

Awareness on wound cleaning and dressing among nursing undergraduates in University of Peradeniya, Sri Lanka

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Abstract - Wound cleaning and dressing is one of the main responsibilities of nurses and nursing undergraduates. Better awareness on wound cleaning and dressing minimizes the wound infections, healing time, pain during the procedure, as well as duration of hospital stay. Indirectly this will minimize the government expenditure on wound management and enhances the patient's quality of life. According to the literature review, a paucity of research exists that describes nurses' awareness on wound cleaning and dressing. Published data regarding this aspect in Sri Lanka also scares. Therefore, this study was aimed to assess the current awareness among nursing undergraduates of Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka. A descriptive, cross-sectional study was carried among one hundred and fifty-one (n=151) nursing undergraduates using a self-administered questionnaire conducted from March to June, 2016. The questionnaire was piloted with 10 nursing students and ethical clearance was obtained from the Ethical Clearance Committee in Faculty of Allied Health Sciences, University of Peradeniya. Data were analyzed using Microsoft Excel and R-studio statistical software. Overall, their average knowledge score was 68 % (SD 12.5%) and the study revealed that nursing undergraduates of Faculty of Allied Health Sciences, University of Peradeniya are having sound knowledge on aseptic techniques to follow during wound cleaning and dressing (mean score 78%). Though, there are gaps in their knowledge with respect to different wound cleaning solutions and techniques, management of special wounds such as burn wounds, venous/diabetic ulcers, neonatal/infant wounds as well as newly available dressing products in the market. Therefore, it is better to develop an effective educational program to enhance the awareness and supervise undergraduates closely while performing rather than rely on self reported data. Moreover, results of this study cannot be generalized to the whole population of nursing undergraduates in Sri Lanka. Therefore, it is suggested to repeat the study in representative samples from both public and private institutions that offer nursing degree in Sri Lanka.

Keywords: Awareness, Nursing undergraduates, Wound cleaning, Wound dressing,

I. INTRODUCTION

Wounds are challenging clinical problem. A wound is defined as an alteration of the anatomic integrity of the skin or any interruption of its continuity, as a consequence of trauma. Wound management involves two main procedures; wound cleaning followed by wound dressing. Wound cleansing is

the application of fluid in order to remove exudates, loosely adherent debris, necrotic tissues or contaminants from the wound surface without causing further tissue damage. This involves washing and debridement. Washing is to loosen the wound debris/necrotic tissues. Whereas debridement, to remove adherent necrotic or slough materials. Widely used cleaning solutions are normal saline, distilled water, povidone-iodine etc(Carr 2006).

Wound dressing provides optimum conditions for wound healing, by absorption of exudates and providing protection against external contaminants, abrasions and pressure. It also eases the pain while allowing appropriate wound assessment and cicatrization. There is panoply of new dressing materials such as hydrocolloids, alginate, hydrogels, semipermeable films and antimicrobial dressings etc.

Higher awareness on wound cleaning and dressing among health care providers helps to reduce wound healing time, wound infections, pain during the procedure, health care cost as well as the duration of patient's hospital stay. In a hospital setup, wound dressing and cleaning is one of the key responsibilities of nurses. Therefore, it is imperative that nurses have the pre-requisite knowledge on different wound types, wound assessment, aseptic wound cleansing and dressing techniques, different wound dressing and cleaning products. Nursing students are also co-responsible for all above, as they are involved with clinical training and entering the profession soon after the graduation. The growing complexity of wound infections and cost of wound care demands that nurses must have best knowledge and practice. Thus, there is a growing trend towards producing specialized nurses such as wound care nurses for Sri Lankan hospital setup specially to combat chronic wounds.

Several studies have assessed the awareness among nursing professionals(Choi et al. 2013; Kambli 2012; Brigid M Gillespie, Wendy Chaboyer, Pamela Allen 2014). A survey on knowledge regarding burn wound care among nurses concluded that nurses are lacking knowledge on burn wound care(Kambli 2012). In another study, majority of nurse have reported that they have not received enough content regarding wound cleaning and dressing during their undergraduate period(Ferreira et al. 2014). This study showed the utmost importance of teaching on above mentioned aspects prior to the practice. Another article has documented that nurses' knowledge on wound care is incomplete and their knowledge related to skin disinfectants and its' action against pathogens is insufficient(Choi et al. 2013) . However, the evidence concerning awareness on wound cleaning and dressing

among Sri Lankan nursing professionals or undergraduates is unknown; literature review reveals that research focusing on this aspect is scarce. Therefore, this study was aimed to determine the current awareness on wound cleaning and dressing among nursing undergraduates in University of Peradeniya, Sri Lanka.

II. MATERIALS AND METHODS

This descriptive, cross-sectional study was carried out at the Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka from March to June, 2016. Ethical clearance was obtained from the Ethical Clearance Committee in Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka. Out of 170 nursing undergraduates, one hundred and fifty-one (n=151) nursing students were selected as the study sample. This included nursing students of all the batches from first year to final year. Students who were away from the faculty more than two weeks due to a sickness, personal matter or a training programme and who refused to participate were excluded from this study. A self-administered questionnaire comprised of 25 close-ended questions which included fixed choice categorical questions (yes/no) and items used a five level Likert rating scale, covering four different aspects. Those were demographic data (part A), knowledge on wound cleaning and dressing techniques and products (part B), aseptic wound cleaning and dressing techniques (part C) and wound healing and assessment (part D) was used to collect data. The questionnaire was piloted with 10 nursing students from Faculty of Allied Health Sciences and questions were modified accordingly. The pilot data were not included in the final analysis of this study. All the participants were verbally informed about the purpose of this study and written consent was obtained before administering the questionnaire. The students were asked not to guess the answers and assured the anonymity.

Awareness of the students was evaluated according to a marking system. The total score was obtained by the sum of correct responses and scores equal or above 90 out of 120 considered as adequate knowledge. R-studio statistical software was used for data analysis after entering all the data into the MS Excel worksheet. Descriptive statistics were used to describe the sample characteristics and impute responses. The $p < 0.05$ was considered as statistically significant.

III. RESULTS AND DISCUSSION

This is one of the only studies to describe knowledge and practices of nursing undergraduate's in Sri Lanka regarding wound cleaning and dressing. Out of 151 respondents, 66% is females and 34% is males and the majority (95%) has trained in both surgical and medical divisions of the hospital during their clinical rotations. Seventy-one (n=71) students (47%) neither followed any lectures on wound cleaning and dressing nor practiced it by themselves. Whereas, eighty (n=80) participants (53%) have learnt about wound cleaning and dressing and practiced it during the hospital based clinical training.

As illustrated by the bar graph (Fig. 1), mean score for all considered aspects have been steadily increased with year of

study. The mean scores of nursing students, who had 2783 hours of clinical exposure has significantly higher mean knowledge scores (92.14) compared to students who had 960 hours clinical exposure (74.42) at $p < 0.05$. Thus, there is a significant positive correlation between the duration of clinical exposure and the mean score of knowledge. ($r = 0.73$, $p < 0.01$). Though, the knowledge regarding wound cleaning and dressing products and techniques was poor and second poorest was the wound healing and assessment in each batch including students who has introduced wound care by means of both theoretically and practically. This finding is consistent with previously published studies that found nurse's knowledge of aseptic wound management techniques is higher in Korea and sound knowledge of wound healing processes in acute care nurses in Queensland, Australia (Gillespie et al. 2014; Choi et al. 2013).

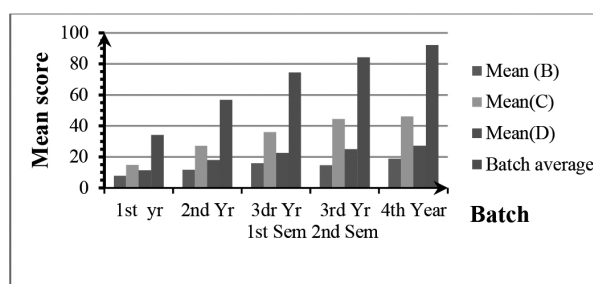


Fig. 1: Mean score of knowledge on wound cleaning and dressing techniques and materials (part B), aseptic techniques in wound cleaning and dressing (Part C), wound healing, assessment, and management (part D) and average score of each batch has illustrated in above bar chart.

According to the item wise analysis majority of students were having poor awareness on different types of cleaning solutions and the technique even after following related lectures and clinical exposure (table: 1).

Item	% of correct responses
Q1. Debridement facilitates the visualization and assessment of the wound.	42
Q2. H ₂ O ₂ is useful for removing the necrotic tissues in the wound.	58
Q3. Effect of Chlorhexidine gluconate is lasting more than 6 hours.	15
Q4. Alcohol and Chlorhexidine gluconate are used to remove gram +/- bacteria including antibiotic resistant bacteria and fungi.	38
Q5. The recommended cleaning method is high-pressure irrigation for highly contaminated wounds.	40
Q6. The ideal syringe and needle size for wound irrigation is 20 mL, 18 gauge needle.	33

As demonstrated by the Table 2 and 3, most students (>80%) have poor awareness on properties of newly available dressing products and selecting suitable dressing products ideal for different types of wounds, even after exposing to both theoretical and practical exposure to wound care practices. This might be due to the lack of clinical experience on different

dressing products due to lack of availability in the hospitals which will make them difficult to use those in future as well. Therefore, it is important discuss properties, advantages and disadvantages of different dressing products available in the market with samples and demonstration during undergraduate period. Noteworthy, in similar study has reported that nurses are lacking knowledge on dressing products which might be due to the limited availability and clinician’s reluctance to deviate from ‘tried-and-true’ dressing choices(Gillespie et al. 2014). Further, out of 80 students only 03 students (4%) have correctly identified all the factors to be considered during pediatric wound dressing such as high skin fragility, high risk of infections due to immature immune system, increased per-cutaneous absorption, attempt to remove dressing and fear and pain associated with wound dressing.

Table 2: Item wise distribution of data on properties of newly available dressing products as a percentage of correct responses. (n=80)

Item	% of correct responses
Q1. The low adherent dressing is made up of weave soaked in chlorhexidine.	22
Q2. Semipermeable films are transparent and impermeable to air and water vapor.	11
Q3. Hydrocolloid is a yellow color gel that allows patients to bathe/shower even with dressing.	12
Q4. Hydrogels are indicated for wounds with high exudates.	10
Q5. Alginate dressing can be washed off easily with saline	15
Q6. Foam dressing provides thermal insulation to the wound bed.	13

Table 3: Item wise distribution of data on selection of appropriate dressing material for different types of wounds as a percentage of correct responses. (n=80)

Item	% of students responded as “no idea”	% of correct responses
Q1. Use of foam dressing for exudative venous leg ulcers	68	06
Q2. Use of hydrofibre dressing for high exudative wounds	50	11
Q3. Use of semipermeable films for wounds on “difficult” anatomical sites	53	13
Q4. Low adherent dressing for flat shallow wounds	57	28
Q5. Use of hydrogels for sloughy necrotic wounds	58	16
Q6. Use of alginates for cavities, sinuses, and for undermining wounds	57	22
Q7. Venous leg ulcer suitable for dress with hydrocolloid	22	42

Condition of the wound (60.2%) and condition of the patient (49.6%) have been identified by students as most important factors when deciding on dressing products, similar to Brigid M Gillespie’s study in which majority of nurses selected dressings based on wound appearance rather than on surgeon’s preferences, time consumption and cost.

According to this study, majority of students was not aware importance of using proteolytic enzymes to degrade devitalized tissues in chronic wounds.

There are specific wound management guidelines published by different countries for burn wounds, diabetic foot ulcers and wounds in pediatrics etc. These protocols aid in developing systematic treatment plan and assessment of wound healing. Out of 80 respondents, only few students (25%) were aware of existing wound care management guideline in the world. There are no evidence to say neither these guidelines are being followed by Sri Lankan hospital staff nor development of new wound care guidelines to be used in Sri Lanka. This finding is consistence with similar studies, in which approximately 65% nursing professional were unaware about the existence of these guidelines in their fields of professional activity and 50% nurses were unaware about national standards pertaining to wound management in Australia respectively(Ferreira et al. 2014; Gillespie et al. 2014).

Similar to Ferreira’s study, more than 80% of undergraduates were well aware about aseptic wound dressing techniques such as opening sterile glove by placing on a clean dry surface, cleaning the wound from least contaminated area to the most, use of separate swabs for each stroke and keeping the tips of the forceps lower than the handles during cleaning, cleaning the dressing room at least an hour prior to dressing, dressing wounds one hour before or after the mealtime, disinfection of dressing trolley before the procedure, washing hands in rotational rubbing manner before and after contact with the patient.

IV. CONCLUSION

Wound care practices continue to evolve and there are better products and techniques to minimize injuries and aid in healing. Thus, developing an effective educational program to enhance awareness is necessary to improve their knowledge, attitude and skills related to wound cleaning and dressing. It is best to supervise undergraduates closely while performing rather than rely on self reported data used in this study. Further, this study needs to be replicated in future with a representative sample from both public and private institutions that offer nursing degree.

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