diseases, diabetic mellitus, smoking, prolonged immobility, poor nutritional status, incontinency, impaired sensation, aging as intrinsic factors, pressure, shear, friction, moisture, poor moving, and handling as well as therapeutic devices as extrinsic factors. Nurses' knowledge and attitude are also viewed as extrinsic factors for PrUs formation.

Qaddumi and Khawaldeh (2014) in a cross-sectional study discussed the level of knowledge among nurses in Jordan PrUs prevention. The study concluded that 73% of nurses have an inadequate level of knowledge about PrUs prevention, mainly in its aetiology, preventive measures used to reduce amount of pressure/shear, and risk assessment. The study also concluded that shortage of staff and lack of time for documentation and prevention were the main reasons for PrUs improper assessment,.

As previous studies have shown that the development of a PrUs has no direct effect on mortality in patients hospitalized in an ICU, hospital-acquired PrUs (HAPUs) may indirectly contribute to mortality in certain patients. One of these prospective studies reported 63% mortality in patients with PrUs and 15% mortality in patients without PrUs. Patients who develop HAPUs experience added morbidity, pain, and psychosocial distress which are associated with loss of independence and social isolation (Tang et al , 2016).

1.2.4. Stages of a Pressure Ulcer

PrUs are classified according to the deepest anatomic structure identification by NPUAP/EPUAP (2014), when the deepest anatomic structure can be identified; the PrUs are categorized into four stages as (1-4). Stage 1: intact skin with localized area of non-blanchable erythema, Stage 2: partial thickness loss with exposed dermis may also be presented as intact or rapture serum-filled blister. Stage 3: full thickness loss of skin in which adipose is visible in ulcer and granulation tissues and epibole are often presented, slough and eschar may also be visible and Stage 4: full thickness tissue is loss with exposed muscle, slough and eschar are presented. When the deepest anatomic structure cannot be identify, the PrUs are categorized into two classifications the first; is unstageable whereas the extent of tissue damage is obscured by slough or eschar, the second is deep tissue injury in the process of evolution.

HAPUs are associated with a significant increase in treatment cost, length of stay, and poor patients' satisfaction. Due to its significant impact on patient outcomes and the cost associated with its treatment, the Agency for Healthcare Research and Quality (AHRQ)(2011) has listed stage III and IV HAPUs as a 'never event.' i.e. events that should not occur at any given time in any healthcare organization".

A complete process starts on admission time and continues throughout the period of hospitalization in the ICU. Patients who are identified at risk to develop PrUs are adjusted using the Braden assessment scale to segregate

patients who need rigorous PrUs preventive interventions from those who require standard preventive measures. Although prediction and prevention of PrUs involve health care personnel in many disciplines, nurses are patients' primary caregivers and thus have the most responsibility for preventing and managing this complication.

The previously mentioned types of studies that discuss this topic need to be conducted in the Palestinian medical community in order to provide a baseline of information about the level of knowledge about PrUs assessment and preventative measures among nurses in Palestine, and how the negative aspect can be improved, as this will definitely increase QOL in the Palestinian hospitals.

This study aims to assess the ICU nurse's knowledge and attitude toward PrUs preventive measures, and the impact of an education on nurse's knowledge &attitude level toward PrUs prevention.

1.3 Statement of Problem and Significance of the Study

PrUs still exist as a pervasive problem and occur at both hospital and community settings. PrUs affecting all age groups, but mostly occurring among the elderly, the immobile, and those patients with severe acute illness or neurological deficits (EPUAP, 2009).

The level of knowledge about proper assessment and prevention of PrUs among Palestinian nurses is in variety; many studies have to be conducted in order to evaluate this level. Lastly, QOL is a big concern and it needs to

be improved in the Palestinian medical community as PrUs is considered one of the best indicator for improving the QOL.

According to Qaseem et al, (2015)PrUs are the third most expensive disorders after cancer and cardiovascular diseases. Also, it is one of the most costly and physically debilitating complications in the 20th century.

The cost of treating PrUs in the USA is estimated to be $11.6 billion annually. In the UK, it ranges from £1,214 for category I to £14,108 for category IV ulcers (Dealey et al, 2012).

Demarre et al (2015) reported that an estimated cost of treating PrUs ranges between 1.71£ and 470.5£ per day. This expensive cost is due to the high cost of treatment, it is essential to prevent the occurrence of these ulcers.

PrUs come at a high cost to everyone; they result pain, suffering, diminished quality of life and even death for some patients. For nursing, they represent extra staff hours and medical supplies spent on caring for a preventable condition. As well as more patients hospitalized, PrUs is a significant financial burden to any health care system and has adverse effects on achieving goals of care.

The study findings expect to improve the nurses' knowledge regarding PrUs prevention measures; it will provide a baseline data for the higher authority to plan for an initiation for staff development in order to improve QOL.

During searching through the website of Ministry of Health, any statistical result regarding the nurses' knowledge and attitude toward PrUs preventive measures have not be found.

1.4 Objectives of the Study

The study tries to achieve the following objectives:

a) Assessing the level of knowledge among staff nurses regarding PrUs preventive measures in ICU.

b) Assessing the attitude among staff nurses regarding PrUs preventive measures in ICU.

c) Assessing the effectiveness of an educational program on the knowledge level among the staff nurses regarding PrUs preventive measures in ICU.

d) Assessing the effectiveness of an educational program on attitude among the staff nurses regarding PrUs preventive measures in ICU.

1.5 Question of the Study

The following questions are to be answered by the current study:

1) What is the level of nurse's knowledge regarding PrUs preventive measures in ICU ?

2) What is the level of nurse's attitude regarding PrUs preventive measures in ICU?

3) Is there a relationship between the educational intervention and the level of nurse's knowledge regarding PrUs preventive measure?

4) Is there a relationship between the educational intervention and the level of nurse's attitude regarding PrUs preventive measure?

1.6 Statistical hypothesis of the Study

The study will test the following two study hypothesis:

1) There will be differences between the pre-test and post- test scores of knowledge among the staff nurses regarding PrUs preventive measures in ICU.

2) There will be differences between the pre-test and post- test scores of attitude among the staff nurses regarding PrUs preventive measures in ICU.

1.7 Operational definition

Assess: Statistical measurement of knowledge and attitude scores among staff nurses regarding prevention of PrUs in ICU patients based on structured questionnaire.

Effectiveness: It refers to the quality of being or able to bring an effect on efficient of educational program.

Knowledge: Correct verbal responses of the staff nurses regarding prevention of PrUs in ICU patients.

Attitude: is a way used by nurses to express positive or negative trends about PrUs Prevention in ICU patient.

Prevention: Measures taken to prevent the occurrence of pressure sores in bed ridden patients.

Pressure ulcer: A painful, often reddened area of degenerating, ulcerated skin cause by pressure and lack of movement and worsened by exposure to urine or other irritating substances on the skin in a bed ridden patient.

Staff nurse: The male and female individual who provides professional nursing care to the patient.

1.8 Conceptual Framework

The conceptual framework of this study based on a General System theory approach by Ludwing Von Bertalantey, (Shrestha&Khatiwada, 2018) and based on the Pressure Injury training program created by the National Database of Nursing Quality Indicators (NDNQI). Based on the system theory, all systems will have common elements of input, process and output. Nurses knowledge and attitude level represent those three elements respectively.

This study will measure the level of nurses' knowledge and attitude before the intervention by pre-test as input, and then the process will be continued by introducing pressure injury training program which includes four modules which are: (1) pressure injuries and staging, (2) other wound types and skin injuries, (3) pressure injuries survey guide, (4) community vs.

hospital acquired pressure injury. Then an output as the increase in the level of knowledge and attitude levels will be measured by post-test.

The following figure shows conceptual framework based on General System Theory Approach by Ludwing Von Bertalantey:

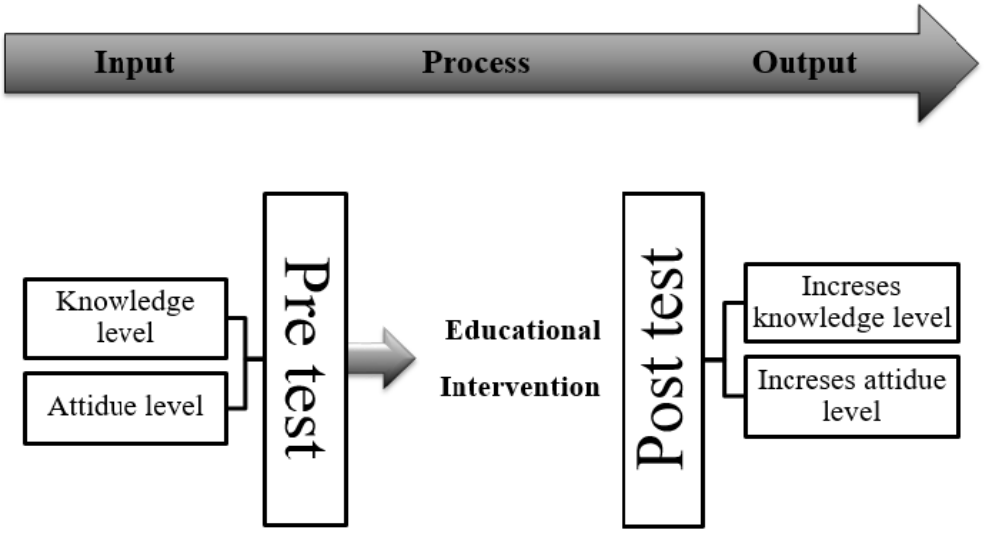


Figure 1: Conceptual Framework based on General System Theory approach by Ludwing Von Bertalantey

Chapter Two
Literature Review

Qaddumi &AL Mahmoud (2018) in a cross-sectional study aiming to measure the prevalence rate of PrUs and the features of PrUs among patients in ICU departments of governmental hospitals in Palestine showed that the prevalence of PrUs in ICU department was 33%, , the prevalence of PrUs stage 2 or more was 7.34%. The stage 1(73.77%)is the most common stages of PrUs .The main common sites of PrUs are different sites of vertebra 35 (28.6%) heel 19 (15.5%), shoulder 9 (7.7%), and ischium 9 (7.7%),most of the PrUs are sized between 1-3cm and have a depth of 0.5-1cm 21(72.4%).

Tweed et al (2008), revealed by using a cohort of registered nurses in a tertiary referral hospital in New Zealand to assess ICU nurses' knowledge of PrUs and the impact of an educational program on knowledge levels that the knowledge was assessed three times: before educational program, within two weeks after the program and 20weeks later. It is found that a completion of the educational program resulted in improved levels of knowledge. The Levels of knowledge to prevent and manage PrUs were good initially and improved with an educational program, but soon will return to the baseline.

Shahin et al (2009) conducted a study about the same subject by using a longitudinal design for assessing PrUs incidence in ICU patients, assessing the factors related to PrUs incidence in cardiological and surgical and

nephrological ICU units at university hospital. From the study, it is found that the total incidence of 3.3% is (4.5% in nephrological patients and 2.9% in surgical patients). Sixteen patients with a total of 21 PrUs were admitted to the ICU, during the patients stay at the ICU, six PrUs developed newly and five PrUs healed. PrUs incidence is low in this study compared to other studies. PrUs can be healed in ICU patients by using some preventive measures such as foam and alternating air pressure mattresses. Hydrocolloid dressing may also help to increase the healing rate of PrUs.

In descriptive and prospective study, Sayar et al (2009) found that the incidence of PrUs in ICU patients appeared to be 14.3%. The majority of PrUs (74%) were grade I, and significance differences were found in the patients of PrUs development according to their level of consciousness, activity, and cooperation, length of stay, water low scale score and creative protein level. Extra care needs have to be taken in order to prevent PrUs development in ICU patients who have an extended length of stay, dependent for activities, and have high Water low scores, are unconscious and are not cooperative.

In another study, Cox et al (2011) used retrospective, correlational design to examine 347 patients admitted to a medical-surgical ICU from October 2008 through May 2009. The study results showed that age, length of stay, mobility, friction/shear, norepinephrine infusion, and cardiovascular disease explained a major part of the variance in PrUs. The current risk assessment scales for development of PrUs may not include risk factors

common in critically ill adults. Development of a risk assessment model for PrUs in those patients is warrant and could be the foundation for development of a risk assessment tool.

Hyun et al (2013), used data from the electronic health records of patients admitted to ICUs between January 1, 2007, and December 31, 2010, and extracted from the data warehouse of an academic medical centre, conducted a study to evaluate the predictive validity of the Braden scale for assessing risk for development of PrUs in ICU patients by using 4 years of data from electronic health records. The study found that the Braden scale has insufficient predictive validity and poor accuracy in discriminating ICU patients at the risk developing of PrUs. The Braden scale may not sufficiently reflect characteristics of ICU patients; therefore further research is needed to determine which possibly predictive factors are specific to ICU in order to increase the usefulness of the Braden scale for predicting PrUs in ICU patients.

A literature search was conducted from 2000 to 2012 using the CINHAL, Cochrane Library, EBSCO Host, Medline (via EBSCO Host), and PubMed, ProQuest and Google Scholar databases in order to review existing literature to explore the association between PrUs development and risk factors in addition to examine PrUs risk assessment scales for critically ill patients managed in adult ICU's by Tayyib et al 2013. The results showed that the studies reviewed identified 28 intrinsic and extrinsic risk factors which may lead to PrUs development. Therefore, research studies that

show the risk factors for potential PrUs development are inconsistent. Additionally, there is no consistent or clear evidence which demonstrates any scale better or more effective than another when used to identify the patients at risk for PrUs development. Another research is needed to identify the risk factors and to develop valid scales for measuring the risk of PrUs development in ICU.

In an attempt to determine the nurses' knowledge and practices regarding risk factors, prevention, and management of PrUs at a teaching hospital in Uganda,Ivan Mwebaza et al 2014, used descriptive cross-sectional design study . The result was that the nurses had limited knowledge about critical parameters of PrUs. Prevention practices were observed to be unreliable and uncoordinated and related to a significant shortage of staff and logistics for PrUs prevention.

In order to assess nurses knowledge, attitude and practice of PrUs prevention in University of Maiduguri teaching hospital, Borno State (MTH) ,Uba et al (2014) conducted a study using non-experimental cross sectional descriptive survey designs. This study revealed low levels of knowledge among nurses and positive attitudes towards PrUs prevention practice. So the nurses need to increase their knowledge towards PrUs prevention in order to improve nursing practice and ensure clients' safety form PrUs.

At the same line , Muhammad et al (2014) conducted a study using a cross sectional design to determine knowledge, attitude and practices of Nurses regarding PrUs prevention at Khyber Teaching Hospital Peshawar. The study findings revealed that nurses though had adequate knowledge regarding PrUs prevention but the lack of proper policies and guidelines, lack of evidence based practice and lack of in-service trainings led to negative attitudes and improper practices among nurses in Khyber Teaching Hospital with regards to PrUs prevention.

Dilie et al (2015) in his cross-sectional study design conducted to assess nurses' knowledge, attitudes, and perceived barriers to expressed PrUs prevention practice in Addis Ababa government hospitals showed that more than half of the nurses were found to have adequate knowledge about PrUs prevention and their attitude towards was overall favourable. The results also showed that expressed PrUs prevention practice was affected by the participant's level of knowledge, attitude, and barriers of care. According to the study results nurses' level of knowledge and attitude should be enhanced together with resolving these barriers in order to provide effective prevention of PrUs.

Moreover, Sawant et al (2015) used a descriptive approach with a cross sectional design to assess knowledge and practices of staff nurses towards prevention of PrUs in a tertiary care hospital found that there was significant association between knowledge of nurses with age and qualification in the result findings. The conclusion of the study says that

nurses' knowledge and practices towards prevention of PrUs will be improved through continuing the nursing education program.

For the same purpose which is to describe the prevalence of PrUs among inpatients of ICU and CCU departments, assess intensive care unit nurses' knowledge and practice about PrUs management and the impact of an educational program on knowledge and practice, Hefnawy et al (2017), conducted a study using an experimental research study. The study included (39) nurses working in the ICU of Prince Miteb Bin Abdulaziz Hospital, Sakaka City, Saudi Arabia. The findings of the study suggested that continued nursing education for the enrichment of nurses' knowledge and augmenting their practices about identification, prevention and management of PrUs is effective in minimizing PrUs for immobilized patients.

A cross sectional study conducted by Oseni et al (2018) to assess the level of knowledge and method of prevention of PrUs, their results revealed that nearly 79% of the nurses had adequate knowledge and good attitude towards prevention and management of PrUs. Furthermore, the study concluded that inadequate nursing staff and lack of continuous medical education account for high prevalence of PrUs.

Shrestha et al 2018 conducted a study in order to evaluate the effectiveness of educational intervention on prevention of PrUs among caregivers of immobilized patients. Using it as a pre experimental hospital based study, interview technique was used to identify knowledge on prevention of PrUs

among caregivers before and after educational intervention. The study findings showed that 31% of caregivers were aware that PrUs are easier to prevent than to treat in pre-test and 59% in post-test. Regarding management, pre and post-test percentages were 32.5% and 60% respectively, 37.1% of caregivers knew the importance of nutrients in prevention of PrUs in pre-test and 75% in post-test. Likewise pre-test post-test scores regarding prolonged rest and sleep as a cause of bedsore were 55.2% and 90% respectively. Nearly half of the caregivers were aware about repositioning 2 hours for prevention of PrUs in pre-test and 90% in post-test. The researcher concluded the study as among 70 respondents 12.9 % of the caregivers had adequate knowledge, 42.9 % had moderate knowledge and 44.3 % of them had inadequate knowledge in pre-test. Whereas, in post-test majority (82.9%) of the respondents had adequate knowledge on prevention of PrUs.

Chapter Three
Methodology

This chapter presents an overview of the research methodology used for this study. It includes study design, study sample (study population, sample size, and sampling process), setting, ethical consideration, study instruments, data collection, and data analysis procedures.

3.1 Study Design

The research design adopted for this study is quasi-experimental design in which one group of pre and post-test approach with control group. There is no randomization in this study design from ethical consideration wise. The pre- and post-test were administered to all subjects in both groups separately. The experimental group attended the PrUs education program. The control group received no education program. This design was conduct to assess ICU nurses knowledge of PrUs and the impact of an educational program on ICU nurses knowledge & attitude level.

3.2 Study Population

All ICU nurse's staff who have acceptance and willing to participate in this study during the period of data collection for one month, which is from some of hospitals selected in Palestine.

Two hospitals were included from Ramallah city (Palestinian Medical Complex (PMC) , Istishari Arab Hospital).

In addition, two hospitals from the West Bank which are Rafidia Hospital in Nablus city and Alia Hospital in Hebron city.

3.3 Study Setting

The study was conducted at the ICU department at the selected hospitals, Firstly the PMC which is consider as largest governmental educational hospital , located at the middle of west bank in Ramallah city , it is include a number of ICU department & therefore contains a large number of nursing staff . Secondly, the Istishari Arab hospital as a privet hospital which is located at Ramallah city. Thirdly, the Rafidia hospital as an governmental & educational hospital which is located at the north of west bank in Nablus city. Lastly, the Alia governmental hospital, it is located at the south of west bank in Hebron city.

3.4 Participants

The present study included 101 participants, included in the four hospitals which were selected in the West Bank and distributed as follows: 91 participants filled out the questionnaire , 8 participants rejected the questionnaire and two of them were on annual leave which were excluded from the study sample.

Hospital /Units		ICU	CCU	PICU
Palestinian medical complex (PMC)	Total	16	19	16
	Fill	15	16	13
	Refuse	1	2	3
	Leaves	---	1	---
Istishari (Ramallah)	Total	18		
	Fill	16		
	Refuse	1		
	Leaves	1		
Rafidia hospital (Nablus)	Total	16		
	Fill	15		
	Refuse	1		
	Leaves	---		
Alia hospital (Hebron)	Total	16		
	Fill	16		
	Refuse	---		
	Leaves	---		
Hospital	Total	Fill	Refuse	Leaves
Palestinian medical complex (PMC)	51	44	6	1
Istishari(Ramallah)	18	16	1	1
Rafidia hospital (Nablus)	16	15	1	0
Alia hospital (Hebron)	16	16	0	0
Total	101	91	8	2

3.5 Sample and sampling

In the present study, a non – probability convenience sampling technique which consisted of 91 nurses from the four mentioned hospitals which were selected from West Bank was used. A convenience sample was made up of nurses who were easy to reach and easy to gather data from in the selected period.

3.6 Study period

The study period is from January 2019 to June 2019.

3.7 Inclusion criteria

All ICU staff nurses working in the selected hospitals in the West Bank (PMC, Istishari Arab Hospital, Rafidia Hospital, and Alia Governmental Hospital). Whom has willing to participate and available during the study period included in the study.

3.8 Exclusion criteria

ICU Nurses who were on annual leave or were seriously ill during the data collection period in the selected hospitals were excluded from the study.

3.9 Study Instrument

To assess the ICU nurses' knowledge and attitude towards PrUs preventive measures and the impact of an educational program on the knowledge & attitude level of PrUs prevention . The researcher used an instrument that includes three sections;

The first section consists of demographic characteristics of age, gender, years of services experience, level of education and formal past training on PrUs.

The second section consists of PrUs knowledge test to measure ICU nurses level of knowledge of PrUs preventive measures. This test is based on international scale developed by Pieper –Zulkowski, a standardized, validated instrument with 72items which was used to measure 3domains: prevention (28items), staging (20items), and wounds (24items).

The participants had to select an answer from: True, False or I do not know.

The researcher used this scale after sending an email to the author for asking permission to use it in this study. The author replied to the email by sending a form to sign by the researcher, then sent the free test.

The last section consists of the staff attitude scale; in order to be used to obtain feedback on the attitudes of the clinical staff regarding PrUs prevention. The scale was developed by Moore and Price, it uses a 5-point scoring system ranging from strongly agree to strongly disagree and includes 11 items for each item.

Participants were asked to rate the level of attitude (5=strongly disagree, 4=disagree and so on). However, question 1,6,7 and 11 scores were reversed for example “strongly disagree “=1 and so on . The score ranged from 11(most negative attitude)to 55 (most positive attitude) based on (Johnson et al , 2018).This test was considered as reliable and valid when it was tested by developers, and showed a reliability of 0.48 by a panel of experts that assessed face and content validity.

The researcher asked for permission to use this scale in the study by sending an email to the author.

3.10 Educational program

The purpose of Pressure Injury Training v.5.0 Created by the National Database of Nursing Quality Indicators (NDNQI), is to provide an overview of pressure injury identification and staging, pressure injury survey procedures, and pressure injury prevention for accuracy in data collection.

This learning module would also be useful for nursing and medical students, practicing nurses & physicians studying skin disorders and care for patients with PrUs

The stated learning objectives are:

• Accurately stage PrUs from photographs and wound description.

• Differentiating a PrUs from other types of wounds.

• Describing PrUs data collection procedures.

• Distinguishing among a community-acquired, hospital-acquired and unit-acquired PrUs.

It includes:-

Module One: - Pressure Injuries and Staging

Module Two: - Other Wounds Types and Skin Injuries

Module Three: - Pressure Injury Survey Guide

Module Four: - Community vs. Hospital/Unit Acquired Pressure Injuries.

Two contact hours awarded to learners who participate in the entire activity and complete the evaluation. Review all modules content and take all four-module tests in one sitting until you are finished. Complete the Module IV test for contact hours.

The researcher used a variety of educational methods, including PowerPoint lectures, group discussions, videos and printed material ("NDNQI® | Pressure Injury Training | v.6.0", 2019).

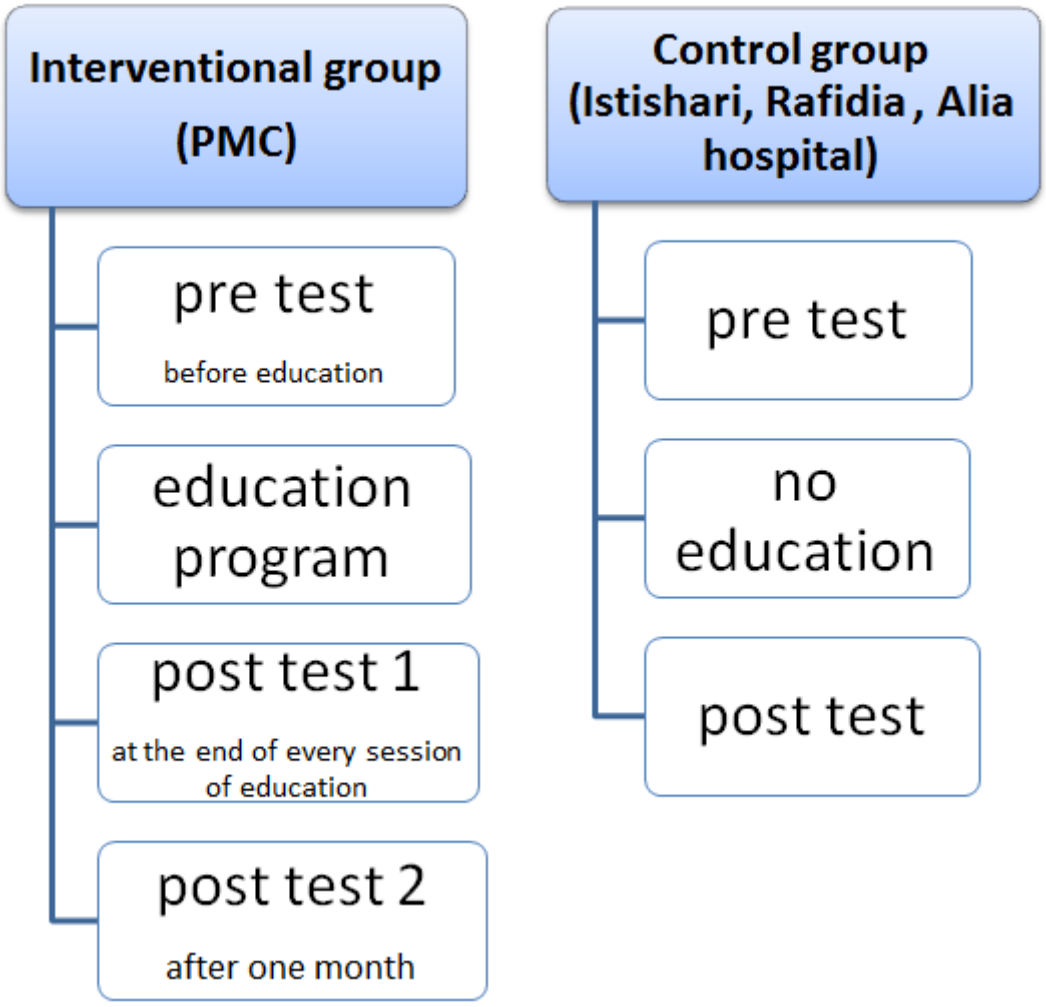
3.11 Data Collection

Pre- experimental (one group pre-test and post-test design) study conducted to assess the effectiveness of an educational intervention on knowledge regarding prevention of PrUs among nurses of ICU. The study population was collected using a non – probability convenience sampling technique which consisted of 101nurses. Data collection started on 2019/1/31 and completed on 2019/4/1. Data collection consisted of three phases.

The First phase: is a preparation phase in which a formal approval was taken from related authorities. Second phase: is an intervention phase in which pre-test was done by using a pre- structured questionnaire in order to assess the level of knowledge & attitude on prevention of PrUs among ICU nurses before the educational intervention. After the pre-test had been carried out, education was provided on the basis of a structured educational package which included the information on several aspects on PrUs;

meaning, causes, causative factors, risk factors, common sites of developing PrUs, signs and symptoms and management and prevention of PrUs. The four-education sessions have been conducted on different dates and in each session, 10-12 participants involved. Illustrative and interactive lecture methods and audio visual aids like power point & posters used for explaining the content of the educational package. In the third phase, the post-test had been done at the end of each education intervention session and after one month period in order to identify the level of knowledge & attitude on prevention of PrUs among ICU nurses by using the same questionnaire that was used in pre-test.

For the control group, data collected from participants with the same instrument used for the experimental group either at beginning or the end of the completion of the PrUs education program. Demographic and contextual characteristics of the participants were collected only at the beginning of the PrUs education program while PrUs knowledge test, attitudes scale towards PrUs prevention and treatment were completed at the beginning and the end of the completion of the PrUs education from both experimental and control groups.



3.12 Data Analysis Plan

An SPSS Version 20 was used for data analysis. The results were showed for the participant who completed and were included in the study. Descriptive statistics i.e. frequencies and percentages were used. The results were analysed by using the student t-test for continuous data, and Chi-square test for nominal data. A $p < 0.05$ was considered significant.

3.13 Ethical Considerations

The study presented in this thesis was performed in accordance with the Declaration of Helsinki and was approved by the institutional review board (IRB) and Ministry of Health- Palestine. Consent forms were obtained from the nurses prior to their participation. Nevertheless, all nurses were given both verbal and written information about the aim and objectives of the study before considering their participation in the study. It was made clear that their participation was voluntary, could be terminated at any time and that confidentiality was guaranteed. For that reason, the ethical dilemma was deemed small.

The nurse’s anonymity may have been threatened when performing continuous data collection. The results were presented in a way that ensured that it was not possible to identify any of the individuals.

Chapter Four
Results

4.1 Introduction

This chapter presents the results of the study which aims to assess the effect of an educational program on ICU nurses knowledge and attitudes towards PrUs. Most importantly is the demographic characteristic of the nurses working in ICUs in Palestine.

Secondly, their level of knowledge before the beginning of the educational program, then their level of knowledge about PrUs immediately after finalizing the program and after one month had been showed.

Lastly, the comparison between those who took the education (intervention group) with those who did not take the educational program (control group) has been conducted.

4.2 Demographic characteristics of ICU nurses in Palestine

Nearly half of the sample participants in the study were working in the PMC and were included in the intervention group. On the other hand, the control group participants were working in the other hospitals; Hebron, Istishari, and Rafidia Hospitals. The participants in the intervention group were slightly older (27.5% between 28-37 years old) than control group (23.1% less than 27years old). Other demographic characteristics of both the intervention and control groups were comparable. In both the intervention and control groups, there was nearly an equal number of males

and females, marital status, level of education, and experience. For more details see table 1.

Table 1: Demographics characteristics of intervention and control groups

Variables	Categories	Group		χ^2	P value
		Intervention	Control		
Hospital	PMC	44 (48.4%)	0 (.0%)	NA	NA
	Hebron	0 (.0%)	16 (17.6%)		
	Istishari	0 (.0%)	16 (17.6%)		
	Rafedia	0 (.0%)	15 (16.5%)		
Age (Years)	Less than 27	7 (7.7%)	21 (23.1%)	11.05	0.01*
	28-37	25 (27.5%)	14 (15.4%)		
	38-48	12 (12.1%)	12 (13.2%)		
Gender	Female	21 (23.1%)	20 (22.0%)	0.24	0.62
	Male	23 (25.3%)	27 (29.7%)		
Marital status	Single	10 (11.0%)	15 (16.5%)	0.96	0.61
	Married	32 (35.2%)	30 (33.0%)		
	Divorced	2 (2.2%)	2 (2.2%)		
Level of education	Diploma	1 (1.1%)	6 (6.6%)	4.91	0.17
	Bachelor	30 (33.0%)	31 (34.1%)		
	High Diploma	5 (5.5%)	6 (6.6%)		
	Master	8 (8.8%)	4 (4.4%)		
Experience (Years)	Less Than 1	2 (2.2%)	6 (6.6%)	3.56	0.61
	1-5	13 (14.3%)	16 (17.6%)		
	6-10	14 (15.4%)	12 (13.2%)		
	11-15	7 (7.7%)	7 (7.7%)		
	15-20	2 (2.2%)	3 (3.3%)		
	More Than 20	**6 (6.6%)**	**3 (3.3%)**		

Having recently had a lecture on PrUs or reading an article about PrUs was slightly higher among control group participants than the intervention group participants. Both groups were equal in having certification on wound care. On the other hand the intervention group had a higher proportion of certification in any clinical specialty than the control group (14.3% vs 6.6%). NPUAP guidelines reading was slightly higher among control group in comparison with the intervention group. Table 2 shows the details.

Table 2: Previous PrUs Knowledge or training of intervention and control groups

Variables	Categories	Intervention	Control	X^2	P Value
Time to listen to a Lecture on PrUs	One year or Less	12 (13.2%)	15 (16.5%)	2.04	0.72
	>One to less than 2	9 (9.9%)	9 (9.9%)		
	2-3	4 (11.0%)	8 (8.8%)		
	4 or more	10 (11.0%)	8 (8.8%)		
	Never	9 (9.9%)	7 (7.7%)		
Time to read Book or Article on PrUs	One year or Less	14 (15.4%)	24 (26.4%)	13.43	0.009*
	>One to less than 2	6 (6.6%)	4 (4.4%)		
	2-3	4 (4.4%)	12 (13.2%)		
	4 or more	8 (8.8%)	2 (2.2%)		
	Never	12 (13.2%)	5 (5.5%)		
Certification in any clinical specialty	Yes	13 (14.3%)	6 (6.6%)	3.87	0.049*
	No	31(34.1%)	41(45.1%)		
Certified Wound	Yes	4(4.4%)	5(5.5%)	0.061	0.80
	No	40(44.0%)	42(46.2%)		
Sought out Information On PrUs on web	Yes	18(19.8%)	29(31.9%)	3.9	0.047*
	No	26(28.6%)	18(19.8%)		
NPUAP Guidelines Read	Yes	7(7.7%)	12(13.2%)	1.27	0.25
	No	**37(40.7%)**	**35(38.5%)**		

4.3 Baseline PrUs knowledge among ICU nurses in Palestine

Both groups (intervention and control) were comparable in their levels of knowledge about PrUs. Only wound subscale knowledge was the part which had a significant difference between the two groups (intervention and control) at baseline, while the other two parts were not significant.

Although there was a statistically significant difference in the wound subscale part of the knowledge about PrUs, figure 1 shows that both groups (intervention and control) had inadequate knowledge about PrUs at baseline (mean = 36.6 vs 36.8) respectively . Table 3 and figure show the details.

Table 3: Comparison between intervention and control groups in regard to their baseline level of PrUs knowledge

Knowledge aspect	**Group**	**N**	**Mean**	**SD**	**Mean Difference**	**t**	**Sig.**
Wound	Intervention	44	10.1	3.2	-2.63	-4.10	0.001*
	Control	47	12.7	2.8			
Staging	Intervention	44	10.5	3.6	0.50	0.66	0.50
	Control	47	10.0	3.5			
Prevention	Intervention	44	15.9	4.1	0.05	0.07	0.94
	Control	47	15.8	3.2			
Total PrUs knowledge	Intervention	44	36.6	9.2	-2.06	-1.18	0.24
	Control	**47**	**38.6**	**7.4**			

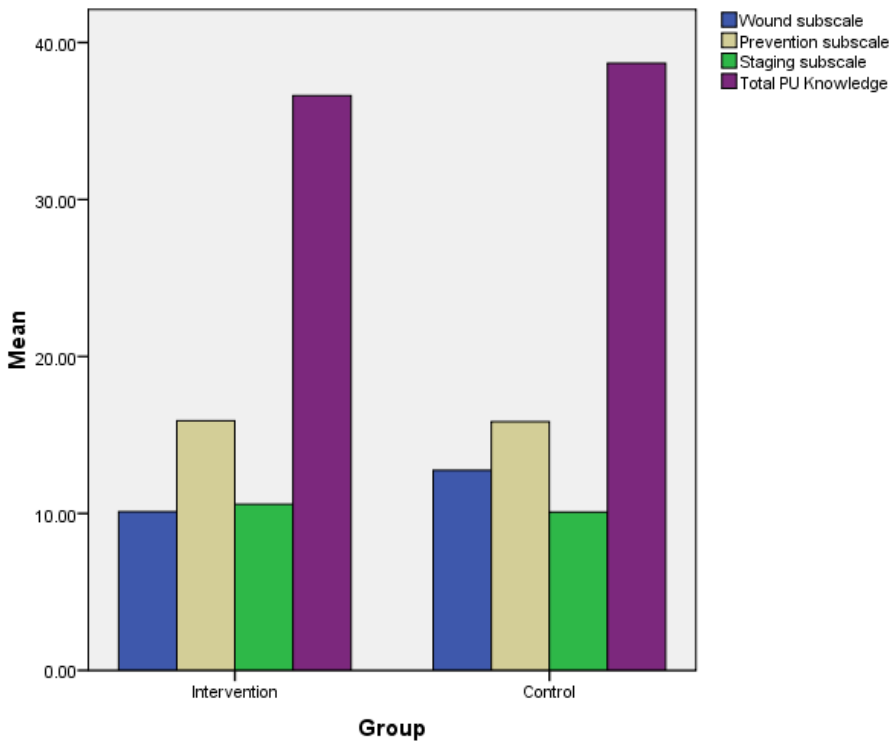


Figure 2: Distribution of correct answers at baseline pre intervention of subscales and total PrUs knowledge questions.

Table 4, the correct proportion answers in wound subscale, revealed that participants had the highest proportion of correct answers in "A pressure injury/ulcer is a sterile wound" (69=75.8%) ; "Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones." (65=71.4%) and "Hydrocolloid and film dressings must be carefully removed from fragile skin" (62=68.1%). On the other hand, nurses had the lowest proportion of correct answers in "Foam dressings increase the pain in the wound." (19=20.9%); "Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4. " (22=24.2%) and "Bacteria can develop; permanent immunity to silver dressings" (22=24.2%). For more details see table 4.

Table 4: Frequencies and percentages distribution of the correct answer about PrUs Knowledge (wound subscale)

PrUs wound knowledge question	Correct Answer	
1. Slough is yellow or cream-colored necrotic /devitalized tissue on a wound bed.	62	68.1
2. A pressure injury/ulcer is a sterile wound.	69	75.8
3. Foam dressings increase the pain in the wound.	19	20.9
4. Hydrogel dressings should not be used on pressure injury/ulcers with granulation tissue.	28	30.8
5. Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4.	22	24.2
6. Eschar is healthy tissue.	47	51.6
7. Honey dressings can sting when initially placed in a wound.	44	48.4
8. Foam dressing may be used on areas at risk for shear injury.	43	47.3
9. Biofilms may develop in any type of wound.	40	44.0
10. Blanching refers to whiteness when pressure is applied to a reddened area.	51	56.0
11. Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones.	65	71.4
12. Deep tissue injury (DTI) may be difficult to detect in individuals with dark skin tones	51	56.0
13. Eschar is good for wound healing.	40	44.0
14. It may be difficult to distinguish between moisture associated skin damage and a pressure injury/ulcer.	44	48.4
15. Wounds that become chronic are frequently stalled in the inflammatory phase of healing.	58	63.7
16. Shear injury is not a concern for a patient using a lateral-rotation bed.	41	45.1
17. A dressing should keep the wound bed moist, but the surrounding skin dry.	54	59.3
18. Hydrocolloid and film dressings must be carefully removed from fragile skin.	62	68.1
19. Hydrocolloid dressings should be used on an infected wound.	35	38.5
20. Pressure injury/ulcers can be cleansed with water that is suitable for drinking.	31	34.1
21. Alginate dressings can be used for heavily draining pressure injury/ulcers or those with clinical evidence of infection.	46	50.5
22. Film dressings absorb a lot of drainage.	23	25.3
23. Non-sting skin prep should be used around a wound to protect surrounding tissue from moisture.	40	44.0
24. Bacteria can develop permanent immunity to silver dressings.	**22**	**24.2**

Table 5, the correct proportion answers in the staging subscale, revealed that participants had the highest proportion of correct answers in “Nurses should avoid turning a patient onto a reddened area.”; “Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal

cannula.”(65=71.4%) and “In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.”(61=67.0%). On the other hand, nurses had the lowest proportion of correct answers in “A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.”(22=24.2%), “Skin tears are classified as Stage 2 pressure injury/ulcers.”(22=24.2%) and “A Stage 2 pressure injury/ulcer may have slough in its base.”(23=25.3%) .table 5 shows the details.

Table 5: Frequencies and percentages distribution of the correct answers about PrUs Knowledge (staging subscale)

PrUs wound knowledge question	**correct answer**	
25. A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.	22	24.2
26. Skin that doesn’t blanch when pressed is a Stage 1 pressure injury/ulcer.	55	60.4
27. A Stage 2 pressure injury/ulcer is a full thickness skin loss.	36	39.6
28. A Stage 2 pressure injury/ulcer may have slough in its base.	23	25.3
29. If necrotic tissue is present and if bone can be seen or palpated, the ulcer is a Stage 4.	61	67.0
30. When necrotic tissue is removed, an unstageable pressure injury/ulcer will be classified as a Stage 2 injury/ulcer.	34	37.4
31. A blister on the heel is nothing to worry about.	48	52.7
32. Bone, tendon, or muscle may be exposed in a Stage 3 pressure injury/ulcer.	34	37.4
33. Dry, adherent eschar on the heels should not be removed.	41	45.1
34. Deep tissue injury is a localized area of purple or maroon discoloured intact skin or a blood-filled blister.	52	57.1
35. In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.	61	67.0
36. A mucosal membrane pressure injury/ulcer is found on mucous membrane as the result of medical equipment used at that time on that location; this pressure injury is not staged.	60	65.9
37. Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal cannula.	63	69.2
38. Stage 1 pressure injury/ulcers are intact skin with non-blanchable erythema over a bony prominence.	60	65.9
39. When the ulcer base is totally covered by slough, it cannot be staged.	53	58.2
40. Nurses should avoid turning a patient onto a reddened area.	65	71.4
41. Skin tears are classified as Stage 2 pressure injury/ulcers.	22	24.2
42.A Stage 3 pressure injury/ulcer may appear shallow if located on the ear, malleolus/ankle, or heel.	58	63.7
43. Deep tissue injury will not progress to another injury/ulcer stage.	50	54.9
44. A Stage 4 pressure injury/ulcer never has undermining.	**42**	**46.2**

Table 6, the correct proportion answers in the prevention subscale, revealed that the participants had the highest proportion of correct answers in “Critical care patients may need slow, gradual turning because of being hemodynamically unstable.”(76=83.5%); “A pressure injury/ulcer scar will break down faster than unwounded skin.”(74=81.3%) and “For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.”(70=76.9%). On the other hand, nurses had the lowest proportion of correct answers in “Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.”(16=17.6%); and “A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.”(21=23.1%) .Table 6 shows the details.

Table 6: Frequencies and percentages distribution of the correct answers about PrUs Knowledge (prevention subscale)

PrUs Wound Knowledge Question	**Correct Answer**	
45. Hot water and soap may dry the skin and increase the risk for pressure injury/ulcers.	60	65.9
46. Chair-bound persons should be fitted for a chair cushion.	58	63.7
47. A person confined to bed should be repositioned based on the individual’s risk factors and the support surface’s characteristics.	65	71.4
48. A pressure injury/ulcer scar will break down faster than unwounded skin.	74	81.3
49. The goal of palliative care is wound healing.	32	35.2
50. Dragging the patient up in bed increases friction.	70	76.9
51. Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning.	63	69.2
52. An incontinent patient should have a toileting care plan.	62	68.1
53. A pressure redistribution surface manages tissue load and the climate against the skin.	59	64.8
54. When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers	63	69.2
54. The home care setting has unique considerations for support surface selection.	69	75.8
55. Donut devices/ring cushions help to prevent pressure injury/ulcers.	27	29.7

56. A specialty bed should be used for all patients at high risk for pressure injury/ulcers.	23	25.3
57. Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work).	23	25.3
58. Critical care patients may need slow, gradual turning because of being hemodynamically unstable.	76	83.5
59. Staff education alone may reduce the incidence of pressure injury/ulcers.	20	22.0
60. A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.	21	23.1
61. Massage of bony prominences is essential for quality skin care.	67	73.6
62. Poor posture in a wheel chair may be the cause of a pressure injury/ulcer.	69	75.8
63. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.	70	76.9
64. Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.	16	17.6
65. Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair	28	30.8
66. Selection of a support surface should only consider the person's level of pressure injury/ulcer risk.	44	48.4
67. It is not necessary to have the patient with a spinal cord injury evaluated for seating.	30	33.0
68. To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher.	52	57.1
69. Urinary catheter tubing should be positioned under the leg.	62	68.1
70. Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment.	64	70.3
71.Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured.	28	30.8
72. Staff education alone may reduce the incidence of pressure injury / ulcers	**52**	**57.1**

4.4 Baseline ICU nurses' attitudes towards PrUs in Palestine

There was a statistically significant difference ($p<0.001$) between intervention and control groups in their attitudes towards PrUs. Despite that there was a statistically significant difference in attitudes towards PrUs, interventional group had a higher mean compared with the control group; 39.8 vs. 35.1 out of 55 respectively).Table 7 and figure 2 show that both groups (intervention and control) exhibited a slightly positive attitude towards PrUs at baseline.

The participants had a relatively positive attitude (highest means) in answers “Continuous assessment of patients will give an accurate account of their pressure ulcer risk” (mean=4.16 ±0.93 out of 5) ; “Most pressure ulcers can be avoided ” (mean=4.03 ±0.78 out of 5), and “All patients are at potential risk of developing pressure ulcers”. (Mean=3.8 ±1.03 out of 5). On the other hand, nurses had a relatively negative attitude (lowest means) in answers “Pressure ulcer prevention is time consuming for me to carry out” (Mean=2.74 ±1.30 out of 5) and “My clinical judgment is better than any pressure ulcer risk assessment tool available to me.” (Mean=2.93 ±1.07 out of 5). Table 7 and Figure 3 show the details.

Table 7: Comparison between intervention and control groups in regard to their baseline level of PrUs attitudes

PrUs attitudes						**Correct Answer**	
Item						**Mean**	**S.D**
All patients are at potential risk of developing pressure ulcers.						3.82	1.03
Pressure ulcer prevention is time consuming for me to carry out.						2.74	1.30
In my opinion, patients tend not to get as many pressure ulcers nowadays.						3.01	1.01
I do not need to concern myself with pressure ulcer prevention in my practice.						3.21	1.15
Pressure ulcer treatment is a greater priority than pressure ulcer prevention						3.31	1.27
Continuous assessment of patients will give an accurate account of their pressure ulcer risk						4.16	.93
Most pressure ulcers can be avoided.						4.03	.78
I am less interested in pressure ulcer prevention than other aspects of care.						3.14	1.21
My clinical judgment is better than any pressure ulcer risk assessment tool available to me.						2.93	1.07
In comparison with other areas of care, pressure ulcer prevention is a low priority for me.						3.06	1.26
Pressure ulcer risk assessment should be regularly carried out on all patients during their stay in hospital.						3.95	1.07
Total PrUs attitudes	**Group**	**N**	**Mean**	**SD**	**Mean Difference**	**t**	**Sig.**
	Intervention	44	39.8	6.6	4.69	3.66	< .001
	Control	**47**	**35.1**	**5.5**			

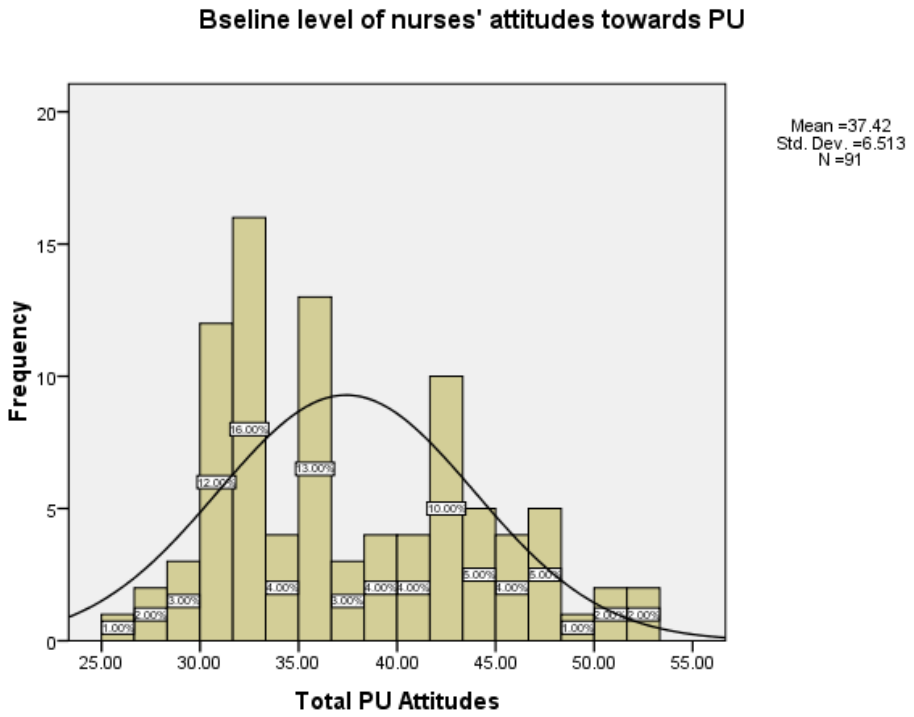


Figure 3: histogram shows the distribution of nurses' attitudes towards PrUs

4.5 Effect of education on level of knowledge about PrUs among ICU nurses in Palestine

There was statistically significant difference (t= 21.1 & p < 0.001) between intervention and control groups in regards to their post education level of total knowledge about PrUs. The intervention group exhibited a higher level of knowledge about PrUs (mean= 67.1±5 vs. 38.6±7.4).

All subscales of PrUs (wound, staging, and prevention) knowledge were significantly different between the intervention group in comparison with the control group (p< 0.001). All subscales (wound, staging, and prevention) means of PrUs knowledge among intervention group are higher than the means among the control group (mean= 22.6 vs. 12.8, 18.1vs 10.0, 26.3vs 15.7, respectively). Table 8 and figure 3 show the details.

Table 8: Comparison between intervention and control group in regard to their post 2 level of PrUs knowledge

Knowledge aspect	Group	N	Mean	SD	Mean Difference	t	Sig.
Wound	Intervention	44	22.6	2.1	9.80	18.0	<.001
	Control	47	12.8	2.9			
Staging	Intervention	44	18.1	2.3	8.07	12.6	<.001
	Control	46	10.0	3.5			
Prevention	Intervention	44	26.3	2.0	10.59	18.4	<.001
	Control	47	15.7	3.2			
Total PrUs knowledge	Intervention	44	67.1	5.0	28.50	21.1	<.001
	Control	**46**	**38.6**	**7.4**			

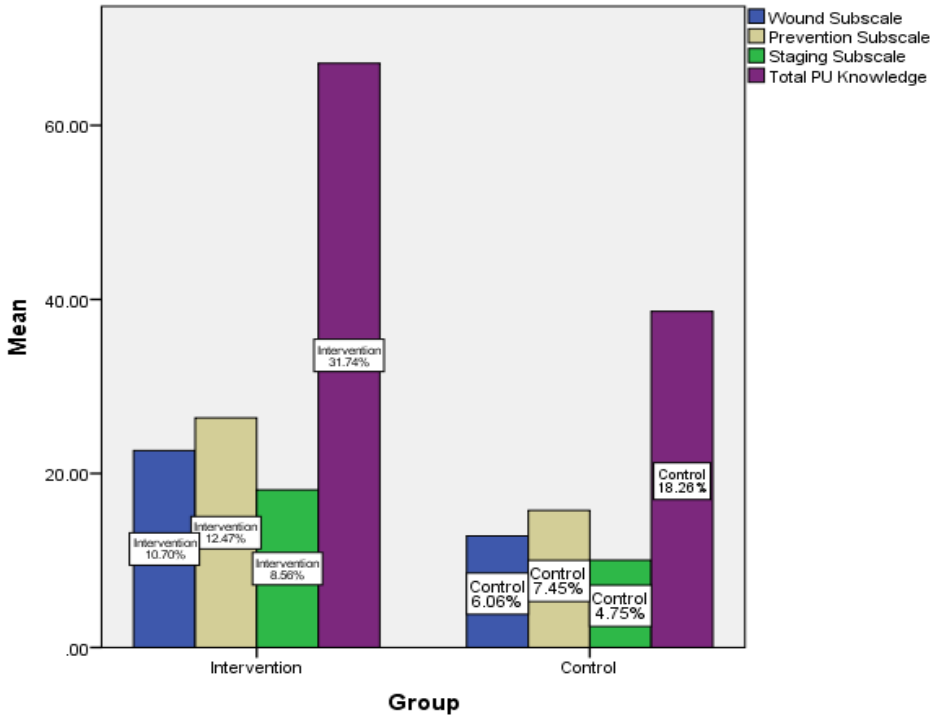


Figure 4: Distribution of the correct answers at post intervention time of subscales and total PrUs Knowledge questions

There was statistically significant difference (t= -22.2 & p < 0.001) between pre and post 1 education level of the total knowledge about PrUs among the intervention group. The intervention group exhibited a higher

level of knowledge about PrUs after an educational program in comparison with pre education level (mean= 67.13±5 vs. 36.6±9.2). In contrast, there was no statistical significant difference (t= 0.33 & p = 0.74) between pre and post 1 educational level of total knowledge about PrUs among the control group.

After one month, the intervention group still exhibited a higher level of knowledge about PrUs after the educational program compared to the pre education level (mean= 49.18±7.5 vs. 36.6±9.2) this result is statistically significant(t= -7.36 & p < 0.001). Table 9 and figure 4 show the details.

Table 9: Comparison between pre and post 2 level of PrUs knowledge of intervention and control groups

PU	Group	Time	N	Mean	SD	t	Sig.
Knowledge	**Intervention**	Pre	44	36.61	9.2	-22.26	<0.001
		Post 1	44	67.13	5.0		
Knowledge	**Control**	Pre	46	38.67	7.5	0.33	0.74
		Post 2	46	38.63	7.4		
Knowledge	**Intervention**	Pre	44	36.61	9.2	-7.36	<0.001
		Post 2	**44**	**49.18**	**7.5**		

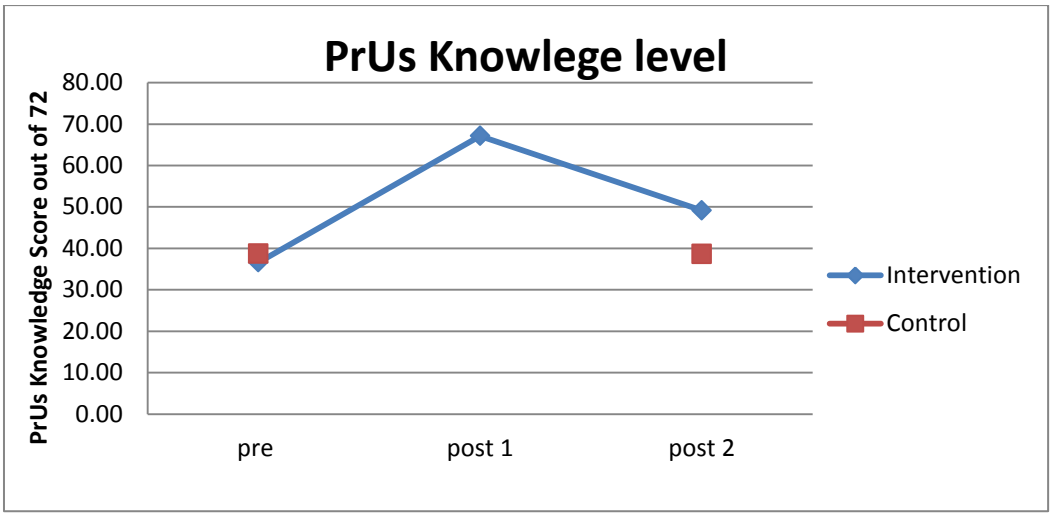


Figure 5: pre and post level of PrUs knowledge in both intervention and control groups.

4.6 Effect of education on level of attitudes towards PrUs among ICU nurses in Palestine

There was statistically significant difference (t= 4.93 & p <0.001) between intervention and control groups in regarding to the post education level of total attitudes towards PrUs. Lower levels of attitude towards PrUs were exhibited by the intervention group(mean= 40.9±5.7 vs. 35.0±5.5 respectively). Table 10 and figure 5 show the details.

Table 10: Comparison between intervention and control group in regard to their post level of PrUs attitudes

Attitudes	Group	N	Mean	SD	Mean Difference	t	Sig.
Total PrUs attitudes	Intervention	44	40.9	5.7	5.86	4.93	<.001
	Control	**47**	**35.0**	**5.5**			

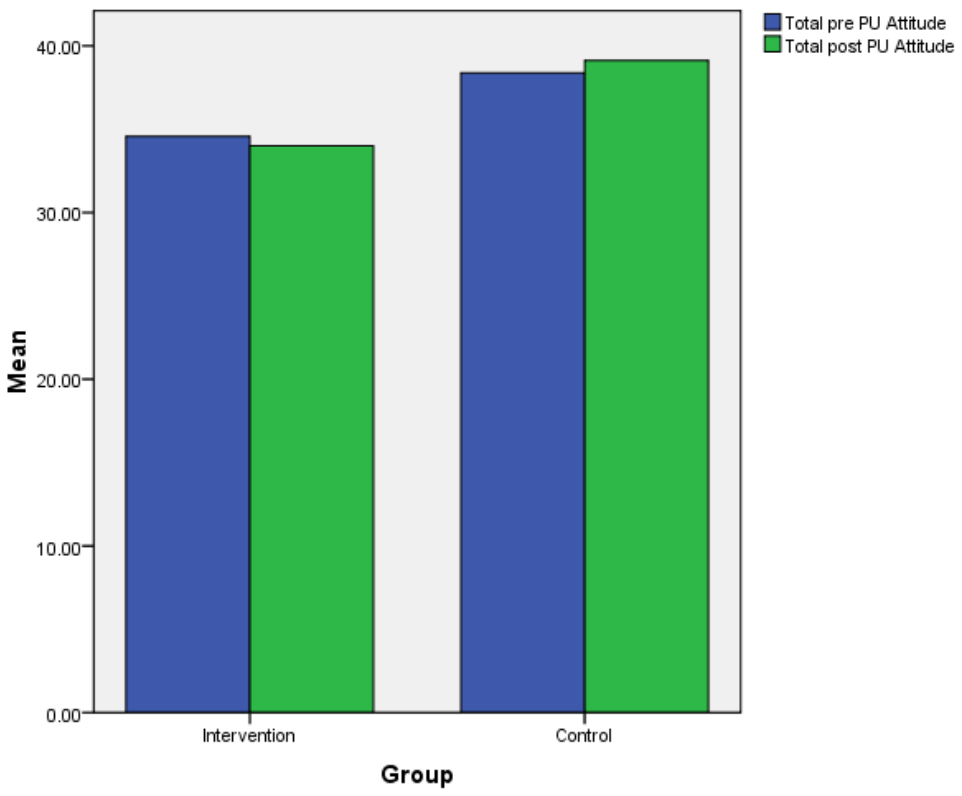


Figure 6: Distribution of the answers of pre-post intervention time of total PrUs Attitudes questions for both intervention and control groups

There were no statistical significant differences (t=-1.65 & p = 0.104) between the pre and post 1 educational levels of total attitudes towards PrUs among the intervention group. The intervention group exhibited a similar level of attitude towards PrUs after an educational program compared to the pre educational level (mean= 40.9±5.7 vs. 39.8±6.6 respectively). In comparison, there are no statistical significant differences (t= 0.36 & p = 0.714) between pre and post 1 educational level of total attitude towards PrUs among the control group with nearly same mean (35.14±5.5 vs. 35.04±5.5 respectively).

After one month, the intervention group exhibited a higher level of attitude towards PrUs after the educational program in comparison with the pre education level (mean= 42.02±4.9 vs. 39.84±6.6 respectively) .

Also, it exhibited a statistical significance differences of (t= -2.54 & p < 0.015). Table 11 and figure 6 reveal the details .

Table 11: Comparison between pre and post level of PrUs attitudes of intervention and control groups

PrUs	Group	Time	N	Mean	SD	t	Sig.
Attitudes	**Intervention**	Pre	44	39.84	6.6	-1.65	0.104
		Post 1	44	40.90	5.7		
Attitudes	**Control**	Pre	47	35.14	5.5	0.36	0. 714
		Post 2	47	35.04	5.5		
Attitudes	**Intervention**	Pre	44	39.84	6.6	-2.54	0.015
		Post 2	**44**	**42.02**	**4.9**		

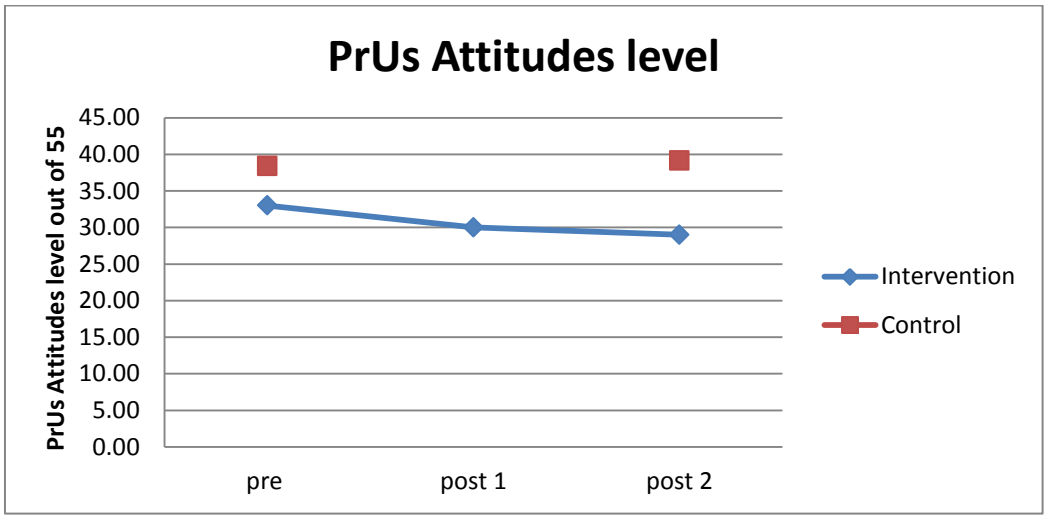


Figure 7: Pre and post level of PrUs attitudes in both intervention and control groups.

Chapter Five
Discussion

The current thesis examined the effect of an educational program on ICU nurses' knowledge and attitude towards PrUs preventive measures, which included the following: Socio demographic characteristics of the participants, the level of knowledge of the nurses related to PrUs preventive measures, the nurses attitude towards PrUs preventive measures in addition to the effect of an educational program on the nurses knowledge and attitude.

5.1 Socio demographic characteristics of the participants.

Findings of the present thesis indicated that the minority of nurses (7.7%) aged less than 27 years old in intervention group, while the majority of nurses in the control group aged less than 27 years old. This might be due to the trends of the PMC hospital which kept the advanced nurses in the ICU ward as much as possible. On the other hand, the other settings from which the control group were selected were more evolved and expected to receive fresh graduated nurses. The young ages of nurses in the control group in this thesis was consistent with (Mohamed and Weheida, 2014) study which stated that most of the nurses working in the ICU were aged less than 30 years old.

In contrast with the nurses age, the intervention group is older than the control group this might be due to the selection from only one of the hospitals (PMC) while the control group participants were selected from

many hospitals in other cities for minimizing the bias i.e the difference in ages between the two groups.

The present thesis indicated that more than half of the nurses (68.2%) are married and (27.5%) are single. This result is consistent with (Taha,2014) study which revealed that the majority of nurses in ICU were married and was in contradiction with (Dilie and mengistu,2015) who found that 68.4% of the study sample were single.

This thesis found out that most of nurses (67.1%) had a basic nursing Bachelor degree. The finding agreed with (Kaddoura et al., 2016) and disagreed with (Uba et al., 2015) study which showed that most of the nurses (93.9%) had a basic diploma which is a limited formal educational background.

This thesis revealed that (69.3%) of the nurses had a service experience of 10 years or less. This finding disagreed with (Hefnawy,2017;Taha,2014) studies that indicated 100% of nurses had a service experience of 10years or less. The difference of results between this thesis and the previous study could be explained by the length of the nurse's service especially in the ICU for more than 10 years.

The result in this thesis showed that more than 79.2% of the nurses were not aware of NPUAP guidelines about the pressure ulcer prevention. This result is consistent with (Awali et al., 2018) study which stated that more than (80%) of nurses are not aware for NPUAP guidelines.

As mentioned above, in comparison of the thesis results with the literature, it is concluded that there are some similarities and other contradictions regarding socio demographic characteristics of nurses even though the two groups are similar regarding gender, marital status, level of education, experience, time to listen to lecture on PrUs, certification in any clinical specialty, certification on wound specialty and sought out information on PrUs on web pages and NPUAP guidelines reading.

5.2 Nurses baseline knowledge level related to PrUs.

The level of the ICU nurses' total mean score for knowledge about preventive measures for PrUs was found to be inadequate in this thesis. This finding is consistent with many previous studies such as (Doğu,2015; Demarre et al.,2015; Qaddumi &Khawaldeh,2014; Uba et al., 2015) which reported that all ICU nurses had insufficient and poor knowledge regarding PrUs prevention.

Unlike the poor level of knowledge in the present thesis, the nurses level of knowledge was found to be acceptable in studies conducted by(Köse et al., 2016;Oseni et al., 2018) .

In the recent thesis, the minority of participants (9.9%) had a certification in wounds. On the other hand, the number of participants who had taken lectures in the last years is 27 (28.2%) nurses. According to Tirgari et al.(2018), the lack of opportunity of training and updating on PrUs might have prevented the nurses from remembering, understanding, and applying suitable knowledge regarding PrUs prevention.

Moreover, in the current thesis, the majority of nurses 61 (67.1%) had only a bachelor degree and7 (7.7%) of participants had a diploma degree. According to Uba et al.(2015), this is likely to correlate to the nurses' low level of knowledge about PrUs prevention because the contents of this curriculum is not specifically focused on the up-to-date information about PrUs prevention and stages. Furthermore, in the current thesis it is showed that more than half of the nurses answered most of the questions correctly regarding the knowledge of PrUs prevention similar to Mohamed and Weheida, (2014) study which revealed that more than half of the nurses answered correctly regarding knowledge of PrUs prevention. The overall percentage of total correct answers was 58.2% when asked about PrUs prevention .

But one of the question in the staging subscale " *A stage 3pressure injury/ulcer is a partial –thickness skin loss involving the epidermis and /or dermis* ", nurses had the lowest proportion of correct answers ,which is consistent with many studies done previously , one of these studies is Delmore et al ,(2018).

Additionally the question "*Messaging of the bony prominences is essential for quality skin care"* was answered correctly by the majority of participants (73.6%) which agrees with IIesanmi et al,(2012) study that found that all participants believed that it is important to massage the bony prominence for PrUs prevention . On the other hand, this finding disagrees with Lawrence et al,(2015) study that found 93% of the nurses were

unaware about the importance of messaging of the bony prominence in PrUs prevention .

In general, there are no significant differences between intervention and control group about their baseline levels of PrUs knowledge, but there is a slight significant difference on wound subscale which is more in the control group than in the intervention group. This might be due to the fact that the control group has an educational background more in young ages who are fresh graduates. In addition to that, in this thesis, the result confirmed that the control group read articles and books since 3 years or less , more than in the intervention group (44% vs. 26.4%) respectively which is supported by many studies such as (Mohamed and Weheida, 2014;Gul et al., 2017) which stated that those who read articles or books had significantly higher levels of knowledge.

These differences between studies might be caused by the differences in the countries where the studies have been conducted and also caused by differences in the scales used for evaluating the knowledge level.

5.3 Nurses baseline attitude related to PrUs.

There are statistically significant differences at ($p<0.001$) level between the intervention and control group in their attitudes towards PrUs.

In the current thesis, both groups exhibited a slight positive attitude towards PrUs. This result is consistent with many studies such as (Dilie,2015;Uba et al., 2015; Simonttei et al., 2015) which found that the

participant had a positive attitude towards their ability to prevent PrUs . However, this is in contrast with Kaddoura et al.,(2016) study which demonstrated an unsatisfactory attitude towards PrUs prevention with a mean attitude score of 30.5.

A slight positive attitude might be caused by many factors such as a healthcare policy, facility policies, years of experience and inadequate levels of knowledge which is a significant relationship between knowledge and attitude of nurses as conducted in many previous studies such as (Beeckman et al., 2010;Simonetti et al.,2015) studies.

Although the nurses' knowledge in the current thesis has appeared low towards the pressure ulcer due to the number of participants who had more than 5 years' experience, the nurses' attitude towards PrUs was slightly positive. 54 (59.4%) of the participants, according to Uba et al., (2015) there was a significant relationship between nursing experience and attitude towards the pressure ulcer.

Nurses had a relatively negative attitude (lowest mean) in answers of some of the questions like "*Pressure ulcer prevention is time consuming for me to carry out*" (Mean=2.74 ±1.30 out of 5) and "*My clinical judgment is better than any pressure ulcer risk assessment tool available to me*." (Mean=2.93 ±1.07 out of 5) which are similar to Kaddoura,(2016) study which showed a result of (10.7%) of participants believed that PrUs prevention is a time consuming procedure and reported that their clinical judgment is better in another area of health care than the actual use of available PrUs risk assessment tools.

According to Habiballah,(2018) study, it was more influential to have more experience , high level of academic achievement and receiving training on PrUs prevention. Most experienced nurses (>10years) have had the highest attitude score. However, this is consistent to this thesis which showed that the attitude level is affected by the nurses' experience and level of academic achievement. This might be due to that fact that nurses are providing the appropriate prevention care to the patients whom seem to be at risk for developing PrUs regardless of their academic qualification.

5.4 Effect of an education on nurses level of knowledge about PrUs prevention.

There were statistically significant differences at ($p < 0.001$) level between intervention and control groups in regards to their post education level and total knowledge about PrUs.

The present thesis stated that the level of knowledge on PrUs regarding to all subscales in the interventional group exhibited a high level (mean= 67.1±5 vs. 38.6±7.4). This high level of knowledge is consistent with Hefnawy, (2017) study which shows that the nurses knowledge regarding PrUs was improved after demonstration of an educational program . In addition, this result is supported by Saleh, Qaddumi & Anthony,(2012) study in Jordan which illustrated that the implications of PrUs education program based on PrUs prevention guidelines improves nurses' knowledge.

While Shrestha & Khatiwada,(2018) indicated that the majority (44.3%) of caregivers had inadequate knowledge regarding the overall knowledge level of PrUs in the pre-test, the level of knowledge was improved to 82.9% after the educational intervention. In addition to that, Mohamed and Weheida, (2014) study conducted in Egypt represented that 77.5% had unsatisfactory knowledge regarding PrUs in the pre-test, and 87.5% after application of the program. This finding is similar to this present study.

In the present thesis, the finding showed that after one month the intervention group still exhibited a higher level of knowledge about PrUs after an educational program in comparison with the pre education level (mean= 49.18±7.5 vs. 36.6±9.2) with a statistically significance of ($t= -7.36$ & $p < 0.001$) . From these results, it is expected that the knowledge level is sustained or returned to baseline if education is stopped which is supported by Awali et al.,(2018) study which showed that the ICU nurses level of knowledge had improved and sustained through the study period compared to the pre-test and it showed that the nurses level of knowledge is not well at pre-test .After implementing the educational intervention, the knowledge level showed to be very high to all subscales.

The post-test 2 (one month after educational intervention) revealed a decrease in level of knowledge than post 1, but more than pre-test. Therefore, the result of analysis confirms the effectiveness of PrUs educational intervention as the pre-test result indicated lower than all post-test which may be explained by the following : First , in this thesis, more

than half of the nurses had a Bachelor degree in nursing , however an educational degree itself is not enough to ensure adequate knowledge . Second, lack of opportunity to attend workshops and trainings for PrUs prevention may be due to the shortage of staff, workload and decrease in financial support for the workshops.

Updating knowledge of nurses on PrUs prevention can be effective by having regular training courses and reviewing of PrUs prevention policies and guidelines. Furthermore, In Palestine, there are no programmed trainings and formulated guidelines about PrUs prevention.

According to the General System theory, all systems will have common elements; these are input, process and output. Nurses knowledge and attitude level represent these three elements respectively which is submitted by Ludwing Von Bertalantey.

In this study, the level of Nurses knowledge and attitude were measured before the intervention by pre-test as input , then the process will be continued by educational intervention Then, output will be used to increase the level of knowledge and attitude level measuring by post-test.

5.5 Effect of an education on nurses attitude about PrUs prevention.

In this thesis, there were a statistically significant differences at ($p<0.001$) level between intervention and control group in regards to post education level of total attitude towards PrUs prevention. The intervention group exhibited a higher level of attitude towards PrUs prevention (mean= 40.9±5.7 vs. 35.0±5.5 respectively).

The result of the initial evaluation prior to educational intervention indicated that the nurses demonstrated a slight positive attitude about PrUs prevention. The post-test indicated that the nurses' attitude had been increased after an educational intervention. Furthermore, after one month, the intervention group exhibited a higher level of attitude regarding pressure ulcer prevention more than the control group. These findings are parallel to Awali et al.,(2018) study findings which showed that the educational intervention had a significant effect on nurses attitude about PrUs prevention. A similar result was found in the intervention study aimed to assess the effect of an educational intervention on nurses attitude by (Saleh, Qaddumi & Anthony, 2012; Tubaishat et al ,2013). On the other hand, the current study findings are in contrast with Kaddourah et al., (2016) study findings which was conducted to assess the healthy professional attitude towards PrUs prevention at King Kailed medical city.

Conclusion and Recommendations

Conclusion

The initial impression prior to the intervention indicated low level of nurses' knowledge and attitude level slightly positive towards PrUs prevention.

However, the post-test1 at the same day of educational intervention showed statically significant increase in level of knowledge in all sub scales (wound, staging and prevention) .In addition, attitude level increase was also positive.

Additionally, after one month, the result showed increases in the level of knowledge which is lower than post-test but still more than pre- intervention, so the education should be a continued manner in order to improve the level of knowledge and to prevent it from deteriorating to baseline.

Recommendation

According to the study results, the following suggestions have been recommended:

- Developing a continuous educational program to improve nurses' knowledge & attitude towards PrUs prevention.

- Encouraging the recruitment of scientifically qualified nurses for example ICU nurses or anaesthetic nurses instead of diploma and bachelor nurses.

- Demonstrating in service training and refresher courses along with providing facilities that are needed for PrUs prevention for staff nurses to promote their knowledge & attitude .

- Knowledge of nurses regarding PrUs prevention is not enough without utilization of standard protocols which are put into practice while caring for a patient.

- Nurse educators should be encouraged to incorporate a PUP component into the curriculum in nursing school to prepare the nurses to act effectively in this area in their future careers.

Limitation of thesis

The major limitation of this thesis included the following:-

- The questioner too long, which is boring for nurses.

- Selection of the intervention group from one hospital and far from the control group to minimize the chance of bias in the study which made a differentiation in age and time to read articles or book.

- This thesis did not examine the effect of educational intervention on long period like2 months and so on.

References

1. Awali, Z., Nagshabandi, E. and Elgmail, A. (2018). **The Effect of Implementing Pressure Ulcer Prevention Educational Protocol on Nurses' Knowledge, Attitude and Practices**. Nursing & Primary Care, *2*(4), pp.1-7.

2. Ayello, E. A., & Lyder, C. H. (2008). **A new era of pressure ulcer accountability in acute care.** Advances in skin & wound care, *21*(3), 134-140.

3. Barakat-Johnson, M., Barnett, C., Wand, T., & White, K. (2018). ***Knowledge and Attitudes of Nurses Toward Pressure Injury Prevention***. **Journal Of Wound, Ostomy And Continence Nursing**, 45(3), 233-237. doi: 10.1097/won.0000000000000430.

4. Colmean S, Fogelberg-Dahm M & Ehrenberg A. ***Improved quality and comprehensiveness in nursing documentation of pressure ulcers after implementing an electronic health record in hospital care***. **J ClinNurs** 2014-18:1557–1564.

5. Cooper, K. (2013). **Evidence-Based Prevention of Pressure Ulcers in the Intensive Care Unit**. Critical Care Nurse, 33(6), 57-66. doi: 10.4037/ccn2013985

6. Cox J**. *Predictors of pressure ulcers in adult critical care patients***. **Am J Crit Care.** 2011;20(5):364–375.

7. D. Berlowitz, **Preventing pressure ulcer in hospitals a tool kit for improving quality of care**, pressure injury prevention and management clinical guideline in Western Australia, November 2013.

8. D. M. Durkin and R. May, Stop the Pressure, February 2015,http://nhs.stopthepressure.co.uk/whats-happening.html. **European Pressure Ulcer Advisory Panel. National Pressure Ulcer Advisory Panel**. Pan Pacific Pressure Injury Alliance Prevention and Treatment of Pressure Ulcers: Quick Reference Guide. [(accessed on 18 February 2015)].

9. Dealey, C., Posnett, J., & Walker, A. (2012). ***The cost of pressure ulcers in the United Kingdom.*** Journal Of Wound Care, 21(6), 261-266. doi: 10.12968/jowc.2012.21.6.261.

10. Demarré L, Vanderwee K, Defloor T, Verhaeghe S, Schoonhoven L &Beeckman D. (2012) Pressure ulcers: ***knowledge and attitude of nurses and nursing assistants in Belgian nursing homes***. Journal of Clinical Nursing, 21(9-10): 142534.

11. Demarré, L., Van Lancker, A., Van Hecke, A., Verhaeghe, S., Grypdonck, M., & Lemey, J. et al. (2015). ***The cost of prevention and treatment of pressure ulcers: A systematic review***. International Journal Of Nursing Studies, 52(11), 1754-1774. doi: 10.1016/j.ijnurstu.2015.06.006.

12. Dilie, A. and Mengistu, D. (2015). **Assessment of Nurses' Knowledge, Attitude, and Perceived Barriers to Expressed Pressure Ulcer Prevention Practice in Addis Ababa Government Hospitals, Addis Ababa, Ethiopia, 2015.** Advances in Nursing, 2015, pp.1-11.

13. Doğu Ö. (2015) ***An Evaluation of intensive care nurses' knowledge and practices about pressure ulcer, care and use of care products***. **J Hum Rrhythm**, 1, 95-100.

14. Gul, A., Andsoy, I., Ozkaya, B., &Zeydan, A. (2017). **A Descriptive, Cross-sectional Survey of Turkish Nurses' Knowledge of Pressure Ulcer Risk, Prevention, and Staging**. Ostomy Wound Management, 63(6), 40-46.

15. Habiballah, L. (2018). **Attitudes of intensive care nurses towards pressure ulcer prevention.** Clinical Nursing Studies, 6(3), 1. doi: 10.5430/cns.v6n3p1

16. He, M., Tang, A., Ge, X., &Zheng, J. (2016). **Pressure Ulcers in the Intensive Care Unit.** Advances In Skin & Wound Care, 29(11), 493-498. doi: 10.1097/01.asw.0000494779.66288.c9 .

17. Hyun.S, Vermillion.B, et al . ***Predictive Validity of the Braden Scale for Patients in Intensive care unit.*** **Am J Crit Care** .2013;22(6):p514-520.

18. IIesanmi RE, Ofi BA, Adejumo PO. (2012). **nurses' knowledge of pressure ulcer prevention in Ogun state**. Ostomy Wound Manage, 58(2), 24-32

19. Kaddourah, B., Abu-Shaheen, A. K., & Al-Tannir, M. (2016). **Knowledge and attitudes of health professionals towards pressure ulcers at a rehabilitation hospital: a cross-sectional study**. **BMC Nursing**, 15(1), 17.

20. Köse, I., Yeşil, P., Öztunç, G., &Eskimez, Z. (2016). ***Knowledge of Nurses Working in Intensive Care Units in Relation to Preventive Interventions for Pressure Ulcer***. **International Journal Of Caring Sciences**, *9*(2), 677-686.

21. Lawrence P, Fulbrook P, Miles S. ***A survey of Australian nurses' knowledge of pressure injury / pressure ulcer management***. **J Wound Ostomy Continence Nurs** .2015;42(5):450-640.

22. Mohamed, S., &Weheida, S. (2014). ***Effects of implementing educational program about pressure ulcer control on nurses' knowledge and safety of immobilized patients.*** **Journal Of Nursing Education And Practice**, 5(3), 12-21.

23. Moore, Z., & Price, P. (2004). ***Nurses' attitudes, behaviors and perceived barriers towards pressure ulcer prevention***. **Journal of clinical nursing**, 13(8), 942-951.

24. National Pressure Ulcer Advisory Panel (NPUAP). **Prevention and Treatment of Pressure Ulcer:** quick reference guide. Washington DC: NPUAP, 2009.

25. NDNQI®|**Pressure Injury Training**|v.6.0.(2019). Retrieved1 September2019, from https://members.nursingquality. org/NDNQIPressureUlcerTraining/.

26. Oseni O.G, Ojewuyi O.O , OteneC.l, Olaitan P.B. (2018).***Knowledge , attitude and practice of pressure ulcers prevention among nurses in a teaching hospital* . International Journal Of Scientific Research**, 7(4), 37-39.

27. Pieper B, Mott M. **Nurses‘ knowledge of pressure ulcer prevention, staging, and description**. **Adv Wound Care** 1995;8:34-48.

28. Pilar Acosta, Joseph Varon, **Handbook of Critical and Intensive Care Medicine** ,(New York, NY 10013, USA: 77030, 2d edition ,2002).

29. Qaddumi J. &Khawaldeh A. (2014) **Pressure ulcer prevention knowledge among Jordanian nurses: a cross-sectional study**. BMC Nursing, 13, 6

30. Qaddumi, J., &Almahmoud, O. (2018). ***Prevalence and Features of Pressure Ulcers among Patients in ICU Department of Governmental Hospital in Palestine: Cross Sectional.* International journal of nursing** 5(2), 72-80. doi: 10.15640/ijn.v5n2a6.

31. Qaddumi, J., Almahmoud, O. (2018). ***Prevalence and Features of Pressure Ulcers among Patients in ICU Department of Governmental Hospital in Palestine: Cross Sectional.* INTERNATIONAL JOURNAL OF NURSING**, 5(2). doi: 10.15640/ijn.v5n2a6.

32. Qaseem, A., Mir, T., Starkey, M., & Denberg, T. (2015). **Risk Assessment and Prevention of Pressure Ulcers: A Clinical Practice Guideline From the American College of Physicians.** Annals Of Internal Medicine, 162(5), 359. doi: 10.7326/m14-1567

33. Saleh, M. Y. N., Qaddumi, J. A. M. S., & Anthony, D. (2012). **An Interventional Study on the Effects of Pressure Ulcer Education on Jordanian Registered Nurses' Knowledge and Practice.** Procedia-Social and Behavioural Sciences, 47(0), 2196–2206

34. Sayar S, Turgut S, Dogan H, et al. ***Incidence of pressure ulcers in intensive care unit patients at risk according to the Waterlow scale and factors influencing the development of pressure ulcers***. **J ClinNurs**. 2009;18(5):765–774.

35. Shahin E, Dassen T, Halfens R. **Pressure ulcer prevalence and incidence in intensive care patients: a literature review**. *NursCrit Care*. 2008;13(2):71–79.

36. Shahin, E., Dassen, T., &Halfens, R. (2009). ***Incidence, prevention and treatment of pressure ulcers in intensive care patients: A longitudinal study***. **International Journal Of Nursing Studies**, 46(4), 413-421. doi: 10.1016/j.ijnurstu.2008.02.011.

37. Shrestha, C., &Khatiwada, S. (2018). ***Educational Intervention on Pressure ulcer among Caregivers of Immobilized Patient***. **International Journal Of Nursing Research And Practice (IJNRP)**, 5(1), 17-21.

38. Simonetti V, Comparcini D, Flacco ME, Di Giovanni P, Cicolini G. **Nursing students' knowledge and attitude on pressure injury prevention evidence-based guidelines: a multicenter cross-sectional study**. Nurse Educ Today 2015;35:573-9.

39. Smith, D., & Waugh, S. (2009). **Research study: an assessment of registered nurses' knowledge of pressure ulcers prevention and treatment**. Kansas Nurs, 84(1), 3-5.

40. Taha, A. S. (2014).***Nurses knowledge and practices related to pressure ulcer at intensive care unit***. **Journal of International Academic Research for Multidisciplinary**, 2(2),247-262.

41. Tayyib N, Coyer F, Lewis PA. **Pressure ulcer in the adult intensive care unit. Sciedu press**. 2013; 11 (3):28-30.

42. Tayyib, N., Coyer, F., & Lewis, P. (2015). ***Saudi Arabian adult intensive care unit pressure ulcer incidence and risk factors: a prospective cohort study***. **International Wound Journal**, n/a-n/a. https://doi.org/10.1111/iwj.12406

43. Tirgari B, Mirshekari L, Forouzi MA. **Pressure Injury Prevention: Knowledge and Attitudes of Iranian Intensive Care Nurses**. Adv Skin Wound Care. 2018;31(4):1–8.

44. Tubaishat, A., &Aljezawi, M. (2014). ***Exploring Pressure Ulcer Care in Jordan.*** **Journal of the Dermatology Nurses' Association**, *6*(3), 115–123.

45. Tubaishat, A., Dean, A., Aljezawi, M., &Qadire, M. Al. (2013). ***Nurses' attitudes and perceived barriers to pressure ulcer prevention in Jordan***. **Journal of Wound Care**, 22(9), 490–497.

46. Tweed.C , Tweed.M . ***Intensive Care Nurses' Knowledge of PrUs: Development of an Assessment Tool and Effect of an Educational Program.*** **American journal of critical care**.2008;17(4):p338-346.

Appendix

Appendix 1

Getting permission by email from Pieper for using the PZ-PUKT scale to assess the nurses' level of knowledge regarding pressure ulcer prevention.

plz ? just for permission Inbox

me Nov 3, 2018
to bpieper

hi DR , I'am kefaya alshaikh from Palestine .
I'am a master student from AL-Najah National University
i want to do my thesis about nursers knowledge & attitude toward pressure ulcer
in intensive care unit .
you can allow to me to use your scale in my study ???
thanx alot

Barbara Ann Pieper Nov 3, 2018
to me, drkarenz@aol.com

Hi Kefaya
Greetings from the cold north! Dr. Karen Zulkowski and I allow use of the instrument for free. Dr. Zulkowski will email a form that you must sign, return to her, and then she will send the test. Please give her a little time to respond.
Best wishes with your project.
Barb Pieper

From: kefaya alshaikh <kokosara72@gmail.com>
Sent: Saturday, November 3, 2018 4:19 PM
To: Barbara Ann Pieper
Subject: plz ? just for permission

...

me Nov 3, 2018
to Barbara

Thx so much for your respone , with my love i sign the form & return it

...

Dr. Karen Zulkowski Nov 5, 2018
Thank you for using our test. Please complete and return the permission form attached. When I receive it I will send you the test and instructions 497...

me Nov 7, 2018
to drkarenz

hay , how are you ?? thank a lot for your responding .

في الاثنين، 5 نوفمبر 2018 في 10:57 م تمت كتابة ما يلي بواسطة Dr. Karen Zulkowski <drkarenz@aol.com>:

Copyright Permission

Top of Form

name,title:,compa	JayneBall@brade	Contact Preventio	http://bradenscale

The ***Pieper-Zulkowski Pressure Ulcer Knowledge Test*** is available at no charge to professionals who agree not to resell them or to profit from their use. Please use this form to request permission to use test. Permission is readily given to those using these products in research, scholarly publications or programs of prevention in clinical agencies.

Please fill out the following personal information.

Name _____

Title_____

Organization _____

Address_____

City _____

State/ Providence_____

Country _____

Email _____

Intended Use_____

I agree to the following:

1. The Pieper- Zulkowski Pressure Ulcer Knowledge Test (PUKT)will be used as written without changing the wording or scoring of the document without written permission.

2. The full name of the tool, Pieper Zulkowski Pressure Ulcer Knowledge Test, or PUKT will be used on any reproduction of the tool.

3. Results of the testing and citations using PUKT will be emailed to Drs Pieper and Zulkowski at drkarenz@aol.com in a form that will be sent to you

Copyright Permission

Top of Form

name,title:,compa JayneBall@brade Contact Preventio http://bradenscale The ***Pieper-Zulkowski Pressure Ulcer Knowledge Test*** is available at no charge to professionals who agree not to resell them or to profit from their use. Please use this form to request permission to use test. Permission is readily given to those using these products in research, scholarly publications or programs of prevention in clinical agencies.

Please fill out the following personal information.

Name: - Kefaya Mufeed Al-Shaikh

Title: - RN at Palestinian Medical Complex

Master student at An-Najah National University

Organization: - Palestinian Medical Complex/MOH

An-Najah National University

Address: - Rukab street, Ramallah

City : - Ramallah

State/ Providence: - Ramallah / West Bank /Palestine

Country: - Palestine territory

Email: - kokosara72@gmail.com

kefaya89@outlook.com

Intended Use : - master thesis titled "nurse's knowledge & attitude toward pressure ulcer preventive measures in intensive care units in Palestine hospital

I agree to the following:

1. The Pieper- Zulkowski Pressure Ulcer Knowledge Test (PUKT)will be used as written without changing the wording or scoring of the document without written permission.

2. The full name of the tool, Pieper Zulkowski Pressure Ulcer Knowledge Test, or PUKT will be used on any reproduction of the tool.

3. Results of the testing and citations using PUKT will be emailed to Drs Pieper and Zulkowski at drkarenz@aol.com in a form that will be sent to you

Appendix 2

- Getting permission by email from Z-Moor for **using the attitude scale to assess nurses level of attitude regarding pressure ulcer prevention**.

plz ? just small explanation ?

me Nov 3, 2018
to zmoore

From kefaya alshaikh kokosara72@gmail.com
To zmoore@rcsi.ie
Date Nov 3, 2018, 3:11 PM

hi sir , I'am kefaya alshaikh from Palestine .
I'am a master student from AL-Najah National Unviersty
i want to do my thesis about nursers knowledge & attitude toward pressure ulcer in intensive care unit .
you can allow to me to use yr scale in my study ???
thanx alot

Appendix 3

- Inform consent

Consent Form For Participation in a Research study

Pressure Ulcer: Nurses' Knowledge and Attitude toward preventive measures in Intensive care units in Palestine.

I am Kefaya Al-Shaikh, a student from AL-Najah National University I want you to participate in my research study. The purpose of this research is to assess the ICU nurse's knowledge and attitude toward pressure ulcer preventive measures, and the impact of an educational program on Nurses knowledge & attitude level.

There are no known risks associated with this research but you have more benefit which is after participation in this study you can getting a certification on pressure injury from the American Nurses Credentialing Center (ANCC)& you will increases your knowledge & attitude toward pressure ulcer .

I will do everything I can to protect your privacy, your identity will not be revealed in any publication resulting from this study.

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time.

If you have any question, you can contact with me any time.
If you want to participate in a study you can sign this form, with my greet thanks.

Participant's signature_____ Date: _____

Contact me:-
Researcher name: - Kefaya Al-Shaikh
Phone: - 0597481403
Email: - kokosara72@gmail.com

Appendix 4

Thesis tools

Part one: - Demographic data

DIRECTIONS: Please answer each of the following questions about your background by circling your choice.

- **Nurse initials**:_____
- **Hospital** : _____
- **Age:**
  a) Less than 27
  b) 28-37
  c) 38-47
  d) 48years and above.

- **Gender:**
  a) Female b) male

- **Marital status:**
  a) Single b) Married c) Divorced d)widowed

- **Level of education:**
  a) Diploma degree
  b) bachelor degree
  c) High diploma degree
  d) master degree

- **Number of years in practice**:
  a) < 1 year
  b) 1 year - 5 years
  c) 6 years - 10 years
  d) 11 years -15 years
  e) 15 years - 20 years
  f) 20 years or more

- **When was the last time you listened to a lecture on pressure ulcers? (Check one)**
  a) One year or less
  b) Greater than 1 year but less than 2 years
  c) 2-3 years
  d) 4 years or greater
  e) Never

- **When was the last time you read an article or book about pressure ulcers? (Check one)**
  a) One year or less
  b) Greater than 1 year but less than 2 years
  c) 2-3 years
  d) 4 years or greater
  e) Never

- **Are you certified in any clinical specialty**?
  a) Yes b) No Certification type_____

- **Are you certified as Wound Specialist?**
  a) Yes b) No Certifying Organization_____

- **Have you sought out information about pressure ulcers on the web?**

  a) Yes b) No

- **Have you read the NPUAP/EPUAP International Pressure Ulcer Prevention and Treatment Guidelines?**

  a) Yes b) No

Part two: - Nurses knowledge regarding pressure ulcer

Pieper-Zulkowski Pressure Ulcer Knowledge Test (Version 2)
For each question, mark the box for True, False, or Don't Know. Be truthful; if you do not know, do not guess.

	True	False	Don't Know
1. Slough is yellow or cream-colored necrotic /devitalized tissue on a wound bed.			
2. A pressure injury/ulcer is a sterile wound.			
3. Foam dressings increase the pain in the wound.			
4. Hydrogel dressings should not use on pressure injury/ulcers with granulation tissue.			
5. Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4.			
6. Eschar is healthy tissue.			
7. Honey dressings can sting when initially placed in a wound.			
8. Foam dressing may use on areas at risk for shear injury.			
9. Biofilms may develop in any type of wound.			
10. Blanching refers to whiteness when pressure is applied to a reddened area.			
11.Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones.			

12.Deep tissue injury (DTI) may be difficult to detect in individuals with dark skin tones.			
13. Eschar is good for wound healing.			
14. It may be difficult to distinguish between moisture associated skin damage and a pressure injury/ulcer.			
15.Wounds that become chronic are frequently stalled in the inflammatory phase of healing.			
16.Shear injury is not a concern for a patient using a lateral-rotation bed.			
17.A dressing should keep the wound bed moist, but the surrounding skin dry.			
18. Hydrocolloid and film dressings must be carefully removed from fragile skin.			
19.Hydrocolloid dressings should be used on an infected wound.			
20.Pressure injury/ulcers can be cleansed with water that is suitable for drinking.			
21.Alginate dressings can be used for heavily draining pressure injury/ulcers or those with clinical evidence of infection.			
22.Film dressings absorb a lot of drainage.			
23.Non-sting skin prep should be used around a wound to protect surrounding tissue from moisture.			
24.Bacteria can develop permanent immunity to silver dressings.			
25.A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.			
26.Skin that doesn’t blanch when pressed is a Stage 1 pressure injury/ulcer.			
27.A Stage 2 pressure injury/ulcer is a full thickness skin loss.			
28.A Stage 2 pressure injury/ulcer may have slough in its base.			
29.If necrotic tissue is present and if bone can be seen or palpated, the ulcer is a Stage 4.			
30.When necrotic tissue is removed, an unstageable pressure injury/ulcer will be classified as a Stage 2 injury/ulcer.			
31.A blister on the heel is nothing to worry about.			
32.Bone, tendon, or muscle may be exposed in a Stage 3 pressure injury/ulcer.			
33.Dry, adherent eschar on the heels should not be removed.			
34.Deep tissue injury is a localized area of purple or maroon discoloured intact skin or a blood-filled blister.			
35.In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.			
36.A mucosal membrane pressure injury/ulcer is found on mucous membrane as the result of medical equipment used at that time on that location; this pressure injury is not staged.			
37.Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal cannula.			

38.Stage 1 pressure injury/ulcers are intact skin with non-Blanchable erythema over a bony prominence.			
39.When the ulcer base is totally covered by slough, it cannot be staged.			
40.Nurses should avoid turning a patient onto a reddened area.			
41.Skin tears are classified as Stage 2 pressure injury/ulcers.			
42.A Stage 3 pressure injury/ulcer may appear shallow if located on the ear, malleolus/ankle, or heel.			
43.Deep tissue injury will not progress to another injury/ulcer stage.			
44.A Stage 4 pressure injury/ulcer never has undermining.			
45.Hot water and soap may dry the skin and increase the risk for pressure injury/ulcers.			
46.Chair-bound persons should be fitted for a chair cushion.			
47.A person confined to bed should be repositioned based on the individual's risk factors and the support surface's characteristics.			
48.A pressure injury/ulcer scar will break down faster than unwounded skin.			
49.The goal of palliative care is wound healing.			
50.Dragging the patient up in bed increases friction.			
51.Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning.			
52.An incontinent patient should have a toileting care plan.			
53.A pressure redistribution surface manages tissue load and the climate against the skin.			
54.When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers.			
55.The home care setting has unique considerations for support surface selection.			
56.Donut devices/ring cushions help to prevent pressure injury/ulcers.			
57.A specialty bed should be used for all patients at high risk for pressure injury/ulcers.			
58.Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work).			
59.Critical care patients may need slow, gradual turning because of being hemodynamically unstable.			
60. A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.			
61. Massage of bony prominences is essential for quality skin care.			
62. Poor posture in a wheel chair may be the cause of a pressure injury/ulcer.			
63. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.			

64. Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.			
65. Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair.			
66. Selection of a support surface should only consider the person's level of pressure injury/ulcer risk.			
67. It is not necessary to have the patient with a spinal cord injury evaluated for seating.			
68. To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher.			
69. Urinary catheter tubing should be positioned under the leg.			
70. Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment.			
71. Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured.			
72. Staff education alone may reduce the incidence of pressure injury/ulcers.			

Part three: - Nurses attitude regarding pressure ulcer

For each question, mark the box for your selection.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. All patients are at potential risk of developing pressure ulcers.					
2. Pressure ulcer prevention is time consuming for me to carry out.					
3. In my opinion, patients tend not to get as many pressure ulcers nowadays.					
4. I do not need to concern myself with pressure ulcer prevention in my practice.					
5. Pressure ulcer treatment is a greater priority than pressure ulcer prevention					
6. Continuous assessment of patients will give an accurate account of their pressure ulcer risk					
7. Most pressure ulcers can be avoided.					
8. I am less interested in pressure ulcer prevention than other aspects of care.					
9. My clinical judgment is better than any pressure ulcer risk assessment tool available to me.					
10. In comparison with other areas of care, pressure ulcer prevention is a low priority for me.					
11. Pressure ulcer risk assessment should be regularly carried out on all patients during their stay in hospital.					

Appendix 5

- Approval of Faculty of Graduate Studies on the topic of the thesis

An-Najah
National University
Faculty of Graduate Studies
Dean's Office

جامعة
النجـــاح الوطنية
كلية الدراسات العليا
مكتب العميد

التاريخ: 2019/3/18

حضرة الدكتورة عائدة القيسي المحترمة
منسقة برنامجي ماجستير تمريض التخدير وتمريض العناية المكثفة

تحية طيبة وبعد،

الموضوع: الموافقة على عنوان الاطروحة وتحديد المشرف

قرر مجلس كلية الدراسات العليا في جلسته رقم (374)، المنعقدة بتاريخ 2019/3/14، الموافقة على مشروع الأطروحة المقدم من الطالب/ة كفايه مفيد خالد شيخ، رقم تسجيل 11659098، تخصص ماجستير تمريض العناية المكثفة، عنوان الأطروحة:

(قرحة الضغط: معرفه الممرضين وموقفهم تجاه الإجراءات الوقائية في وحدات العناية المركزة في فلسطين)
(Pressure Ulcer: Nurses' Knowledge and Attitude Toward Preventive Measures in Intensive Care Units in Palestine)

بإشراف: د. جمال قدومي

يرجى اعلام المشرف والطالب بضرورة تسجيل الاطروحة خلال اسبوعين من تاريخ اصدار الكتاب. وفي حال عدم تسجيل الطالب/ة للاطروحة في الفترة المحددة له/ا ستقوم كلية الدراسات العليا بإلغاء اعتماد العنوان والمشرف

وتفضلوا بقبول وافر الاحترام ،،،

د. علي عبد الحميد
عميد كلية الدراسات العليا

نسخة : د. رئيس قسم الدراسات العليا للعلوم الطبية والصحية المحترم
: ق.أ.ع. القبول والتسجيل المحترم
: مشرف الطالب
: ملف الطالب

صادر
جامعة النجاح الوطنية
كلية الدراسات العليا
19. 03. 2019
للضرورة
الرقم المتسلسل

ملاحظة: على الطالب/ة مراجعة الدائرة المالية (محاسبة الطلبة) قبل دفع رسوم تسجيل الاطروحة

فلسطين، نابلس، ص.ب 7،707 هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115 هاتف داخلي (5) 3200
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix 6

- Approval letter from IRB

An-Najah
National University
Faculty of medicine
&Health Sciences
Department of Graduate
Studies

جامعة النجاح
الوطنية
كلية الطب وعلوم الصحة
دائرة الدراسات العليا

Approval Letter

Ref: MAS

Study Title:

"Pressure Ulcer: Nurses' Knowledge and Attitude toward preventive measures in Intensive care units in Palestine"

Submitted by:

Kefaya Mufeed Al-Shaikh

Supervisor:

DR.Jammal Qaddumi

Date Reviewed:

11th November 2018

Date Approved:

13th November 2018

Your Study titled "***Pressure Ulcer: Nurses' Knowledge and Attitude toward preventive measures in Intensive care units in Palestine***" with archived number (17) November r was reviewed by An-Najah National University IRB committee and was approved on 13th November 2018

Hasan Fitian, MD

IRB Committee Chairman

An-Najah National University

IRB

نابلس - ص.ب 7 أو 707 || هاتف 14/8/7/4/2342902(09) (970) || فاكسميل 2342910 (09) (970)

Nablus - P.O Box :7 or 707 | Tel (970) (09) 2342902/4/7/8/14 | Faximile (970) (09) 2342910 | E-mail : hgs@najah.edu

Appendix 7

- Facilitation form from Ministry of Health

State of Palestine
Ministry of Health - Nablus
General Directorate of Education in Health

دولة فلسطين
وزارة الصحة- نابلس
الإدارة العامة للتعليم الصحي

Ref.: .....
Date:.....

الرقم: ٢٠١٨/١٩٧٩/٦٤
التاريخ: ٢٠١٨/١٢/١٠

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،
الأخ مدير مجمع فلسطين الطبي المحترم،،،

تحية واحترام،،،

الموضوع: تسهيل مهمة – جامعة النجاح

يرجى تسهيل مهمة الطالبة: كفاية مفيد الشيخ – ماجستير تمريض العناية المكثفة/ جامعة النجاح، في عمل رسالة الماجستير بعنوان: "Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive Care Units in Palestine" من خلال السماح للطالبة بجمع معلومات من ممرضي العناية المكثفة (بعد اخذ موافقتهم)، وذلك في:

مستشفى رفيديا الحكومي

- مستشفى عاليه / الخليل

- مجمع فلسطين الطبي

علما ان البحث تحت اشراف د. جمال قدومي.

كما انه سيتم الالتزام بمعايير البحث العلمي والحفاظ على سرية المعلومات.

مع الاحترام،،،

د. أمل أبو عوض
مدير عام التعليم الصحي

نسخة: عميد الدراسات العليا المحترم/ جامعة النجاح

P.O .Box: 14
Tel.:09-2333901

ص.ب. 14
تلفون: 09-2333901

Appendix 8

- Facilitation form for data collection at PMC

An-Najah
National University
Faculty of Graduate Studies

جامعة
النجـــاح الوطنية
كلية الدراسات العليا

التاريخ : 2018/12/10م

حضرة مدير عام مجمع فلسطين الطبي المحترم
رام الله

تحية طيبة و بعد ,,,

الموضوع : تسهيل مهمة الطالبة/ كفاية مفيد الشيخ، رقم تسجيل (11659098)، تخصص ماجستير تمريض العناية المكثفة

يرجى من حضرتكم تسهيل مهمة الطالبة / كفاية مفيد الشيخ، رقم تسجيل 11659098، تخصص ماجستير تمريض العناية المكثفة، في كلية الدراسات العليا، وهي بصدد اعداد الاطروحة الخاصة بها والتي عنوانها:

(Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive care units in Palestine)

يرجى من حضرتكم تسهيل مهمتها في جمع بيانات من خلال توزيع استبانة خاصة بالمشروع على الممرضين وذلك في الفترة الواقعة ما بين 2018/12/1 – 2019/1/31 ، وذلك لاستكمال مشروع البحث.

شاكرين لكم حسن تعاونكم.

مع وافر الاحترام ،،،

د. علي عبد الحميد
عميد كلية الدراسات العليا

جامعة النجاح الوطنية
كلية الدراسات العليا
نابلس / فلسطين

فلسطين، نابلس، ص.ب 707، 7 هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
3200 (5) هاتف داخلي Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix 9

- Facilitation form for data collection at Hebron hospital

An-Najah
National University
Faculty of Graduate Studies

جامعة
النجـــاح الوطنية
كلية الدراسات العليا

التاريخ : 2018/12/10م

حضرة مدير عام مستشفى عاليه الحكومي المحترم
الخليل

تحية طيبة و بعد ,,,

الموضوع : تسهيل مهمة الطالبة/ كفاية مفيد الشيخ، رقم تسجيل (11659098)،
تخصص ماجستير تمريض العناية المكثفة

يرجى من حضرتكم تسهيل مهمة الطالبة / كفاية مفيد الشيخ، رقم تسجيل 11659098، تخصص ماجستير تمريض العناية المكثفة، في كلية الدراسات العليا، وهي بصدد اعداد الاطروحة الخاصة بها والتي عنوانها:

(Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive care units in Palestine)

يرجى من حضرتكم تسهيل مهمتها في جمع بيانات من خلال توزيع استبانة خاصة بالمشروع على الممرضين وذلك في الفترة الواقعة ما بين 2018/12/1 – 2019/1/31 ، وذلك لاستكمال مشروع البحث.

شاكرين لكم حسن تعاونكم.

مع وافر الاحترام ،،،

د. علي عبد الحميد
عميد كلية الدراسات العليا

جامعة النجاح الوطنية
كلية الدراسات العليا
نابلس / فلسطين

فلسطين، نابلس، ص.ب 7، 707 هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
هاتف داخلي (5) 3200 Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix 10

- Facilitation form for data collection at Rafidia hospital

An-Najah
National University
Faculty of Graduate Studies

جامعة
النجـــاح الوطنية
كلية الدراسات العليا

التاريخ : 2018/12/10م

حضرة مدير عام مستشفى رفيديا الحكومي المحترم
نابلس

تحية طيبة و بعد ,,,

الموضوع : تسهيل مهمة الطالبة/ كفاية مفيد الشيخ، رقم تسجيل (11659098)، تخصص ماجستير تمريض العناية المكثفة

يرجى من حضرتكم تسهيل مهمة الطالبة / كفاية مفيد الشيخ، رقم تسجيل 11659098، تخصص ماجستير تمريض العناية المكثفة، في كلية الدراسات العليا، وهي بصدد اعداد الاطروحة الخاصة بها والتي عنوانها:

(Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive care units in Palestine)

يرجى من حضرتكم تسهيل مهمتها في جمع بيانات من خلال توزيع استبانة خاصة بالمشروع على الممرضين وذلك في الفترة الواقعة ما بين 2018/12/1 – 2019/1/31 ، وذلك لاستكمال مشروع البحث.

شاكرين لكم حسن تعاونكم.

مع وافر الاحترام ،،،

د. علي عبد الحميد
عميد كلية الدراسات العليا

جامعة النجاح الوطنية
كلية الدراسات العليا
نابلس / فلسطين

فلسطين، نابلس، ص.ب 7،707 هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115 هاتف داخلي (5) 3200
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix 11

- Facilitation form for data collection at Istishari Arab hospital

An-Najah
National University
Faculty of Graduate Studies

جامعة
النجـــاح الوطنية
كلية الدراسات العليا

التاريخ : 2018/12/10م

حضرة مدير عام مستشفى الإستشاري العربي المحترم
رام الله

تحية طيبة و بعد ,,,

الموضوع : تسهيل مهمة الطالبة/ كفاية مفيد الشيخ، رقم تسجيل (11659098)، تخصص ماجستير تمريض العناية المكثفة

يرجى من حضرتكم تسهيل مهمة الطالبة / كفاية مفيد الشيخ، رقم تسجيل 11659098، تخصص ماجستير تمريض العناية المكثفة، في كلية الدراسات العليا، وهي بصدد اعداد الاطروحة الخاصة بها والتي عنوانها:

(Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive care units in Palestine)

يرجى من حضرتكم تسهيل مهمتها في جمع بيانات من خلال توزيع استبانة خاصة بالمشروع على الممرضين وذلك في الفترة الواقعة ما بين 2018/12/1 – 2019/1/31 ، وذلك لاستكمال مشروع البحث.

شاكرين لكم حسن تعاونكم.

مع وافر الاحترام ،،،

د. علي عبد الحميد
عميد كلية الدراسات العليا

جامعة النجاح الوطنية
كلية الدراسات العليا
نابلس / فلسطين

فلسطين، نابلس، ص.ب 707، 7 هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115 هاتف داخلي (5) 3200
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix 12

- Approval form from PMC for data collection

State of Palestine
Ministry of Health - Nablus
General Directorate of Education in Health

دولة فلسطين
وزارة الصحة- نابلس
الإدارة العامة للتعليم الصحي

Ref.: .....
Date:.....

الرقم: ٢٠١٨/١٩٧٩/٦٢٢
التاريخ: ٢٠١٨/٠٢/١٠

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،
الأخ مدير مجمع فلسطين الطبي المحترم،،،

تحية واحترام،،،

الموضوع: تسهيل مهمة – جامعة النجاح

يرجى تسهيل مهمة الطالبة: كفاية مفيد الشيخ – ماجستير تمريض العناية المكثفة/ جامعة النجاح، في عمل رسالة الماجستير بعنوان: " Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive Care Units in Palestine من خلال السماح للطالبة بجمع معلومات من ممرضي العناية المكثفة (بعد اخذ موافقتهم)، وذلك في:

- مستشفى رفيديا الحكومي
- مستشفى عاليه / الخليل
- مجمع فلسطين الطبي

علما ان البحث تحت اشراف د. جمال قدومي.

كما انه سيتم الالتزام بمعايير البحث العلمي والحفاظ على سرية المعلومات.

مع الاحترام،،،

د. أمل عوض
مدير عام التعليم الصحي

نسخة: عميد الدراسات العليا المحترم/ جامعة النجاح

P.O .Box: 14
Tel.:09-2333901

ص.ب. 14
تلفون: 09-2333901

Apendix 13

- Approval form from Hebron hospital for data collection

State of Palestine
Ministry of Health - Nablus
General Directorate of Education in Health

دولة فلسطين
وزارة الصحة- نابلس
الإدارة العامة للتعليم الصحي

Ref.: .....
Date:.....

الرقم: ..١٦٤/١٩٧٩/ ٢٠١٨
التاريخ: ..١٠/١٢/٢٠١٨

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،
الأخ مدير مجمع فلسطين الطبي المحترم،،،

تحية واحترام،،

الموضوع: تسهيل مهمة – جامعة النجاح

يرجى تسهيل مهمة الطالبة: كفاية مفيد الشيخ – ماجستير تمريض العناية المكثفة/ جامعة النجاح، في عمل رسالة الماجستير بعنوان: "Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive Care Units in Palestine" من خلال السماح للطالبة بجمع معلومات من ممرضي العناية المكثفة (بعد اخذ موافقتهم)، وذلك في:

- مستشفى رفيديا الحكومي
- مستشفى عاليه / الخليل
- مجمع فلسطين الطبي

علما ان البحث تحت اشراف د. جمال قدومي.

كما انه سيتم الالتزام بمعايير البحث العلمي والحفاظ على سرية المعلومات.

مع الاحترام،،

د. أمل عوض
مدير عام التعليم الصحي

نسخة: عميد الدراسات العليا المحترم/ جامعة النجاح

P.O .Box: 14
Tel.:09-2333901

ص.ب. 14
تلفون: 09-2333901

12. DEC. 2018 10:27 J.H.D NO. 077 P. 1/1

Appendix 14

- Approval form from Rafidia hospital for data collection

State of Palestine
Ministry of Health - Nablus
General Directorate of Education in Health

دولة فلسطين
وزارة الصحة- نابلس
الإدارة العامة للتعليم الصحي

Ref.: .....
Date:.....

الرقم: ..١٦٤/١٩٧٩/ ٢٠١٨
التاريخ: ..١٠/١٢/..../٢٠١٨

Rafidia hospital

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،
الأخ مدير مجمع فلسطين الطبي المحترم،،،

تحية واحترام،،،

الموضوع: تسهيل مهمة – جامعة النجاح

يرجى تسهيل مهمة الطالبة: كفاية مفيد الشيخ – ماجستير تمريض العناية المكثفة/ جامعة النجاح، في عمل رسالة الماجستير بعنوان:" Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive Care Units in Palestine من خلال السماح للطالبة بجمع معلومات من ممرضي العناية المكثفة (بعد اخذ موافقتهم)، وذلك في:

- مستشفى رفيديا الحكومي
- مستشفى عاليه / الخليل
- مجمع فلسطين الطبي

علما ان البحث تحت اشراف د. جمال قدومي.

كما انه سيتم الالتزام بمعايير البحث العلمي والحفاظ على سرية المعلومات.

مع الاحترام،،،

وزارة الصحة الفلسطينية
د. أمل عوض
مدير عام التعليم الصحي
الإدارة العامة للتعليم الصحي

نسخة: عميد الدراسات العليا المحترم/ جامعة النجاح

P.O .Box: 14
Tel.:09-2333901

ص.ب. 14
تلفون: 09-2333901

Appendix 15

- Approval form from Istishari hospital for data collection

An-Najah
National University
Faculty of Graduate Studies

جامعة
النجـــاح الوطنية
كلية الدراسات العليا

التاريخ : 2018/12/10م

حضرة مدير عام مستشفى الإستشاري العربي المحترم
رام الله

تحية طيبة و بعد ,,,

الموضوع : تسهيل مهمة الطالبة/ كفاية مفيد الشيخ، رقم تسجيل (11659098)، تخصص ماجستير تمريض العناية المكثفة

يرجى من حضرتكم تسهيل مهمة الطالبة / كفاية مفيد الشيخ، رقم تسجيل 11659098، تخصص ماجستير تمريض العناية المكثفة، في كلية الدراسات العليا، وهي بصدد اعداد الاطروحة الخاصة بها والتي عنوانها:

(Pressure Ulcer: Nurses Knowledge and Attitude toward Preventive Measures in Intensive care units in Palestine)

يرجى من حضرتكم تسهيل مهمتها في جمع بيانات من خلال توزيع استبانة خاصة بالمشروع على الممرضين وذلك في الفترة الواقعة ما بين 2018/12/1 – 2019/1/31 ، وذلك لاستكمال مشروع البحث.

شاكرين لكم حسن تعاونكم.

مع وافر الاحترام ،،،

د. علي عبد الحميد
عميد كلية الدراسات العليا

لا مانع من توزيع الاستبيان
مع قسمي icu و ccu
20/12/2018

جامعة النجاح الوطنية
كلية الدراسات العليا
نابلس / فلسطين

فلسطين، نابلس، ص.ب 7، 707 هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115 هاتف داخلي (5) 3200
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

جامعة النجاح الوطنية

كلية الدارسات العليا

قرحة الضغط: معرفة الممرضين وموقفهم تجاه الاجراءات الوقائية في وحدات العناية المركزة في فلسطين

اعداد

كفاية مفيد الشيخ

إشراف

د. جمال القدومي

قدمت هذه الاطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في برنامج تمريض العناية المكثفة، بكلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس–فلسطين

2019

قرحة الضغط: معرفة الممرضين وموقفهم تجاه الاجراءات الوقائية في وحدات العناية المركزة في فلسطين

إعداد

كفاية مفيد الشيخ

إشراف

د. جمال القدومي

الملخص

المقدمة: تعتبر ضغوط القرحة من المضاعفات الشائعة التي تسببها عوامل عدة مثل عدم الحركة، ونقص التغذية، و المكوث لفترة طويلة في وحدات العناية المكثفة بالنسبة للمرضى، حيث تعتبر هذه المضاعفات من أهم المواضيع التي تم مناقشتها في الحقل الطبي عند الحديث عن جودة الرعاية وسلامة المرضى في معظم بيئات الرعاية الطبية في جميع أنحاء العالم.

الهدف : تهدف هذه الدراسة إلى تقييم معرفة ممرضي وحدات العناية المكثفة واتجاهاتهم نحو ضغوط التقرح، والإجراءات الوقائية بالإضافة إلى تأثير برنامج تعليمي على مستوى تلك المعرفة نحو الوقاية من ضغط التقرح.

الطريقة: من أجل تحقيق هدف الدراسة، تم استخدام منهج شبه تجريبي حيث تم اختيار عينة مؤلفة من 91 ممرض وممرضة من أربع مستشفيات فلسطينية تم من خلالها قياس معرفة الممرضين وممارساتهم حول ضغط التقرح من خلال استخدام مقياس دولي من تصميم كل من بيبر وزولكوسكي، تم قياس اتجاهات عينة الدراسة من خلال مقياس كل من مور وبرايس.

النتائج: أظهرت نتائج الدراسة أن معرفة الممرضين بالإجراءات الوقائية نحو ضغوط القرحة في وحدات العناية المكثفة ضعيفة في كل من المجموعة التجريبية والضابطة بينما كانت الاتجاهات إيجابية بدرجة طفيفة. في المجال المقابل، وجد هناك فروق دالة إحصائياً في زيادة مستوى المعرفة في جميع المقاييس الفرعية (الجروح، والمستويات، والوقاية) كذلك ارتفع مستوى الاتجاهات وكان إيجابياً. وأكثر من ذلك، أعادت نتائج إعادة الاختبار بعد شهر من البرنامج التعليمي انخفاضا

مقارنة مع الاختبار البعدي ولكن بصورة أكثر من الاختبار القبلي للمجوعة الضابطة.

الخاتمة: يعتبر البرنامج التعليمي أداة فعالة للممرضين حيث يقدم لهم فرصة لتطوير فهمهم حول موضوع ضغوط القرحة، وقد بقي هناك قليل يتعلق بتطور المعرفة والتي تهدف إلى تخفيف معاناة المرضى. علاوةً عن ذلك، يمكن لبرنامج ضغوط القرحة التعليمي أن يساعد الممرضين على اكتساب اتجاهات مهنية تمكنهم من تطوير جودة العمل التمريضي، وبالتالي تخفيف العبء عن المرضى وعائلاتهم وكذلك عن الممرضين وبيئة عملهم.

الكلمات الرئيسية: ضغوط القرحة، المعرفة، الاتجاهات، والتقييم، والفعالية، والإجراءات الوقائية، وطاقم التمريض، والبرنامج التعليمي.