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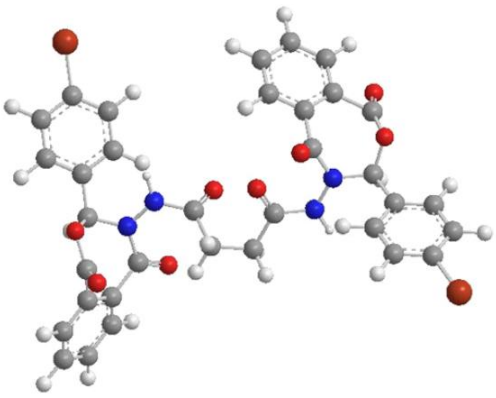

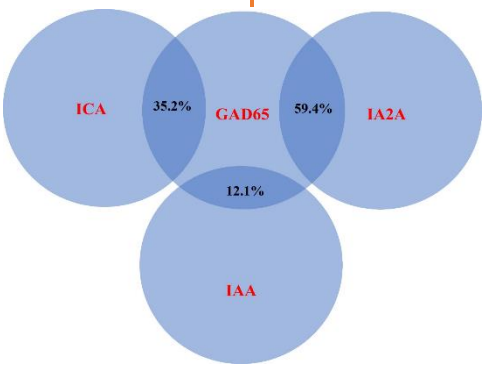

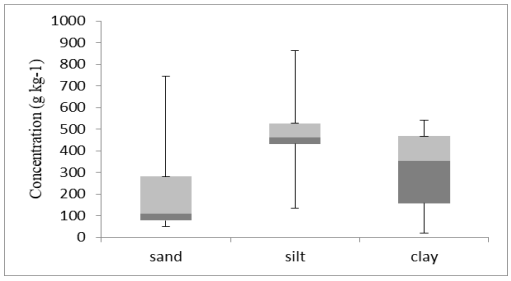

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Nurses' Knowledge and Practice Regarding Burn Wound Dressing in Sulaimaniyah, Iraq

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Abstract

Background: Burn is a public health issue, and the disinfected practice plays an important role in caring for patients with burns to reduce infection faster, recover, and maintain the status. **Objectives**: To assess nurses' knowledge and practice regarding burn wound dressing and utilizing aseptic techniques in dressing burn wounds. **Patients and methods**: The quantitative descriptive study using a non-probability convenience sample technique was used to recruit 45 nurses at Burn Plastic and Reconstructive Surgery Hospital, Sulaimaniyah, Iraq, from April to September 2022. A questionnaire was used to collect nurses' sociodemographic characteristics and their knowledge, while an observational checklist was used to evaluate their practice regarding burn wound management. **Results:** The mean age of participants was 40.8±6.7, most of whom were Nursing Institute graduates (86.7%). The mean score of experience as a nurse and in burn units were 16.1±5.6 and 14.8±4.9, respectively, and most of them (91.1%) had good knowledge regarding burn wound management. The proportion of satisfactory practice levels regarding preparation, procedure of burn wound dressing and general practice were 64.4%, 68.9%, and 66.7%, respectively. The proportion of regular introducing self, explaining the procedure, hand hygiene before the process, and documentation were zero. **Conclusions:** The nurses' knowledge of burn wound management was good, and most had satisfactory overall wound dressing practice. However, introducing themselves, explaining the procedure, hand washing, and documentation were the weakest aspects of the practice.

Introduction

Burns are among the most painful injuries and a worldwide community well-being problem. They are the 4th most popular kind of trauma globally after traffic accidents falls, and social violence. Almost 90% of burns occur in low-to-middle-income regions, especially those that require the organization to decrease the occurrence and harshness of burns [1].

Severe burn injuries are the common leading causes of morbidity and mortality in many countries [2], including most developing countries such as Iraq [3]. The burn death rate has been estimated as 27% in hospital-admitted patients in Iraq [4], and it is estimated that about 75% of the burn mortality is due to infections of burned wounds or other infectious complications in burned patients [2].

The burned wound area is disposed to quick bacterial contamination with the possible offensive infection. Actions to lower the chances of infection are proper infection control practices, thus; closed dressing management is frequently advised to decrease the cross-contamination by pathogens that delay wound healing and loss of skin grafts [5]. An infected burn wound needs regular dressing with proper local care [6]. Thus, the critical clinical proficiencies in healthcare is a sterilised procedure to protect patients from infections caused by pathogens [7].

The reasons for high morbidity and mortality in burn injuries may be due to nonadherence to aseptic techniques by the nurses during burn wound care [8]. Nurses must play a vital role in burn ward care; thus, nurses must have the knowledge and proper skill of the multisystem affected by a burn, aseptic techniques, and appropriate diagnostic and psychosocial skills. Also, nurses should be specialists in wound care and management and notice abnormal changes during the burn wound healing. Consequently, these practices help nurses to control burn infections and manage pain [9].

Burned injury is hypothetically life-threatening situation, and burned patient demands special care. Knowledgeable and experienced nurses should offer this care based on specific guidelines and protocols to prevent infection and complications. The management and maintenance of burned patients need an entire body of knowledge and skills from a responsible multidisciplinary team. Thus, capable nurses should be well-practised, and specific infection control guidelines should be developed for that purpose, especially to prevent/control hospital-acquired infection [10]. Therefore, the current study aimed to assess nurses' knowledge and practice regarding burn wound dressing in Sulaimaniyah City, Iraq.

Materials and Methods

Study design and setting

This quantitative descriptive study was conducted on 45 nurses caring for burn patients at the burn unit in Burn Plastic and Reconstructive Surgery Hospital, Sulaimaniyah, Iraq, from April to September 2022.

Inclusion criteria

All permanent nurses worked at the burn unit who cared for burned patients, regardless of age, gender, and nationality.

Exclusion criteria

Nurses who worked in the burn care unit but were not involved in direct patient care, such as head nurses, clinical instructors, nurse managers, and volunteer nurses.

Ethical considerations

Ethical approval was taken from the Ethical Committee of the College of Medicine, University of Sulaimani, Sulaimaniyah, Iraq (No. 25 on February 02/2022/UoS), while official permission was obtained from the Sulaimani Directorate of Health and hospital authority. Written consent describing the purpose and benefits of the study was taken from participants.

Questionnaire

The questionnaire content validity and instrumentation tool were established through a panel of 10 experts in the nursing and medicine field. Then, a validated questionnaire was used to collect nurses' sociodemographic characteristics such as gender, age, education level, marital status, years of work experience as a nurse in burn units, and attendance in training courses on burn management. Another part of the questionnaire comprised 10 items on managing burned wound knowledge. Each question had 3 answer choices (Yes, No, or I don't know). A score of 1.0 was given for the answer Yes and 0.0 for No, or I don't know. Aggregated knowledge scores ranged from 0–10 and were converted to percentile (0–100%). Scores of <50% considered poor knowledge levels, 50-75% regarded fair knowledge, and 75-100% considered good knowledge.

Observational checklist

This tool was intended to observe nurses' practices while managing burned wounds. It covered 2 main practice phases, including preparation observation for wound care (phase 1) with 13 sub-items and specific wound dressing procedure (phase 2) with 12 sub-items. The researcher observed each nurse 3 times, and each performance was recorded as 3.0 for always, 2.0 for some time, and 0.0 for never performed. The scores of 3 trials were summed and divided by 3 to calculate the mean score of the item. A similar method was used to calculate the mean score of both practice's phases and overall practice. The mean scores for each item, each phase, and overall practice ranged from 1–3. A mean score ≤2.33 is considered unsatisfactory practice, while >2.33 is regarded as satisfactory [11].

Study protocol and data collection

The burn unit was visited daily, and nurses were approached during morning, evening, and night shifts. Then, detailed information on the questionnaire used was introduced to the nurses. Proper guidance was provided to nurses to understand the questions, and they were asked to answer freely to the questions. Each nurse took 25-30 minutes to fill out the questionnaire. On the other hand, nurses' direct observation was carried out using the observational checklist, and each nurse was directly observed while performing care 3 different times to exclude subjectivity.

Statistical analysis

The instrument reliability was measured before the data collection through the correlation coefficient (0.81). Statistical Package for the Social Science (SPSS, version 26) was used to analyse the data. The differences are considered significant when the p-value ≤ 0.05.

Results

The mean participants' age was 40.8±6.7 years. Most participants were females (51.1%), aged 30-39 years (53.3%), married (93.3%), with incomes equal to their expenditure (51.1%), graduated from a Nursing Technical Institute (86.7%), and attended training courses (93.3%). The mean experience of participants as a nurse was 16.1±5.6 years, and most (40%) had 8–12 years of experience. Whereas the mean expertise of nurses in the burn unit was 14.8±4.9, most of them (48.9%) had 17-21 years of experience in burn management (Table 1).

Table 1: Distribution of participants' characteristics.

Participants' characteristic		**Frequency**	**Percentage**
Age group (Years)	30 – 39	24	53.3
	40 – 49	18	40.0
	≥ 50	3	6.7
Gender	Male	22	48.9
	Female	23	51.1
Marital status	Single	3	6.7
	Married	42	93.3
Financial status	Incomes < Expenditure	20	44.4
	Incomes = Expenditure	23	51.1
	Incomes > Expenditure	2	4.4
Levels of education	Secondary School Nursing	6	13.3
	Technical Nursing Institute	39	86.7
Experience as a nurse (Years)	8 – 12	18	40.0

	13 – 17	8	17.8
	18 – 21	14	31.1
	≤ 22	5	11.1
Experience in the Burn Unit	7 - 11	14	31.1
	12 - 16	7	15.6
	17 - 21	22	48.9
	≥ 22	2	4.4
Training course	No	3	6.7
	Yes	42	93.3
Total		**45**	**100**

Most participants (88.7%) knew that the site of the wounds and the coronary disease affected wound healing (80%), and iodine solution can be used for dressing dry clean wounds (86.7%). Also, most participants (90%) had correct knowledge regarding the effect of infection as high risk and the absence of guidelines is a main barrier to using an aseptic technique. Whereas >90% of participants believed that preventing wound contamination through constructively securing dressing supports wound healing. Almost 97.8% knew the negative effect of diabetes millets and the positive effects of utilizing hand washing before and after each wound dressing on wound healing. About 95.6% of participants believed the aseptic technique could prevent wound infection. All participants knew personal protective devices could protect patients from cross-contamination (Table 2).

Table 2: Distribution of participants' knowledge regarding burn wound management.

Item	**Knowledge**	**Correct**		**Incorrect**	
		Frequency	**%**	**Frequency**	**%**
1	Site of wounds don't have a role in wound healing	39	88.7	6.0	13.3
2	Coronary artery diseases not affect wound healing	36	80	9.0	20
3	Diabetes mellitus affect wound healing	44	97.8	1.0	2.2
4	Infection is the highest risk of burn	40	88.9	5.0	11.1
5	Infection can be prevented through use of aseptic technique during dressing or wound care	43	95.6	2.0	4.4
6	Hand washing is very important before/after each dressing procedure	44	97.8	1.0	2.2
7	The use of PPE devices also helps to protect the patient from potential cross contamination	45	100	0.0	0.0
8	Povidone iodine solution used for (clean wound) dressing	39	86.7	6.0	13.3
9	Securing dressings in a constructive manner support wound healing by prevention wound contamination	41	91.1	4.0	8.9
10	One of the barriers that prevent perform of aseptic technique is lack of guide line	40	88.9	5.0	11.1
Overall Knowledge			91.1		8.9
Total		**45**	**100**	**45**	**100**

PPE: Personal protective equipment

Participants' knowledge was good for 91.1% of nurses, and the average level of knowledge was 8.9% (Figure 1).

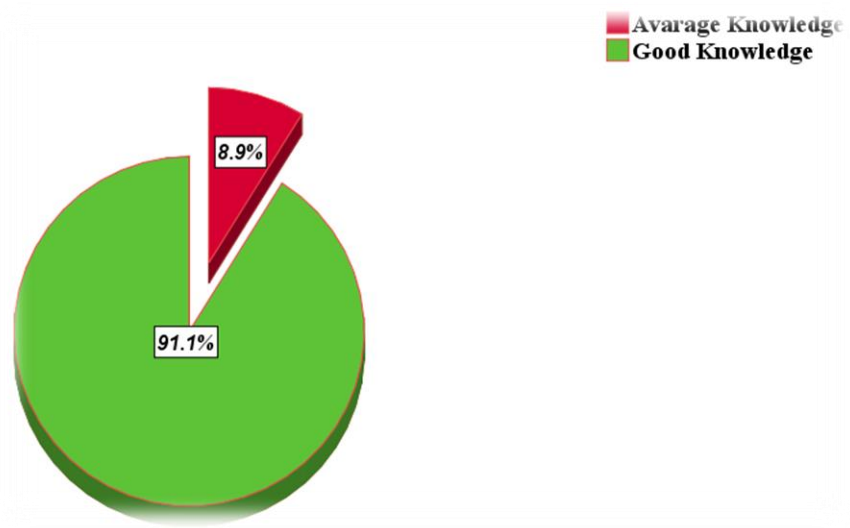

Figure 1: The levels of knowledge regarding burn wound management.

Regarding the participants' practice on preparation of burn wound dressings, none of the participants introduced themselves or explained the procedure to the patients permanently and 8.9% always had patients' consent, and 13.4% assessed the need for pain medication before every practice. Also, 26.7% considered the wound; note the wound for healing signs, infection signs, and drainage usually, while 42.2% performed hand hygiene regularly, 68.7% used normal saline to open the old dressing if needed, 73.3% assisted the patient to a comfortable position, 75.6% provided patient privacy completely, 80% always greeted the patients, prepared and gathered equipment and 84.4% used personnel protective equipment (PPE) and 88.9% removed the solid dressing and discarded immediately. None of them always did wash their hands pre-procedure or documented notes regarding the dressing procedure. About 11.1% of nurses always maintained an aseptic technique, while 66.7% did it sometime. The mean scores for the above items were ≤2.33, which is considered unsatisfactory practice (Table 3).

Table 3: Distribution of participants' practice regarding preparation of burn wound dressings.

Wound dressing preparation item	Never	Sometime	Always	Mean ± SD*
	Number, (%)			
Greeted the patient	0.0 (0.0)	9.0 (20)	36 (80)	2.80 ± 0.41
Introduced himself/herself	38 (84.4)	7.0 (15.6)	0.0 (0.0)	1.16 ± 0.37
Explaining the procedure for the patient	44 (97.8)	1.0 (2.40	0.0 (0.0)	1.02 ± 0.15
Patient's consent	3.0 (6.7)	38 (84.4)	4.0 (8.9)	2.02 ± 0.40
Prepare and gathered equipment	0.0 (0.0)	9.0 (20)	36 (80)	2.80 ± 0.41
Provide patient privacy	0.0 (0.0)	11 (24.4)	34 (75.6)	2.76 ± 0.44
Perform hand hygiene	5.0 (11.1)	21 (46.7)	18 (42.2)	2.31 ± 0.67
Assess need for pain medication	20 (44.4)	19 (42.2)	6.0 (13.4)	1.69 ± 0.70
Apply clean gloves, gown, cap, and mask	0.0 (0.0)	7.0 (15.6)	38 (84.4)	2.84 ± 0.38
Assist the patient to a comfortable position to the wound area	0.0 (0.0)	12 (26.7)	33 (73.3)	2.73 ± 0.46
Loosen tape and open bandage on the old dressings and use normal saline if need	0.0 (0.0)	14 (31.3)	31 (68.7)	2.69 ± 0.47
Remove the soiled dressing and discard immediately	0.0 (0.0)	5.0 (11.1)	40 (88.9)	2.89 ± 0.32
Assess the wound, note wound for healing signs, infections, and drainage	12 (26.7)	21 (46.6)	12 (26.7)	2.00 ± 0.74

* Mean score ≤2.33 considered unsatisfactory practice

Additionally, 37.8% of the nurses always used the correct direction while cleaning the wound and 44.4% opened the sterile dressing tray correctly, 51.1% used a safety box to distract sharp tools permanently, 62.3% poured the solution into a clean basin, and 65.6% removed gloves, disposed of, and washed their hand correctly. Most nurses (80%) always applied the proper dressing material, 87.8% usually cleaned and disinfected reusable equipment properly, and 97.8% used sterile gloves and constantly secured the dressing with tape or bandage (Table 4).

Table 4: Distribution of participants' practice regarding procedure of burn wound dressings.

Wound dressing procedure item	Never	Sometime	Always	Mean ± SD*
	Number, (%)			
Hand washing	40 (89.9)	5.0 (11.1)	0.0 (0.0)	1.11 ± 0.32
Sterile gloves	0.0 (0.0)	1.0 (2.2)	44 (97.8)	2.98 ± 0.15
Open sterile dressing tray or set up sterile supplies and cleansing solution	1.0 (2.2)	24 (53.4)	20 (44.4)	2.42 ± 0.54
Pour solution into sterile basin	2.0 (4.4)	15 (33.3)	28 (62.3)	2.58 ± 0.58
Clean the wound from top to bottom and from the center to the outside	0.0 (0.0)	28 (62.2)	17 (37.8)	2.38 ± 0.49
Maintain the aseptic technique throughout the procedure	10 (22.2)	30 (66.7)	5.0 (11.1)	1.89 ± 0.57
Apply prescribed dressing materials, then sterile gauze	0.0 (0.0)	9.0 (20)	36 (80)	2.80 ± 0.41
Secure the dressing with tape and bandage if needed	0.0 (0.0)	1.0 (2.2)	44 (97.8)	2.98 ± 0.15
Remove gloves, dispose, and wash hands	0.0 (0.0)	20 (44.4)	25 (65.6)	2.56 ± 0.51
Presence of safety box	0.0 (0.0)	22 (48.9)	23 (51.1)	2.51 ± 0.51
Reusable equipment cleaned and/or disinfected appropriately	0.0 (0.0)	10 (22.2)	35 (87.8)	2.78 ± 0.42
Document the dressing procedure, any abnormal and assessment findings	44 (97.8)	1.0 (2.2)	0.0 (0.0)	1.02 ± 0.15

* Mean score ≤2.33 considered unsatisfactory practice

The satisfactory level of practice was slightly higher during the wound dressing procedure (68.9%) than during preparation for the dressing procedure (64.4%), while the satisfactory level of overall practice was 66.7% (Figure 2).

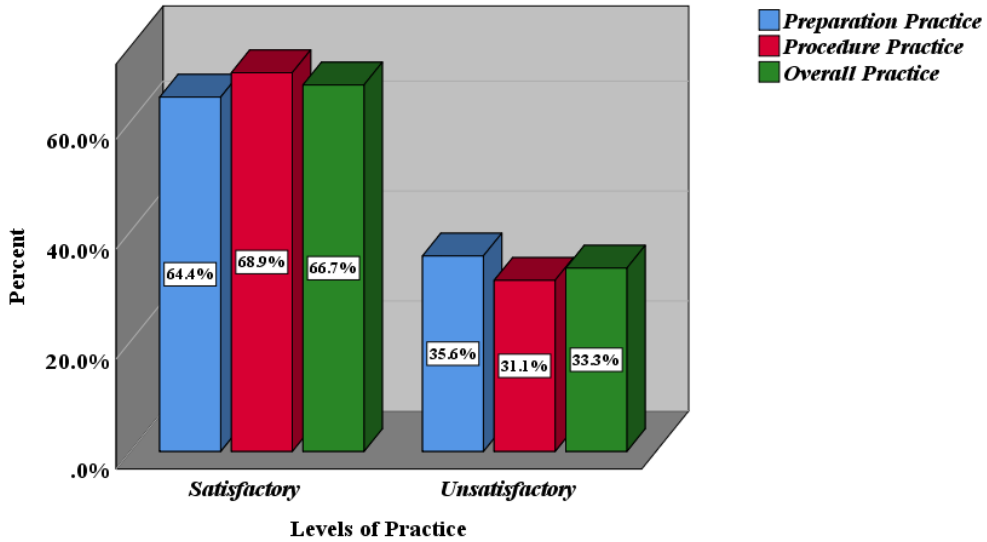

Figure 2: Levels of preparation, procedure, and overall practice.

Discussion

Nurses' knowledge and practice in managing patients in specialised care circumstances have fundamental importance as they are the front-line force in healthcare management and stay with indoor patients for the maximum time compared to any other healthcare staff or even home mates of the patients. In burn units specifically, nurses need to have sufficient knowledge and proper practice of patient management and infection control measures [12].

The assessment of the current study indicates participants' knowledge regarding burn wound management revealed that most participants had good knowledge. In this regard, Kadhim et al. 2019 in Dohok City assessed nurses' knowledge regarding the management of burn patients, and their findings revealed that the proportion of correct answers was >70% for almost all of the knowledge items [13]. Another recent study in Iran found that 56% of participants had good knowledge of burns, 32% reported average knowledge, and 12% reported low knowledge [14].

Regarding burn wound dressing, in the current study, 68.9% of nurses had satisfactory knowledge. This outcome is higher than that reported in another study that reported 56.8% and 59.5% of nurses had satisfactory knowledge of burn wounds and wound dressing techniques, respectively. However, 73% of them had satisfactory knowledge regarding complications dressing [15]. Also, it is higher than that found by another study in Egypt [16] and Saudi Arabia [10]. This might be because most nurses in this study were diploma degree holders and had a deeper knowledge base on their long experience in burn units which draw in such areas as clinical practice and critical thinking. In addition, the vast majority had a training course in the burn management field.

Regardless of the highly satisfactory knowledge of burn wound management among participants, their practice was different. The level of practice could have been better for some items in preparation and during the wound dressing procedure. None of the participants introduced themselves or explained the procedure to the patient, washing their hands prior procedure and documenting the dressing procedure usually. In addition, the practice could have been better in taking patient consent, assessing the need for pain medication, assessing wounds for infection or healing signs, and maintaining an aseptic technique. In this respect, Aldousari et al. 2021 assessed nurse's knowledge and practice regarding dressing a wound and reported that 64.9% of nurses set preparation for wound dressing and 55.5% of nurses opened sterile dressing sets on the trolley (patient bedside), opened bottles of antiseptic solution or saline, pour into the sterile basin, removed gloves by pulling out the inside of them and cleaned the wound with an antiseptic solution using gauze swab from least contaminated area to most contaminated. Most nurses covered the wound with sterile gauze, while some disposed of or returned supplies to their proper place.

Furthermore, Tegegne et al. assessed nurse practice regarding wound care and found that 51% of respondents had good wound care practices, and 37.5% of the nurses sometimes washed their hands before and after wound dressing. Using sterilised and dressing materials for cleaning and dressing wounds had the most positive (always) responses (62.8%) [17].

The current study's finding regarding nurses' practice in burn wound dressing was higher than in some local and regional studies. In this respect, Mohammed et al. 2021 in Egypt reported that all nurses' practice was unsatisfactory in managing burn patients. Buksh et al. 2019 stated that all nurses had an unsatisfactory level of practice, indicated by total performance scores. These differences might be because the Burn Plastic Surgery and Reconstructive Hospital in Sulaimaniyah were established, supervised, and run by nongovernmental organisations, all nursing staff attended training courses regarding the management of burn patients, and most nurses working in this hospital have long experience in managing burn patients.

Conclusions

Nurses' knowledge regarding burned wound management and overall nurses' practice regarding wound dressing was satisfactory. However, introducing themselves, explaining the procedure, hand washing, and documentation were the weakest aspects of the burn wound dressing. Therefore, hospitals must organize training courses and develop unit-specific clinical wound dressing, infection control guidelines and protocols.

Conflict of interest

The authors confirm that they are not affiliated with or involved in any organization or entity with financial interests.

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