

Assessment of Nurses' Performance Regarding Postoperative Wound Care in Khartoum State

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Abstract

Background: An important component of surgical wound management is the selection of suitable dressings, especially for post-operative wound infection. The literature indicates that nurses' knowledge in wound assessment is not reflected in clinical practice. The aim of this study is to: assess nurses' knowledge and practice regarding postoperative wound care.

Methods: This is a descriptive study; included graduated nurses at least BSc in nursing working in Khartoum state. Four hospitals were selected according to the inclusion and exclusion criteria. The sample included all nurses who attended postoperative wound care. The total number of nurses was 142; only 31 nurses were assessed for their practice in postoperative wound care. Data was collected by using questionnaire which was validated by expertise in Medical & Surgical nursing. In addition, standard checklist was used according to nursing procedure in wound care skills. The scoring system was classified into three grades to measure nurses' performance; High knowledge, Low knowledge, Poor knowledge. The data was analyzed using statistical package for social science (SPSS) (version 16); frequency and cross-tabulation was done.

Results: The majority of nurses 83.1% (n=118) had poor knowledge in the initial assessment of wound, compared with 64.8% (n=92) in the low knowledge regarding type of dressing. Nurses' dressing's skills were satisfactory in two steps; preparation and wound cleaning, but they were poor in the documentation. 75% (n=18) of nurses were satisfactory in the preparation of dry dressing, and 58.3% (n=14) in applying dry dressing.

Conclusions:

Nurses' knowledge about wound assessment and dressing was poor. However nurses' skills were satisfactory, except in wound documentation. There is a need to upgrade and develop wound care.

مستخلص**خلفية:**

يعتبر اختيار الضماد المناسب أهم عنصر في معالجة جرح العمليات الجراحية، وخاصة بالنسبة لإلتهاب الجرح

بعد العملية الجراحية . وقد أثبتت الدراسات أن معرفة الممرضين في تقييم الجرح لا تتعكس في الممارسة

السريرية. تتمثل أهداف هذه الدراسة في الآتي: تقييم معرفة وممارسة الممرضين وتحديد تصوراتهم بشأن رعاية

الجرح بعد العملية الجراحية.

المنهج:

هذه الدراسة وصفية وقد شملت الممرضين المتخرجين على الأقل درجة البكالوريوس في التمريض والذين كانوا

يعملون في ولاية الخرطوم؛ تم إختيار أربعة مستشفيات وفقا لمعايير التضمين والاستبعاد. وشملت العينة جميع

الممرضين الذين يقومون برعاية جرح ما بعد العملية الجراحية في منطقة الدراسة. لذا تم جمع البيانات من 142

ممرض لتقييم معرفتهم، و فقط 31 ممرض منهم تم تقييم ممارستهم لرعاية الجرح بعد العملية الجراحية. جمعت

البيانات عن طريق الاستبيان وقائمة المتابعة القياسية. تم إجراء التحقق من دقة وصحة الإستبيان عن طريق

خبراء في التمريض الباطني والجراحي و أسس التمريض وطرائق البحث العلمي. بيد أن القائمة المرجعية

القياسية التي أستخدمت لمتابعة مهارات الممرضين في رعاية الجرح. تم تقييم أداء الممرضين من قبل الباحث

بأستخدام ثلاث تقدرات كميّار " معرفة عالية, معرفة قليلة, معرفة ضعيفة", ومن ثم تم تخزين وتحليل وتلخيص البيانات بأستخدام الحزمة الإحصائية للعلوم الإجتماعية الإصدار 16؛ وتم ذلك بأستخدام عملية التردد والتكرار لحساب النسب المئوية والتبويب المتقاطع لإختبار العلاقات.

النتائج:

أغلبية المرضى 83.1% (عدد 118) معرفتهم ضعيفة عن التقييم الأولي للجرح. لكن مقارنة بمعرفتهم حول أنواع التضميد كانت المعرفة قليلة" بعض الشيء 64.8% (عدد 92). مهارة المرضى في تضميد الجرح كانت مرضية في مرحلتي؛ التحضير وأثناء عملية التضميد (تنظيف الجرح), بينما كانت مهارتهم ضعيفة في مرحلة ما بعد التضميد (التوثيق). 75% (عدد 18) من المرضى كانت مهارتهم مرضية في التحضير للتضميد الجاف, 58.3% (عدد 14) منهم مهارتهم مرضية أثناء التضميد.

الخلاصة:

أن معرفة المرضى لتقييم وتضميد الجرح كانت ضعيفة. أما مهارات المرضى في تضميد الجرح كانت مرضية, إلا في المرحلة الأخيرة (التوثيق) للتضميد كان ضعيفا. هناك حاجة ماسة لإرتقاء وتطوير العناية بالجرح.

Introduction:

The appropriate postoperative wound management can significantly decrease patient's morbidity and mortality including early and late complications ⁽¹⁾. Therefore dressings applied in the operating theatre are commonly allowed to remain intact

until the second or third day after the operation^(2, 3). Practice in postoperative wound care before training in adult nursing was effective for understanding the need for wound care and learning wound care techniques and indicated that learning wound care was possible during basic nursing education⁽⁴⁾.

Nurses role are key in the prevention of postoperative wound infection and as such, they need adequate knowledge on infection control. Thus, every nurse working in the surgical unit must strive to acquire and update their knowledge in order to improve their practice. If this is done, it will reduce the length of hospital stay for patients and reduce the cost of hospitalization⁽⁵⁾.

Any nurse who cares for a patient with a wound must have the necessary skills to accurately assess and understand the results of those assessments, allowing the development of an appropriate, evidence-based treatment plan. The initial assessment is generally undertaken by a nurse, member of the medical staff or other wound care professional. During the assessment the nurse should recognize the limits of their knowledge and refer the patient for specialist opinion when necessary⁽⁶⁾. Appropriate post-operative surgical wound care is essential in preventing potential complications, such as surgical-site infections (SSIs), wound dehiscence and hematomas. General practitioners play a major part in managing patients' post-operative wounds in the community and it is important to appreciate the principles of post-operative wound management to minimize the incidence of wound complications⁽⁷⁾.

Most studies suggest that the infection rate in clean surgery is 5% or lower. However, other studies have shown that if patients are followed up intensely for 6 weeks after surgery, and the definition of infection is not solely limited to the presence of a purulent discharge, then infection rates might be nearer 10%⁽⁸⁾.

The prevalence rate of hospital acquired infection was 25.23%. The highest prevalence rate of nosocomial postoperative wound infection, in Sudan was due to poor antibiotic selection, for prophylaxis during and after surgery and increased level of contamination in most part of the hospital⁽⁹⁾.

Methods

Study design

This descriptive study was done in Khartoum governmental hospitals which involve general and specialized hospitals, the study was done in four hospitals Ahmed Gasim center for open heart surgery and renal transplantation which has 3 intensive care units (recovery room, cardiac ICU, and renal ICU), 4 ward (medical ward, surgical ward, renal ward, and transplanted ward), and Hemodialysis unit. Medical health center University of Khartoum (surgical ward). Ibn sina specialized hospital which consist of many department gastrointestinal ward, ENT ward, urology ward, 2 units of hemodialysis, and bleeding center. Institution of Sudan heart has may department; intensive care units (ICU, CCU, Cath.lab, and theatre), and surgical ward. These hospitals were selected to be a part of study due to regulation of nurses and their responsibility regarding wound.

Sampling

Total coverage that means all available nurses who work in the study settings as mentioned before at time of data collection and met inclusive criteria of sampling. Inclusion criteria; graduated nurse with at least BSc in nursing sciences, experience of each participant should be at least one year in the clinical area and approved to participate in this study. It was calculated 142 nurses.

Data collection

Tools for data collection was developed based on available literature ⁽¹⁰⁻¹³⁾ and validate by expertise in medical surgical nursing filled. It contains two main tools as follows:

Tool (1): structured questionnaire; which includes three main parts as follows:

Part I: Demographic data: The first part was demographic data consist (8) questions (hospital, department, age, gender, date of graduate, duration of experience, training course, and the area of training course).

Part II: Nurse's knowledge questionnaire: includes 2 small parts to assess nurse's knowledge regarding wound care as follows:

Wound assessment: it includes 7 questions regarding nurses' knowledge about wound assessment.

Wound dressing: it includes 3 questions about knowledge of nurses regarding wound dressing.

Part III: Wound care update questionnaire: includes (4) questions about nurses' perceptions in improving and developing wound care; the types of these questions were likert-scale with five options.

Tool (2): Observational Checklist:

The nurses' skills were observed by checklist that was standards for wound management adopted from Skill Checklists for Fundamentals of Nursing⁽¹²⁾.

Data analysis

The data was coded, analyzed and presented by using descriptive statistics to describe, explain and summarize the data in forms of tables and figures. Statistical package for social sciences (SPSS) version 16 was used for analyzing the questionnaire variables. Frequency and cross tabulation was used in analyzing and summarizing data, whereas word and excel was used for presentation of data in forms of tables and figures. The level of significance was measured ($P < 0.05$).

Cross-tabulation:

Cross-tabulation used to test the relation between nurses' knowledge regarding wound assessment, dressing, and Socio-demographic mainly "graduate, experience, and training course", the test done by Chi-square for statistical significance concluded "P value".

Results:

Participants were asked seven questions regarding assessment of wound, started by initial assessment; only 12% respondents ($n=17$) were High knowledge, while 83.1% of participants ($n=118$) were had poor knowledge. Nurses knowledgeable about wound classification were 12% ($n=17$), and 78.2% nurse ($n=111$) were poor knowledge. 71.8% ($n=102$) of nurses were poor in knowledge regarding traumatic acute wound. Whereas 9.2% of nurses ($n=13$) were knowledgeable in surgical acute

wound, and 76.7% of nurses (n=109) were not. 78.9% of nurses (n=112) had poor knowledge in the assessment of location of wound, and 18.3% of nurses (n=26) were High knowledge. The knowledge about standard precaution of infection control; 23.2% of respondents (n=33) were High knowledge, and 61.3% of respondents (n=87) had poor knowledge (Table 1).

The majority of nurses 85.9% (n=122) had poor knowledge about hydrocolloid dressing, as well as irrigation of wound 83.8 (n=119). But in comparing with the type of dressing they were slightly poor knowledge 64.8% (n=92) (Table 2).

The nurses were satisfactory in doing Infection control measures such as ‘Gather the necessary supplies’ 64.5% (n=20) and ‘Place a waste receptacle or bag’ 67.7% (n=21), but they were poor in ‘Perform hand hygiene and put on PPE’ 67.7% (n=21) (Table 3).

The nurses were satisfactory in practicing dressing technique element such as ‘Assist the patient to a comfortable position’ 70.9% (n=22), ‘Open the sterile cleaning solution’ 83.8% (n=26) and ‘Apply a layer of dry, sterile dressing’ 60.7% (n=17) (Table 4).

The relation between nurses’ knowledge regarding infection control and graduate (P = 0.000) table (5).

Table (1) Distribution of nurses’ knowledge regarding assessment of wound (n=142)

knowledge	High Knowledge		Low knowledge		Poor knowledge		Total
	No	%	No	%	No	%	
Initial assessment	17	12	7	4.9	118	83.1	142
Wound classification	17	12	15	9.8	111	78.2	142
Traumatic acute wound	17	12	23	16.2	102	71.8	142
Surgical acute wound	13	9.2	20	14.1	109	76.7	142
Location of wound	26	18.3	4	2.8	112	78.9	142
Standard precaution	33	23.2	22	15.5	87	61.3	142

Table (2) Distribution of nurses' knowledge regarding wound dressing (n=142).

Nurses' knowledge	High Knowledge		Low knowledge		Poor knowledge		Total
	N	%	N	%	N	%	
	Type of dressing	22	15.5	28	19.8	92	
Indication of hydrocolloid dressing	8	5.6	12	8.4	122	85.9	142
Irrigation of wound	6	4.2	17	12	119	83.8	142

Table (3) Distribution of nurses' practice regarding Infection control measures

<i>Infection control measures</i>	Excellent		Satisfactory		Poor		Total
	N	%	N	%	N	%	
	<i>Gather the necessary supplies</i>	4	2.9	20	64.5	7	
<i>Perform hand hygiene and put on PPE</i>	4	2.9	6	9.4	21	67.7	31
<i>Close curtains around bed.</i>	7	22.6	13	41.9	11	35.5	31
<i>Place a waste receptacle or bag.</i>	5	6.1	21	67.7	5	6.1	31

Table (4) Distribution of nurses' practice in relation to dressing technique performance

<i>Dressing technique</i>	Excellent		Satisfactory		Poor		Total
	N	%	N	%	N	%	
	<i>Adjust bed to comfortable working height</i>	2	7.1	12	42.9	14	
<i>Assist the patient to a comfortable position</i>	6	9.4	22	70.9	3	9.7	31
<i>Put on clean, disposable gloves and loosen tape</i>	4	2.9	17	4.8	10	2.3	31
<i>Carefully remove the soiled dressing</i>	-	-	21	70	9	30	30
<i>Note the presence, amount, type, color, and odor</i>	2	6.7	18	60	10	33.3	30
<i>Inspect the wound site for size, appearance, and drainage</i>	4	2.9	16	1.6	11	35.5	31
<i>Using sterile technique, prepare a sterile work area</i>	5	6.1	21	67.7	5	6.1	31
<i>Open the sterile cleaning solution</i>	2	6.5	26	83.8	3	9.7	31

<i>Put on sterile gloves</i>	8	25.8	17	54.8	6	9.4	31
<i>Clean the wound from top to bottom and center to outside</i>	3	9.7	12	42.9	16	51.6	31
<i>Dry the area using a gauze</i>	5	16.1	11	35.5	15	48.4	31
<i>Clean around the drain</i>	6	37.5	8	50	2	12.5	16
<i>Apply a layer of dry, sterile dressing</i>	3	0.7	17	60.7	8	28.6	28
<i>Apply a surgical or abd pad(ABD)</i>	1	7.7	9	69.2	3	23.1	13

Table (5) Cross-tabulation – nurses’ knowledge regarding infection control in relation to level of graduation.

<i>Standard precaution of infection control</i>	Graduation						Total	
	before 2000		2000-2006		2007-2012		N	%
	N	%	N	%	N	%		
<i>High knowledge</i>	2	25	17	34	14	16.7	33	23.2
<i>Low knowledge</i>	3	37.5	10	20	9	10.7	22	15.5
<i>Poor knowledge</i>	3	37.5	23	46	61	72.6	87	61.3
<i>Total</i>	8	100	50	100	84	100	142	100

P = 0.000

Discussion

The management of a wound begins by identifying the overall wellbeing of the patient. Dressings and the various topical medications are a small part of healing a wound. The key to successful wound healing is meticulous wound care and the optimization of the body’s wound healing capacity⁽¹⁴⁾.

The study was conducted in four centers with availability of graduated nurses and clear job description. Nurses working in intensive care units represent the majority of participants 44.4% (n=63). The majority of nurses were in the age group ⁽²⁵⁻³⁵⁾; and so they had no enough training courses in wound care. The continuous and regular courses in wound care improved knowledge and practice of nurses⁽¹⁵⁾. In this respect Hatfield and Tronson, emphasized the importance of assigning skilled nurses for postoperative patients⁽¹⁶⁾. As well, O'Mara and Valvaitis claimed that nurses' were accustomed to do routine work, which was considered to be manual work to be

performed every day without up-dating their knowledge⁽¹⁷⁾. In contrast with these ideas, Ali had a special thought that nurses' experience enhances the day to day activities and improves their practice. She has also stated that, the level of knowledge of nurses increases with each year of the nursing⁽¹⁸⁾.

Accurate wound assessment and appropriate product choices can promote a healing environment and ultimately affect patient outcomes. Therefore, the nurse needs to have an understanding of the process of wound healing and have undertaken a full holistic patient assessment before focusing on the patient's wound⁽¹⁹⁾.

The study showed that Nurses were poor in knowledge in the different parts of wound assessment; they were not performing wound assessment regularly and perfectly. The lack of assessment affects wound care and leads to poor prognosis for wounded patients, furthermore it was delays healing⁽²⁰⁾. On the other hand in the pain assessment during wound care, nurses performed assessment of pain regularly, only 3% of nurses did not assess pain during wound care. Pain assessment is increasingly being accepted in practice as a key aspect of the nurse's role. The Royal College of Surgeons reviewed post-operative pain and concluded that pain assessment should be recorded by the nurse as part of routine observations of vital signs. This idea was later reinforced by the Audit Commission who developed guidelines that recommended 'evidence based medicine personally tailored care' to acknowledge the individuality of patient pain experiences. In many areas of nursing practice today pain assessment has become a routine part of the assessment process⁽²¹⁾. Nurses were observed by a checklist including pain assessment; 71% (n=22) of study populations were poor during performing wound care.

The study showed that participants were poor in knowledge especially in hydrocolloid dressing; as wound product used in chronic wound for debridement. The nurse should be knowledgeable about dressing; so as to be able to select appropriate dressing to promote healing. Technological advances have resulted in dressings that can actively target different aspects of the wound healing process in acute, exudating and chronic wounds. Hydrocolloids, hydrogels, alginates, polyurethane foam/films

and silicone gels can all be used for drug delivery to wounds. This finding is similar to that of Smeltzer, who stressed on that nurses should be informed about the principles of wound healing, while Hamlin et al. appointed that wound management requires not only knowledge of the properties of dressings but also an understanding of the healing process^(22, 23).

Regarding Association of nurses' knowledge regarding infection control Measures with their acquired training course. The present study revealed significant relation was found between nurses' knowledge regarding infection control Measures with their acquired training course (P. 0.027), and their graduation (P. 0.000). This finding goes in the same way with priority of infection control measures in the ministry of health and study area.

Limitation:

The obstacles faced by the researcher during data collection, that wound dressing done by a nurse to be chosen by the directors of nursing and work is alternately may continue this appointment for a long time, so the number of nurses in the assessment of knowledge regarding wound assessment and dressing was (142). The number of nurses observed during performing dressing was (31). Also the responsibility of the wound care located on the doctor, not the nurse. With regard to the supplies needed to take care of the wound available hostility that used in the infection control are not available, such as guan, mask, hood, and eye protection.

Conclusions

1. Knowledge of nurses about the parameters of wound assessment was poor.
2. Assessment of pain was accepted but not demonstrated during wound care.
3. Nurses' knowledge was satisfactory in type of dressing, but poor in wound irrigation and hydrocolloid dressing.
4. Nurses' skills regarding wound dressing were satisfactory, except in the last step of dressing procedure was poor.

References:

1. Melanie Charalambous AC. 2013;A Critical Exploration of Surgical-Oncology Nurse's Perceptions of Factors Involved in Decision Making on Postoperative Wound Management: a Descriptive Survey. *Hellenic Journal of Nursing Science*. 3(1):10.
2. Gillian S. Ross R, DipHE. 2004 [cited 2013 10 October];Surgical wound care: current views on minimising dressing-related pain. Available from: <http://www.nursingtimes.net/nursing-practice/clinical-zones/wound-care/surgical-wound-care-current-views-on-minimising-dressing-related-pain/200074.article>.
3. Jose B, Dignon A. 2013;Is there a relationship between preoperative shaving (hair removal) and surgical site infection? *Journal of perioperative practice*. 23(1-2):22-5. Epub 2013/02/19.
4. Reiko Murakami MS, Reiko Yamane, Hiroko Hikoyama, Mikiyo Sato, Natsuko Takahashi, Sumie Yoshida, Misuzu Nakamura and Yoshikazu Kojima. 2012; Implications for better nursing practice: psychological aspects of patients undergoing post-operative wound care. *Journal of clinical nursing*. (22):9.
5. 1Famakinwa TT, 2Bello, B.G., 2Oyeniran, Y.A., 3Okhiah, O. and, R.N. N. 2014;KNOWLEDGE AND PRACTICE OF POST-OPERATIVE WOUND INFECTION PREVENTION AMONG NURSES IN THE SURGICAL UNIT OF A TEACHING HOSPITAL IN NIGERIA. *International Journal of Basic, Applied and Innovative Research IJBAIR*, 2014. 3:6.
6. Qusey K CL. 2012;Wound assessment made easy. *Wounds uk*. 8(2):4.
7. Yao K, Bae L, Yew WP. 2013; Post-operative wound management. *Australian Family Physicin*. 42(12):4.
8. Andrew C Melling BA, Eileen M Scott, David J Leaper. 2001;Effects of preoperative warming on the incidence of wound infection after clean surgery: a randomised controlled trial. *THE LANCET*. 358:5.

9. Ahmed MI. 2012;Prevalence of Nosocomial Wound Infection Among Postoperative Patients and Antibiotics Patterns at Teaching Hospital in Sudan. *North American Journal of Medical sciences (NAJMedSci)*. 4(1):5.
10. Association EN. 2013; Clinical Practice Guideline: Wound Preparation. *Emergency Nursing Resource: Ann Marie Papa*;. p. 10.
11. Barrett S. 2009;Using Applied Wound Management (AWM) as an audit tool within a primary care trust. *Wounds uk*. 5:21.
12. Carol Taylor CL, Priscilla LeMone, Pamela Lynn, and Marilee LeBon. 2011;Fundamentals of Nursing: The Art and Science of Nursing Care. 7th edition ed. Health WK, editor.
13. Gheorghe A, Calvert M, Pinkney TD, Fletcher BR, Bartlett DC, Hawkins WJ, et al. 2012;Systematic review of the clinical effectiveness of wound-edge protection devices in reducing surgical site infection in patients undergoing open abdominal surgery. *Annals of surgery*. 255(6):1017-29. Epub 2012/01/25.
14. Kockrow E. 2006; Surgical wound care. *Basic nursing skills*. p. 33.
15. Flanagan M. 2008;Improving wound care teaching and learning in clinical practice. *Wounds UK*. 4:4.
16. Hatfield A TM. 2001;The complete recovery room book. third edition ed. Oxford University Press.
17. O'Mara L M. VRK. 2006;Public health nurses perceptions of mobile computing in a school program. 23(3).
18. SBM. A. 2003;Developing an in service training program for nurses control hospital infection in Suez Canal University Hospital. [Unpublished Doctorate Thesis]. In press.
19. Hampton S. 2004;Holistic wound care. *Journal of Community Nursing (JCN)*. 18(8):12.
20. Tiina Pukki MT, Sirpa Halonen. 2010;Assessing Mepilex®Border in post-operative wound care. *Wounds uk*. 6(1):7.

21. Benbow M. 2006;Holistic assessment of pain and chronic wounds. Journal of Community Nursing (JCN). 20(5).

22. Smeltzer SC. BBG, Hinkle JL. ., Cheever KH. Burner &Suddarths. 2008; Textbook of medical surgical nursing. 11 ed. Lippencott Williams & Wilkins. 20 p.

23. Hamlin L. TM, Davis M. 2009;Peri-operative nursing, an introductory text. 7. Mosby. Philadelphia,.