

# Nurses' Knowledge and Practices Regarding Wound Dressing at Primary Health Care Centers

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## ABSTRACT

**Background:** Wound dressing is a nursing responsibility that requires excellent skills and knowledge.

**Objective:** This study aims to assess nurses' knowledge and practices regarding wound dressing in primary health care centers in Jeddah, KSA.

**Design:** A cross sectional descriptive design.

**Setting and Sample:** 74 nurses from 37 Primary Health Care centers (PHCs), at Jeddah, KSA.

**Tools:** two tools were used: Nurse's knowledge questionnaire regarding wound dressing in PHC centers and Wound Dressing Observational checklist.

**Results:** 74.3% of nurses had satisfactory level of knowledge and 20.3% of nurses had satisfactory level of practices regarding wound dressing, there were no relationships between demographic and work-related characteristics and nurses' knowledge and practices.

**Conclusion:** Most of nurses had satisfactory level of knowledge regarding wound dressing. In addition, more than three quarters of them had unsatisfactory practices regarding wound dressing. Also, there was no relationships between demographic and work-related characteristics and nurses' knowledge and practices. There was a significant negative correlation between level of nurse's knowledge and nurses' practices regarding wound dressing in primary health care centers in Jeddah, KSA.

**KEYWORDS:** Nurse's knowledge; Nurse's practices; Wound dressing; Primary health care centers

## INTRODUCTION

Wound dressing is a nursing duty that requires excellent skills and knowledge to prevent enormous complications. To prevent wound complications, it is necessary to study existing knowledge and practices as well as assessing the difference between these and, ideally, to lean more towards evidence-based practices for wound care BaMohammed [1].

Optimal wound management can be achieved by collaboration of multidisciplinary team. Since nurses' role s in wound

management is vital, they need to have objective education on wound management and should be empowered in their role amongst the other team members Kumarasinghe [2]. However, there is evidence that management and care of patient with wound injury requires a unique body of knowledge and skills from a range of multidisciplinary team members especially the nurse, and encompasses a wide variety of roles and responsibilities, mainly prevention of infection El-Sayed [3]. Beneficial effects of wound care training in improving nurses' knowledge in relation

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to wound care have been observed in many studies BaMohammed [1]; Nuru [4]. Nurses should be knowledgeable when applying wound dressing when dressing a specific wound, Nonetheless, the nurses' confidence in their ability to undertake appropriate wound management has been reported to be affected by their knowledge and this knowledge has been associated with the practice of wound dressing The lack of basic wound management knowledge can lead to wound mismanagement, resulting in unnecessary costs and the drainage of health care resources Ogunfowokan [5]. The need to enhance clinicians' knowledge of dressing selection and assessment skills in wound management is of great importance globally Münter [6].

The use of scientific nursing evidence in the treatment, and prevention of wounds, has as main objective the promotion of patient safety, since by this procedure, it is used and encourages the implementation of innovative practices. However, for nurses to have their evidence-based practice, you need to have appropriate and current scientific knowledge about the actions of treatment and prevention of wounds Faria [7]. However, studies report that nurses' practitioners have insufficient knowledge and lack skills in wound management assessment and dressing selection Weller [8]. Nurses who work in PHC centers have many roles in contexts of care such as wound dressings. The quality of care that nurses provide has a direct relationship to patient outcomes. Enhancing nursing performance either knowledgeable or practical will be resulted in improving patient safety and outcomes Swiger [9].

Wound management occurs primarily in the community with wounds being a common admission diagnosis to community nursing services and general practice where patients are seen for frequent on-going visits. Primary Health is a high priority area requiring more education and training particularly around evidence based wound management practice Innes-Walker et al. [10]. Wound management is a significant and growing issue worldwide. Knowledge of dressing products and clinical expertise in dressing selection are two major components in holistic wound management to ensure evidence-based wound care Weller et al. [8].

Approximately 10% of the patients suffers from wound infection in the world due to insufficient nursing wound care practice. Adequate level of skill and positive attitude are essential components in the delivery woundcare Weller et al. [8].

According to survey done by the World Health Organization demonstrated a prevalence of nosocomial infections in the range of 3-21%, with wound infections accounting for 5-34% of the total. According to retrospective study done in 2018, they identified that 8.2 million people had wounds with or without infections. Also, cost estimates for acute and chronic wound treatments ranged from \$28.1 billion to \$96.8 billion. Highest expenses were for surgical wounds followed by diabetic foot ulcers, with a higher trend toward costs associated with outpatient wound care compared with inpatient Sen [11].

Living with a wound to have a negative multifactorial impact on psychosocial health and well-being. This impact is recognized to be worsening with changing demographics and a population that is living longer with multiple comorbidities and chronic conditions. The majority of the burden lies within the community setting where PHC nurses and other community health and social care providers are responsible for wound management. Indeed, wound care represents between 35% and 65% of community nurses' caseloads, which has significant implications for an increasingly overstretched and pressurized PHC nurse work force Welsh [12].

## Statement of the Research Problem

Primary health care centers are part of health care setting that provide health care services for a large number of patients. Wound dressing is a major procedure that provided in PHC so it is important to determine the weakness and strengths in wound dressing which typically aims to improve nurses' performance toward this procedure. It was educational levels of nurses dealing with wound management. However, it was significant that nurses with bachelor degree showed high practice level compared to others nurses with other educational backgrounds Khudhair 2018. Additionally, high knowledge of aseptic technique and the level of overall knowledge is statistically significant with age and educational level of nurses during provide wound dressing care Dhakal [13].

## Significance of the Problem

The outcomes of this study contribute to nursing education, nursing practice, and future research in Saudi Arabia. It will provide baseline data for higher authority to plan for an initiation for staff development in order to improve quality of care. The study findings will also provide a unique exploration of level of nurses' knowledge and practice regarding wound dressing; thereby, contributing to body of knowledge on this subject. In service training and educational program can be designed for nurses to enhance their knowledge, attitude, and practice.

Significantly, it was evident that wound infection can increase the financial cost due to increase hospitalization as well as the increase of time-consuming for personnel in the health sector, increase the use of antibiotics and increase in the consumption of medical supplies Najm 2018. It is estimated that 25 % of cases of wound infections can be prevented by nurses by applying standard precautions during wound dressing. So, nurses can help to prevent wound infection, decreases patients' economic burden Sickder [14].

## The Aim of the Study

This study aims to assess nurses' knowledge and practices regarding wound dressing in primary health care centers in Jeddah, KSA.

**Research Questions:** The research questions posed in this study were:

1. What is the level of nurses' knowledge regarding the wound dressing in PHC centers in Jeddah, KSA?
2. What is the level of nurses' practices regarding the wound dressing in PHC centers in Jeddah, KSA?
3. What is the relationship between nurses' knowledge and practices regarding wound dressing in PHC centers in Jeddah, KSA?

## MATERIALS AND METHODS

### Materials

**Research Design:** Cross-sectional descriptive design used to conduct the present study and to answer the research question.

### Study Setting

The current study was conducted in wound dressing clinic in 37 Primary Health Care centers (PHCs), Ministry of Health at Jeddah, KSA, which is located in the Western Region of Saudi Arabia from October 2019 to September 2020.

### Sample Size

A convenience sample of 74 nurses were recruited from the previously mentioned setting. The sample size was calculated using Raosoft software with the following input; 5.0% margin of error (95.0% confidence level) and 416 nurses from 37 Primary Health Care centers (11 PHCs in King Fahad General Hospital, 9 PHCs in King Abdullah Medical Complex, 9 PHCs in East Jeddah General Hospital finally 8 PHCs in King Abdulaziz Hospital) Raosoft Inc. The calculated sample using Raosoft software were 74 nurses.

The nurses were selected from each primary health care center under each hospital mentioned above according to the following: 22 nurses was selected from PHCs in King Fahad General Hospital (2 nurses from each PHCs), 18 nurses was selected from PHCs in King Abdullah Medical Complex (2 nurses from each PHCs), 18 nurses was selected from PHCs in East Jeddah General Hospital (2 nurses from each PHCs), finally 16 nurses selected from PHCs in King Abdulaziz Hospital (2 nurses from each PHCs).

### Tools For Data Collection:

The data was collected using the following two tools:

I: Nurse's knowledge questionnaire regarding wound dressing in PHC centers:

Part 1: Demographic characteristics:

This part consists of the demographic data: consisting of age, gender, working experience, workplace, and educational level of the participants.

Part II: Nurse's knowledge questionnaire regarding wound dressing in PHC centers

This part was developed by Ferreira et al. [15] and modified by the researcher according to policy and procedure of wound dressing in Ministry of Health of Saudi Arabia, to assess nurses' knowledge regarding wound dressing. It consists of 28 questions divided as; definition of wound, wound classification & category, principle role of wound care, factors affecting wound healing, wound debridement, wound assessment and burned wound dressing. This tool was validated by 5 expertise in medical surgical specialty in nursing from faculty of nursing at King Abdulaziz University, with  $\geq 50\%$  consider satisfactory level regarding the overall score of these previous sections. The question responses were either "true", "false" or "don't know" options. The correct answer was given 1 score, while the incorrect answer and the response for "don't know" were given "zero". The maximum scores for this tool were 28, this score was multiplied by 3.57 to get 100, then categorized as follow:

- a)  $\geq 50\%$  as satisfactory.
- b) Less than 50 % as dissatisfactory.

II: Wound Dressing Observational checklist.

This tool adapted from Nkamare [16] and modified by researcher according to policy and procedure protocol and nurse's competency guidelines in ministry of health, Jeddah, then was validated by 5 experts in medical surgical specialty in nursing in faculty of nursing at King Abdulaziz University.

It is a structured checklist to assess nurses' practice regarding wound dressing, it consists of 34 items including three phases of interventions of nurses' practice; pre procedure items (1 to 8), intra procedure (9 to 31), and post procedure (32 to 34), 3 items (24,25,26) excluded from total score if wound irrigation not needed, with  $\geq 60\%$  consider satisfactory level of nurses practice regarding

wound dressing. The items were checked according to nurses' action during all of phases as "done correctly", "done incorrectly" or "not done". The correct nurse's action was given 2 score, while the incorrect practice was given 1 score and for "not done" were given "zero". The maximum scores for this tool were 68 when wound irrigation is used and 62 when it's not used.

- a)  $\geq 60\%$  satisfactory level.
- b) Less than 60% unsatisfactory level.

## METHODS

### Written Approval

An official-letters were issued from deanship of Postgraduate Studies - Faculty of Nursing Department, King Abdulaziz University to the Directorate of Health Affairs (General Department of Research and Studies), Ministry of Health, for obtaining their approval to carry out the study about nurses' knowledge and practices regarding wound dressing at Primary Health Care Centers in Jeddah -after explaining the study aim.

### Ethical Consideration

After obtaining the official permission from the Directorate of Health Affairs to conduct the study, the researcher started the process of data collection. Written informed consents to participate in the study were obtained from the participants after explanation of the aim of the study. The researcher affirmed to the administration authorities that; the conduction of the study will not affect the employee. Also, the anonymity, confidentiality, privacy and right to refuse were assured for all participants.

### Tool's Validity

The English questionnaires revised by five experts in the field of nursing in faculty of nursing at KAU to test the face and content validity regarding of content clarity, relevance, comprehensiveness, representativeness, logical consequence, appropriateness of the content to achieve the study aim and accurateness. The questionnaires were modified according to the experts' feedbacks (modifications were in the form of rephrasing some of the statements). Knowledge items achieved acceptable universal agreement between experts (S-CVI/UA = 0.83) and practice items achieved acceptable universal agreement between experts (S-CVI/UA = 0.85).

### Tool's Reliability

Reliability test had been performed for all study questionnaires to test the internal consistency using Alpha Cronbach test. Firstly, Nurse's knowledge questionnaire regarding wound dressing in PHC center's reliability test for the internal consistency was 0.719 Cronbach Alpha or 71.9% indicating a high internal consistency. Secondly, Wound Dressing Observational checklist reliability analysis was 0.850 Cronbach Alpha or 85.0% which indicates high internal consistency.

### Pilot Study

A pilot study was conducted on 10% of the study sample (8 participants) to test the tool applicability, clarity, and visibility of the tools as well as to the suitable time needed for each question. The pilot study was performed in February 2020. There were minor modifications done to the questionnaires according to the jury feedback, so the sample of the pilot study was excluded from the study sample.

## Data Collection Process

After obtaining the administrative approval to conduct the study and contacting the research affairs and administrative department in primary health care centers in each hospital, the data was collected four hours per day, five days per week in morning shift for every PHCs. The available nurses in those PHCs in dressing clinic were recruited. Then, nurses' written consents were obtained after explaining the aim of the study and assuring the confidentiality and anonymity, as well as their right to refuse and withdraw from the study at any time.

The nurses were fill the knowledge questionnaires during their presence in the clinic or the meeting room between or after the client visit and answer the question in the presence of the researcher. Each questionnaire needed approximately 30-40 minutes to be filled up. The researcher was the only person distributing and responding to nurses' inquiry. The researcher reviewed each collected questionnaire to assure its completeness and if there is any missing data. Moreover, the second tool was fill up by researcher through direct observation; it took approximately 10-20 minutes according to dressing situation. The data was collected by the researcher over three months, started from the beginning of July 2020 to the end of September 2020. Finally, the collected data was kept in locked locker and it will be destroyed after one year.

**Table 1:** Number and percentage distribution of satisfactory nurses' knowledge regarding wound definition, categories and coverage in PHC.

Parameter (N= 74)	Satisfactory Answer	
	N	%
Definition of wound.	67	90.5
Laceration wound definition.	31	41.9
<b>Categories of Wound and Wound Dressing</b>		
Clean wound categories	48	64.9
Wound coverage	64	86.5
Semi-transparent dressing	33	44.6
Antibiotic therapy	37	50

Table 2 describes nurses' knowledge regarding the principles for wound care and factors affecting wound healing; as regards to the principles for wound care it shows that more than half (56.8%) of them had satisfactory knowledge regarding using water-soluble emulsion cream and ointments in chronic wound. Nearly two fifths (43.2% and 40.5%) of them had satisfactory knowledge regarding using appropriate combining and safe products for wound dressing and using of wet dressing in chronic wound, respectively. More

**Table 2:** Number and percentage distribution of nurses' knowledge regarding principles for wound dressing and factors affecting wound healing in PHC.

Statement (N= 74)	Satisfactory Answer	
	N	%
Principle Role for Wound Dressing		
Usage of water-soluble emulsion cream and ointments in chronic wound.	42	56.8
Usage of appropriate combining and safe products for wound dressing.	32	43.2
Choosing of cost-effective dressing.	59	79.7
Usage of wet dressing in chronic wound	30	40.5
Wound healing mechanisms differ according to types of wounds.	51	68.9
<b>Factors Affecting Wound Healing</b>		
Wound infection.	57	77
Nutrition, cleanliness, rest and position.	60	81.1

## Data Analysis

Statistical Packages for Software Sciences (SPSS) version 21 has been used to perform all statistical analysis for this study [SPSS Inc., 2012]; the statistical tests used are (percentage, mean and standard deviation, paired and independent T test, ANOVA test and Pearson correlation). A value of  $p < 0.05$  was considered to be statistically significant.

## RESULTS

### Part I: Level of Nurses' Knowledge and Practices regarding Wound Dressing in PHC

Table 1 describes nurses' knowledge regarding wound dressing in relation to wound definition, categories and coverage. As regard to wound definition, results showed that majority (90.5%) of them had satisfactory knowledge. Regarding the wound categories and coverage; most (86.5%) of them had satisfactory knowledge regarding the selection of the wound coverage and less than two thirds (64.9%) of them had satisfactory knowledge regarding clean wound categories. In comparison, less than half (44.6%) of them had satisfactory knowledge regarding semi-transparent dressing while less than half (41.9% and 50%) of nurses had satisfactory knowledge regarding laceration wound definition and antibiotic therapy used in wound dressing respectively.

than three quarters (79.7%) know that nurses should choose cost effective dressing, and more than two-thirds (68.9%) of them know wound healing mechanisms. Regarding factors affecting wound healing it shows that most (77% and 81.1%) of nurses had satisfactory knowledge about wound infection, wound healing is affected by many different factors such as nutrition, cleanliness, rest and position.

Table 3 describes the nurses' knowledge regarding wound debridement and wound assessment. It reveals that less than half (48.6%) of nurses had satisfactory knowledge regarding autolytic debridement and more than one third (35.1%) of them had satisfactory knowledge regarding mechanical debridement. Also, nearly one third (33.8%) of them had satisfactory knowledge regarding autolytic debridement enzymes. In relation to wound assessment, it reveals that more than half (67.6%) of nurses had

a satisfactory knowledge regarding the classic signs of infection, nearly half (63.5%) of them had satisfactory knowledge regarding the wound assessment process. Meanwhile, more than one-third (33.8%) of nurses had satisfactory knowledge regarding of the importance of wound inspection. More than three quarters (75.7%) of nurses had satisfactory knowledge regarding the Braden scale usage.

**Table 3:** Number and percentage distribution of nurses' knowledge regarding wound debridement and wound assessment in PHC.

Statement	Correct Answer	
	N	%
<b>Wound Debridement</b>		
Autolytic debridement.	36	48.6
Mechanical debridement.	26	35.1
Autolytic debridement enzymes.	25	33.8
<b>Wound Assessment</b>		
Wound assessment process.	47	63.5
The classic signs of infection.	50	67.6
Inspection of wound.	25	33.8
Braden scale usage.	56	75.7

Regarding Burn wound dressing, this Table 4 illustrates that more than half (56.8%, 59.5% and 52.7%) of nurses had satisfactory knowledge regarding burn wound, burn wound dressing technique, burn wound dressing technique in hand and foot, burn wound technique in burned face, nurse's role in pulse diminished wound dressing respectively, and less than half (41.9%) of them had satisfactory knowledge regarding the patient participation

in removing the dressing. However, more than one third (33.8%) of them had satisfactory knowledge regarding occlusive dressing usage in skin grafts and in the burned wound, dealing with adhered dressing of burned wound. In contrast, nearly three quarters (73%) of them had satisfactory knowledge regarding complication of tight wrapped dressing.

**Table 4:** Number and percentage distribution of nurses' knowledge regarding burn wound dressing in PHC.

Statement	Correct Answer	
	N	%
<b>Burn wound Dressing</b>		
Burn wound dressing technique.	42	56.8
Burn wound dressing in hand and foot.	44	59.5
Usage of topical agent in burn wound dressing in face.	39	52.7
Occlusive dressing usage in skin grafts.	25	33.8
Complication of tight wrapped dressing.	54	73
Nurses' role in pulse diminished wound dressing in burn wound dressing	39	52.7
Dealing with adhered dressing of burned wound.	25	33.8
The patient role in burn wound.	31	41.9

Regarding the level of total nurse's knowledge, this Table 5 shows that; the majority (90.5% and 89.2%) of nurses had satisfactory knowledge regarding definition and factors affecting wound healing, whereas the means were (0.91±0.295 and 1.5811±0.68260) respectively. Nearly two-thirds (70.3% and 64.9%) had satisfactory knowledge regarding types, categories, and principle roles for wound care, whereas the means were (2.8784 ±1.03305 and 2.8919±1.25586). Also, it shows that more than half

(58.1%) of nurses had satisfactory knowledge about burn wound dressing, whereas the means were (4.0405±1.58278). While more than one-third (36.5%) had satisfactory knowledge regarding wound debridement, whereas the means were (1.2027±0. 81054). Additionally, it shows that nearly three quarters (75.7%) had satisfactory wound assessment knowledge, whereas the means were (2.2162±1.24163); (Table 6).

**Table 5:** Frequency distribution of nurses' regarding total knowledge of wound dressing in PHC.

Items (N= 74)	Satisfactory		Unsatisfactory		Mean &SD
	N	%	N	%	
Definition	67	90.5	7	9.5	0.91±0.295
Types, classification and Categories	52	70.3	22	29.7	2.8784±1.03305
Principle role for wound care	48	64.9	26	35.1	2.8919±1.25586
Factors affecting wound healing	66	89.2	8	10.8	1.5811±0.68260
wound debridement	27	36.5	47	63.5	1.2027±0.81054
Wound assessment	68	91.9	6	8.1	2.4054±0.87459
Burn wound dressing	43	58.1	31	41.9	4.0405±1.58278

**Table 6:** Number and percentage distribution of nurses' practices regarding preparation for wound dressing in PHC.

Items	Correctly done		Incorrectly done	
	N	%	N	%
<b>Pre-Procedure Items</b>				
Verify physician order for specific wound care medication and instructions.	54	73	20	27
Ask patient about allergies as tap, topical solution and medications.	9	12.2	65	87.8
Provide pain medication (as doctor prescription).	3	4.1	71	95.9
Introduce yourself to client.	29	39.2	45	60.8
Explain the procedure to patient.	33	44.6	41	55.4
Perform hand hygiene.	32	43.2	42	56.8
Prepare necessary equipment.	69	93.2	5	6.8
Place the patient in comfortable positions.	56	75.7	18	24.3

Figure 1 shows the satisfactory level of nurses' knowledge regarding wound dressing. Based on the study finding, slightly less than three quarters (74.3%) of nurses had satisfactory knowledge, while more than one quarter (25.7%) had unsatisfactory knowledge.

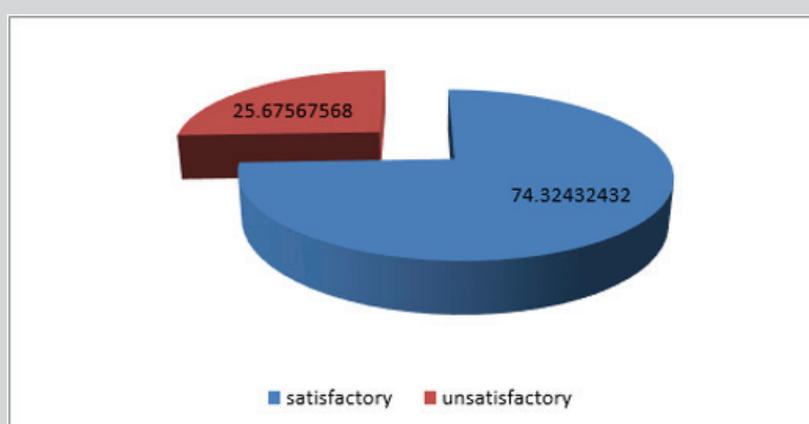
**Figure 1:** Percentage distribution of total nurses' knowledge regarding wound dressing (N= 74).

Table 7 describes nurses' pre-procedure items practice, it shows that; nearly three quarters (73% and 75.7%) of nurses verified physician order for specific wound care medication and instructions and placed the patient in comfortable positions. Meanwhile, a minority (12.2% and 4.1%) asked patients about allergies as tap, topical solution, and medications and provide pain medication (as

doctor prescription). Less than half (44.6% and 43.2%) explained the procedure to the patient and correctly perform hand hygiene. More than one-third (39.2%) of nurses introduced themselves to the client; meanwhile, most (93.2%) of them prepared the necessary equipment.

**Table 7:** Number and percentage distribution of nurses' practices regarding wound dressing in PHC.

Items			Correctly done		Incorrectly done
			N	%	N
a)	Put on PPE and clean gloves.	27	36.5	47	63.5
b)	Remove the old dressing from edges toward center of the wound.	16	21.6	58	78.4
c)	Discard dressing in disposable bag.	27	36.5	47	63.5
d)	Note the color and amount of the drainage.	58	78.4	16	21.6
e)	Observe the general condition of wound, anatomical location, presence of odor, color of wound bed and wound tissue loss.	60	81.1	14	18.9
f)	Measure the wound by use disposable paper measuring tap length& width.	3	4.1	71	95.9
g)	Pull off gloves and discard appropriate.	18	24.3	56	75.7
h)	Use sterile technique, open sterile dressing tray and arrange supplies in work area.	31	41.9	43	58.1
i)	Open cleaning solution and pour into the sterile container.	31	41.9	43	58.1
j)	Don sterile gloves.	29	39.2	45	60.8
k)	Saturate the sterile gauze pads with prescribed cleaning agent.	54	73	20	27
l)	Wipe from clean area to contaminated area.	24	32.4	50	67.6
m)	Use one gauze for each wipe.	22	29.7	52	70.3
n)	Discard each by dropping into the plastic bag after wiping.	19	25.7	55	74.3
o)	Clean all area of wound and wound surrounding in (circular or one-way direction) technique.	6	8.1	68	91.9

Table 8 describes nurses' practices regarding wound dressing; it shows that nearly one-third (36.5%, 39.2% and 32.4%) of them correctly performing steps; put on PPE and clean gloves, discarded dressing in a disposable bag, don sterile gloves and wipe from clean area to contaminated area. Additionally, it shows nearly one quarter (21.6 %, 24.3%, 29.7% and 25.7%) of them correctly did the following steps; pulls off gloves and discard appropriate, use one gauze for each wipe and discard each by dropping into the plastic bag after wiping and remove the old dressing from edges

toward the center of the wound correctly. Most (78.4%, 81.1% and 73%) of nurses noted the color and amount of the drainage, observed the general condition of the wound, anatomical location, presence of odor, color of the wound bed, and wound tissue loss and saturate the sterile gauze pads with prescribed cleaning agent correctly. However, a minority (4.1% and 8.1%) of them measured the wound by using disposable paper measuring tap length, width and clean all areas of the wound and wound surrounding in circular or one-way direction technique correctly.

**Table 8:** Frequency distribution of nurses' practices regarding post wound dressing practice in PHC.

Items	Correctly done		Incorrectly done	
	N	%	N	%
<b>Post Procedure</b>				
Hand hygiene	20	27	54	73
Provide patient teaching	16	21.6	58	78.4
Proper documentation	19	25.7	55	74.3

Table 9 illustrates nurses' post-procedure items practice; it shows that nearly one quarter (27% and 25.7%) of them have done hand hygiene and proper documentation correctly. Also, it shows

that nearly one-fifth (21.6%) of nurses provide patient teaching correctly.

**Table 9:** Frequency distribution of total nurses' practices regarding wound dressing in PHC (N=74).

Parameter	Satisfactory		Unsatisfactory		Mean &SD
	N	%	N	%	
Preparation for wound dressing	26	35.1	48	64.9	3.8514±1.58488
Nurses' practices regarding wound dressing	10	13.5	64	86.5	9.4054±4.46269
Nurses' practices regarding post wound dressing	11	14.9	63	85.1	0.7432±0.90752

Regarding items of wound practice Table 10 shows that more than one third (35.1%) of nurses had satisfactory practice of pre-procedure steps, whereas the mean was (3.8514±1.58488). Additionally, it shows that minority (13.5% and 14.9%) had satisfactory practice regarding intra and post-procedure whereas the means were (9.4054±4.46269 and 0.7432±0.90752). Regarding the total practice of wound dressing, Figure 2 shows that nearly

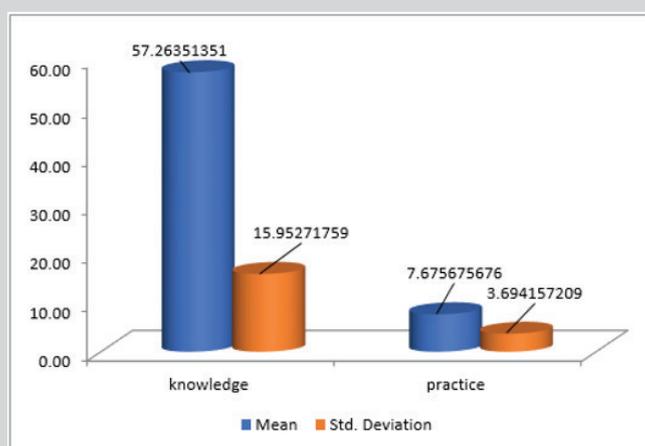
one-fifth (20.3%) of nurses had satisfactory practices, while more than three quarters (79.7%) of them had unsatisfactory practices of wound dressing. With regards to the mean and SD of nurses regarding total knowledge and total practices, this Figure 3 shows that, the mean of knowledge was (57.26±15.95), and the mean of practices was (7.68±3.69).

**Table 10:** Relation between demographic characteristics and nurses' knowledge regarding wound dressing.

Parameter (N= 74)	Mean SD	F and T test	Sig
<b>Age</b>			
25-30	64.9091±6.32399	0.519	0.671
31-35	59.6591± 13.93107		
36-40	58.1250± 14.89308		
41-60	60.000 ± 16.77051		
<b>Gender*</b>			
Male	58.2000± 11.30818	-0.647	0.52
Female	60.3827± 14.78845		
<b>Educational level *</b>			
Diploma in Nursing	58.9615± 14.05481	-1.159	0.25
bachelor's degree in nursing	64.5833± 9.70261		
<b>Work Experience</b>			
1- 5 years	56.2500±0	2.111	0.107
6-10 years	63.125± 12.68430		
11-15 years	55.8446± 13.07382		
More than 15 years	64.1667± 14.60258		
<b>Place of work</b>			
PHC of King Fahad Hospital	53.5227 ± 16.25062	2.261	0.089
PHC of King Abdullah Complex	63.1250± 11.37795		
PHC of Jeddah East Hospital	61.250± 12.86239		
PHC of King Abdulaziz Hospital	62.3438± 11.19780		



**Figure 2:** Percentage distribution of total nurses' practices regarding wound dressing (N= 74).



**Figure 3:** Mean and SD of nurses' regarding their satisfactory level of knowledge and adequate practices (N= 74).

## Part II: The Relationships between Nurses Knowledge and Practices Regarding Wound Dressing with their Characteristics

Regarding the relation between demographic and work-related characteristics and nurses' knowledge, Table 11 reveals that nurses from 25 to 30 years had the highest mean (64.9091±6.32399) of knowledge with insignificant difference, whereas  $p$ -value > 0.05. Comparing to males, it shows that females had a higher mean score of knowledge (60.3827±14.78845) with an insignificant difference, whereas  $p$ -value>0.05. Also, it reveals that nurses with bachelor's degrees had the higher mean of knowledge (64.5833±9.70261) with an insignificant difference, whereas  $p$ -value>0.05. Also, it

reveals an insignificant difference between nurses' knowledge with workplace and work experience, whereas  $p$ -value>0.05.

Regarding the relation between demographic and work-related characteristics and nurses' practices, Table 11 reveals that nurses from 25 to 30 years had the highest mean (9.6364±4.47823) of practice with an insignificant difference, whereas  $p$ -value > 0.05. Also, it reveals that nurses with work experience from one to five years had the highest mean of practice (15±0.0) with an insignificant difference, whereas  $p$ -value > 0.05. Additionally, it reveals an insignificant difference between nurses' practices with gender, educational level and workplace, whereas  $p$ -value > 0.05.

**Table 11:** Relation between demographic characteristics and nurses' knowledge regarding wound dressing.

Parameter (N= 74)	Mean SD	F and T Test	Sig
<b>Age</b>			
25-30	9.6364±4.47823	0.847	0.473
31-35	8.4091±3.80049		
36-40	8.3235 ±4.22633		
41-60	6.5714 ±1.81265		
<b>Gender*</b>			
Male	8.7600 ±3.76696	0.587	0.559
Female	8.1837 ±4.10119		
<b>Educational Level*</b>			
Diploma in Nursing	8.4308±3.95668	0.303	0.763
bachelor's degree in nursing	8.0000 ±4.33013		
<b>Work Experience</b>			
1- 5 years	15.0000±0	1.376	0.257
6-10 years	8.2222 ±3.96389		
11-15 years	7.8919 ±4.02619		
More than 15 years	9.1667 ±3.74559		
<b>Place of Work</b>			
PHC of King Fahad Hospital	7.9545 ±3.92158	2.027	0.118
PHC of King Abdullah Complex	9.3333 ±4.74032		
PHC of Jeddah East Hospital	9.5000 ±3.43426		
PHC of King Abdulaziz Hospital	6.6250±3.22232		

Table 12 illustrates the correlation between knowledge and practice of nurses; it illustrates that significant negative correlation between nurse's knowledge and practice whereas  $p$ -value > 0.043.

**Table 12:** Correlation between knowledge and practices among nurses in PHC.

Parameters	Nurses' practice	
	R	P
	-0.236	0.043
** Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

## DISCUSSION

The assessment of current study shows participants' knowledge regarding wound dressing revealed that, the mean percent score of study participants had satisfactory level of study participants' knowledge regarding wound dressing. Based on the study finding, nearly three quarters (74.3%) of nurses had satisfactory knowledge, while slightly more than one quarter (25.7%) had poor knowledge.

The high level of knowledge referred mostly to the participants who have practical experience 11 to 15 years and who are receiving in-service education and training.

In addition, all PHCs have undergone a CBAHI assessment of the quality of nursing services to ensure the highest quality of work and services in all PHCs. By comparison of this finding with the findings of other studies which used the similar tool for measuring

the knowledge about wound dressing, the current study finding was, to some extent, near the findings of Ferreira et al. 2014, who found that the mean percent scores of satisfactory level of wound dressing knowledge among nurses was precisely two third (69.4%) and the result of the study conducted by Anjumol 2016, to determine the level of wound dressing knowledge and practice among 30 participants, 15 were staff nurses and 15 were nursing students, who stated that the mean scores of the nurse knowledge in his study were majority had satisfactory of knowledge level.

Moreover, Ferreira et al. [15] reported that the mean score of satisfactory level regarding wound dressing knowledge among participants from tertiary university hospital in São Paulo State in Brazil was satisfactory level in overall the knowledge level with insufficient knowledge level in some areas on the subject. That highlights the need to update current evidence supporting the care of patients with wounds. Further study done by Bilal 2018 was consistent with current study. They conducted a study among the nurses in two tertiary care hospitals to determine the knowledge, attitude, and practices regarding diabetic foot dressing among 250 nurses in Pakistan. They found that approximately three quarters (74.9%) of the study participants had a satisfactory level of knowledge about the diabetic foot's wound care, and about a quarter (25.1%) had an unsatisfactory level. In addition, they reported that more than three quarter (76.0 %) had a satisfactory level of knowledge regarding wound types, classifications, and categories of wound among participants.

In contrast, findings are not consistent with the findings of the study conducted by Faria et al. 2016 to assess the knowledge of nurses on the evaluation and treatment of wounds and describe the clinical practice in the care of wounds among 55 nurses in a hospital public education in Brazil.; the authors reported unsatisfactory level to wound types, classifications, and categories among participants. They recommend educational strategic planning aimed at a plan of action for the use of recommendations focused on evidence-based practice.

Moreover, the findings of this study were inconsistent with the findings of another study that was conducted by Ogunfowokan 2016 to assess clinical nurses' knowledge and perception of modern wound dressing among 183 nurses in medical and surgical units of a tertiary teaching hospital in South-West, Nigeria. the authors reported more than half (60.1%) had unsatisfactory level regarding items to test nurse's knowledge related to factors affecting wound healing among participants. They recommend updating nurses' knowledge through seminars, workshops, or short-course programs for patients' health improvement.

The current study's findings revealed that, regarding the total practice of wound care, nearly one-fifth (20.3%) of nurses had satisfactory practice, while more than three quarters (79.7%) had an unsatisfactory practice of wound care. That is referred to a lack of supervision and, in most PHCs, lack of awareness about policy and procedure. This suggests the need to reinforce and develop supervision of clinical practices on wound dressing application. These supervisions would assist both junior and senior nurses and other key stakeholders (e.g., nurses' managers, policymakers, and educators) to improve nurses' services, thus, minimizing patient suffering.

These findings are congruent with a study done by Saleh 2019, aimed to assess nurses' practice of pressure ulcer wound management in Jordan among nurses, who found that nearly half of

the nurses have an unsatisfactory level nurse's practice regarding wound dressing procedure. Besides, other findings are compatible with the study's findings conducted by Najm 2018 to assess wound dressing practices among nurses in Erbil emergency hospitals; the authors reported more than half of participants had (65.6%) as an unsatisfactory level to wound dressing practice.

Also, other findings of the current study are congruent with a study done by BaMohammed et al. [1] that aimed to explore existing wound care practices among nurses and to measure the effectiveness of a wound management course on their performance in Saudi Arabia. The authors reported majority of nurses had an unsatisfactory level to wound dressing practice. However, these findings are not congruent with a study done by Dhanasundari 2019, aimed to assess the practice of aseptic techniques on surgical wound dressing among staff nurses in tertiary care teaching hospital at Pondicherry in Indian. The authors reported that most of (80.0%) the nurses have a satisfactory level of nurse's practice regarding pre-procedure preparations.

In addition, other findings are incongruent with a study done by Ba Mohammed et al. [1], aimed to explore existing wound care practices among nurses and measure the effectiveness of a wound management course on their performance in Saudi Arabia. The authors reported that, in intra-procedure steps the compliance in this phase was above 90% in each of the steps [17,18].

Other findings are also inconsistent with a study done by Tela [2018], aimed to assess nurses' practice regarding post-operative wound care and identify associated factors among nurses in Ethiopia. The authors reported that more than half of nurses had a satisfactory level to wound dressing practice regarding intra-procedure preparations.

More than half (55.5%) of nurses open sterile dressing sets on trolley (patient bedside) and Open bottle of antiseptic solution or saline, pour into sterile basin, remove gloves by pulling out the inside of them and clean wound with antiseptic solution use gauze swab from least contaminated area to most contaminated. Most of nurses they cover the wound with sterile gauze, while slightly above a fifth they dispose or return of supplies to their proper place [19-21].

Finding of current study showed that, there is relationship between nurses' knowledge and practices. Regarding the correlation between study participants' knowledge and practice about wound dressing, it illustrates that significant negative difference between nurse's knowledge and practice.

This finding is contradiction with the finding of the study done by El-Sayed et al. [3], who found that, there are no relation between the study participants' knowledge and practice regarding wound dressing. The current study finding may highlight the positive effect of the participants' knowledge on their practice; which in turn will increase the level of study participants' engagements in professional wound dressing practice.

## LIMITATIONS

In this study, nurses' knowledge and practice about wound dressing of 74 nurses working in 37 primary health care centers in the ministry of health which is out of 45 PHCs. The PHCs which were not included were converted to screening centers due to the Covid-19 pandemic, that's why it was not possible to include them in the study.

## RECOMMENDATIONS

Further research are required and more attention to identify and implement effective strategies to enhance wound dressing management knowledge in health professionals.

## CONCLUSION

In conclusion, there was satisfactory level of nurses' knowledge regarding wound dressing. Based on the study finding, slightly nearly three quarters of nurses had satisfactory knowledge. Also, more than three quarters of them had unsatisfactory practices of wound dressing. Regarding of wound practice, it shows that more than one third of nurses had satisfactory practice of pre-procedure steps, Additionally, it shows that minority had satisfactory practice regarding intra and post-procedure. However, there was no relationships between demographic and work-related characteristics and nurses' knowledge and practices. In addition, there was significant negative correlation between level of nurse's knowledge and nurses' practices regarding wound dressing in primary health care centres in Jeddah, KSA.

## REFERENCES

- BaMohammed A, Mohidin S, George B, Al-Aidarous S (2018) An observational study on wound dressing performance among nurses in adult units. *IOSR Journal of Nursing and Health Science* 7(3): 01-06.
- Kumarasinghe SA, Hettiarachchi P, Wasalathanthri S (2018) Nurses' knowledge on diabetic foot ulcer disease and their attitudes towards patients affected: A cross-sectional institution-based study. *J Clin Nurs*, 27(1-2): e203-e212.
- El-Sayed ZM, Gomaa A, Abdel-Aziz M (2015) Nurses' knowledge and practice for prevention of infection in burn unit at a university hospital. *IOSR Journal of Nursing and Health Science* 4(4): 62-69.
- Nuru N, Zewdu F, Amsalu S, Mehretie Y (2015) Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. *BMC nursing* 14(1): 34.
- Ogunfowokan AA, Adereti CS, Daramola LS, Famakinwa TT (2016) Clinical nurses' knowledge and perception of modern wound dressing in a teaching hospital in Nigeria.
- Münter KC (2016) Education in wound care: Curricula for doctors and nurses, and experiences from the German wound healing society ICW. *Mil Med Res* 3(1): 29.
- Faria GBG, Lima EFA (2016) Knowledge and practice of nurses on the care of wounds. *J Nurs UFPE on line* 10(12): 4532-4538.
- Weller CD, Team V, Sussman G (2020) First-Line interactive wound dressing update: A comprehensive review of the evidence. *Front Pharmacol* 11: 155.
- Swiger PA, Vance DE, Patrician PA (2016) Nursing workload in the acute-care setting: A concept analysis of nursing workload. *Nursing outlook* 64(3): 244-254.
- Innes-Walker K, Parker C, Finlayson K, et al. (2019) Improving patient outcomes by coaching primary health general practitioners and practice nurses in evidence based wound management at on-site wound clinics. *Collegian* 26(1): 62-68.
- Sen CK (2019) Human wounds and its burden: an updated compendium of estimates. In: 140 Huguenot Street, 3<sup>rd</sup> Floor, Mary Ann Liebert Inc., publishers, New York, USA.
- Welsh L (2018) Wound care evidence, knowledge and education amongst nurses: a semi-systematic literature review. *Int Wound J* 15(1): 53-61.
- Dhakal B, Angadi S, Lopchan M (2016) Nurses' knowledge and practice of aseptic technique in the operation theatre at selected hospitals of Bharatpur. *Int J Adv Nur Management* 4(3): 276-278.
- Sickder HK, Lertwathanawilat W, Sethabouppha H, Viseskul N (2017) Nurses' surgical site infection prevention practices in Bangladesh. *Pacific Rim International Journal of Nursing Research* 21(3): 244-257.
- Ferreira AM, Rigotti MA, da Silva Barcelos L, Simão CMF, Ferreira DN, et al. (2014) Knowledge and practice of nurses about care for patients with wounds. *Revista de Pesquisa: Cuidado é Fundamental Online* 6(3): 1178-1190.
- Nkamare M, Nnodimele A, Edith O (2013) An assessment of wound dressing b university teaching hospital. In. Maureen B, Nkamare Faculty of Nursing, Niger Delta University Bayelsa Remo, Ogun State, Nigeria. *Nursing Science* 5(1): 21-29.
- Crowder M (2017) Analysis of repeated measures, Routledge, London, UK.
- Goundar S (2012) Research methodology and research method.
- Launiala A (2009) How much can a KAP survey tell us about people's knowledge, attitudes and practices? Some observations from medical anthropology research on malaria in pregnancy in Malawi. *Anthropology Matters* 11(1).
- Sadia H, Kousar R, Azhar M, Waqas A, Gilani S (2017) Assessment of nurses' knowledge and practices regarding prevention of surgical site infection. *Saudi J Med Pharm Sci* 3(6): 585-595.
- Wang KT (2015) Research design in counseling: Nelson Education.