

Effectiveness of Planned Demonstration on Wound Dressing in Terms of Practice among Staff Nurses in IKDRC-ITS, Ahmedabad

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Abstract

*In wound dressing procedures, if wound contamination is limited, there is a less chance of infection. A recent survey in India estimated the prevalence rate of chronic wounds at 4.5 per 1000 population. In this study the practice of wound dressing technique among staff nurses before and after planned demonstration was evaluated and the association of the practice scores of wound dressing with selected demographic variables was found. A quasi experimental one group pre-test post-test design was adapted. The population comprised of staff nurses working in the medical and surgical wards in IKDRC-ITS hospitals in Ahmedabad. Convenient sampling technique was used to select 60 staff nurses. A structured observational checklist consisting of 20 items evaluated the effectiveness of planned demonstration on dressing technique. The data collected was analysed by using descriptive and inferential statistics. Study revealed that in pre-test majority (81%) of the staff nurses had a poor practice and in post-test, all (100%) had good practice on wound dressing. The mean post-test (15.6), practice scores were higher than pre-test practice score (9.9); the calculated *t* value (19.56) was greater than table value (*t*=2.00) at 0.05 level of significance. There was a significant association of experience with pre-test practice scores while no significant association was found between age, gender and education with pre-test practice scores. Also there was no significant association between selected demographic variable in post-test practice scores. The study proved that the planned demonstration on wound dressing was an effective measure to improve the practice level of staff nurses.*

A wound is a defect or break in the continuity of the skin. This is an injury to the skin or underlying tissue or organs caused by surgery, a blow, a cut, chemical, heat or cold, friction or shear force, pressure or as a result of disease such as in leg ulcer and carcinomas. Skin wounds are typically divided into acute and chronic wounds. Acute wounds are traumatic or surgical wounds that usually heal over time in normal wound-healing process. Acute skin wounds vary from superficial scratches to deep wounds with variable amounts of tissue loss and damage to blood vessels, nerves, muscles or other tissues, or internal organs. The main causes postulated for the wound infections in India are the indiscriminate use of antibiotics, failure of many hospitals to follow basic infection control methods like hand washing, gloving, sterilisation, overall lack of hygiene in hospitals. Over 2.8 million patients with chronic wounds are treated at a cost of billions of rupees per year in India. Despite numerous advantages in wound healing research, the treatment of

chronic non-healing wounds still presents a challenge. In India, 10,000 persons die every year due to wound infection. Diabetic wound, commonly proceeding to lower extremity amputation, has been identified as the key component in nearly 90 percent of these ablative procedures.

A recent survey in India estimated the prevalence of chronic wounds at 4.5 per 1000 population and acute wounds more than double i.e. at 10.5 per 1000 population. The reasons include systemic conditions such as diabetes, atherosclerosis, tuberculosis, leprosy, venous ulcers, pressure ulcers, vasculitis, and trauma.

Objectives

1. To evaluate the practice on wound dressing technique among staff nurses before and after planned demonstration.
2. To find out the association of the practice scores of wound dressing with selected demographic variables.

Review of Literature

Mohamed, Amal Elmoniem et al (2019), in a quasi-experimental study on Effect of Training

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Program on Performance of Nurses Caring for Patients with Negative Pressure Wound Therapy (NPWT) at Mansoura university and hospital nurses' NPWT found total knowledge test scores mean to be 21.1 ± 54.4 , 32.2 ± 2.3 , 30.2 ± 2.6 at pre-post and second post respectively. Nurses' NPWT total practice test scores mean was 34.4 ± 4 , 68.9 ± 6.1 , 73.9 ± 3.9 pre-post and second post respectively. It was concluded that nurses' performance towards NPWT was improved after application of a training programme on negative pressure wound therapy.

In a cross-sectional observational study on 41 nurses in general and critical care settings at King Abdulaziz University Hospital, Mohammed, et al (2018) found that 20 (48.8%) had attended a wound management course. The mean score was 77.6 percent for nurses' adherence to correct wound management techniques. Compliance was lower in the pre-phase, confirming the dressing order ($n=27$, 66.7%), conducting client verification ($n=29$, 71.8%), and explaining the procedures to the client ($n=24$, 59%). Compliance was higher during the performance phase ($n=36$; 90%) and the least compliance was shown in the post-phase in the area of educating patients and family by only 33.3 percent ($n=13$). The study concluded that chi-square test disclosed a significant difference in dressing with completely aseptic techniques among participants who attended the wound management course ($p=0.02$).

Virendra S Athavale, Aditya P Lad, et al (2018) undertook a longitudinal study on importance of hand washing prior to wound dressings in prevention of nosocomial infection in surgical wards at Dr DY Patil Medical College, Hospital and Research Centre, Pune. All 3rd years surgery residents were covered in the study. The study revealed that out of 58 surgery residents, 47 were having positive microbiological swabs without any type of hand washing; 24 residents had positive swabs even after washing hands with soap and water; 3 residents had positive swab after washing hands with sterilium. The study concluded that only 31 percent resident doctors could give more than 50 percent correct answers before the study and 96 percent could give more than 50 percent correct answers after the study.

A descriptive study was conducted by Shobha S Nisale, Meghraj Chawada, et al (2017) on pre-operative, intra-operative and post-operative factors responsible for post-operative wound infection at SRTR Rural Government Medical College, Beed (Maharashtra). As the length of pre-operative stay on the duration of post-operative hospital stay increased, the occurrence of SSIs also increased and the quality of surgical wound deteriorated. As the duration of surgery increased, the occurrence of

SSIs increased. The study concluded that the order of surgery was not related to occurrence of SSIs and the rate of SSI was more (21.55%) when the drain was used in comparison to only 8.04 percent when the drain was not used. The most common organism found to cause SSIs was staphylococcus aureus in 33.07 percent cases.

In a retrospective study on prevalence of surgical site infection (SSI) in general surgery at Rajendra Institute of Medical Sciences (RIMS), Ranchi Kumar & Rai (2017) studied 3321 elective surgical patients and 452 emergency surgical patients. The study revealed 12.5 percent prevalence of SSI. Among the 3 types, superficial incision SSI was most prevalent followed by deep incisional SSI and finally by organ/space SSI. The surgical procedure most commonly associated with SSI was exploratory laparotomy. An alarming 17.7 percent of SSI was associated with emergency surgeries as compared to 12.5 percent of elective surgeries.

Vasuki et al (2017) conducted a study of papaya dressing versus normal saline dressing in healing of ulcers at Kilpauk Medical College and Hospital, Chennai in which 100 patients were included. The mean reduction in slough/necrotic tissue at time of inclusion in study and four weeks after the study was assessed. In saline dressing, mean reduction was 13.156 (SD 3.4558). The mean reduction in slough/necrotic tissue in papaya dressing was 10.5 (SD 0.7071). There was significant difference in percentage reduction in slough/necrotic tissue within the two groups. Similarly, for the cases with active ulcer, the size assessment at the time of inclusion in the study and three week after in papaya dressing was 2.5062 (SD 1.504). Mean ulcer size in normal saline dressing was 2.1564 (SD 1.2961).

Singh et al (2016) conducted a descriptive survey study to assess the knowledge of 68 staff nurses regarding aseptic technique at selected hospital in Pilkhuwa, Hapur (UP). Knowledge was assessed using the structured knowledge questionnaire. The reliability coefficient was found 0.70 by Kuder Richardson-20 formula. The study revealed that mean knowledge score of staff nurses was 13.13 with median score of 14. Standard deviation of knowledge score was 3.25. Maximum staff nurses i.e. 43 (63.24%) were having average knowledge whereas 25 (36.76%) having knowledge poor average, none of the staff nurse was having adequate knowledge regarding aseptic techniques. On computation of chi square, it was found that there was no significant association of the knowledge score of the staff nurse with any demographic variables at 0.05 level of significance.

Thatcher & Hemavathy (2015) evaluated the effectiveness of aseptic wound dressing practices among 100 staff nurses working in Balaji Hospital,

Chennai. One group pre-test post-rest design was used. Collected data was analysed using descriptive and inferential statistics. Highest percentage (70%) of the respondent had average knowledge and their scores ranged between 10-19; 19 percent of the subjects had good knowledge and 11 percent of the respondents had poor level of knowledge, with scores ranging between zero and nine. A very highly significant ($t=31.74$, $p < 0.05$) difference was observed between the pre-test and post-test knowledge score of staff nurses in the area of aseptic wound dressing practice showing effectiveness of SIM.

Methodology

A quasi experimental one group pre-test post-test design was adapted for the study. The population comprised of staff nurses working in the medical and surgical wards in IKDRC-ITS hospitals in Ahmedabad. Convenient sampling technique was used to select the sample of 60 staff nurses based on inclusion criteria. A structured observational checklist with 20 items was prepared to evaluate the effectiveness of planned demonstration on medical wound dressing technique. Content validity of tool was established by submitting it to 15 experts. The reliability of the tool was established by inter rater method and the correlation between the observation were measured by using Choen's Kappa formula method. The internal consistency of the observational checklist was, $r=0.8$. Hence, the tool was found to be reliable; the data collected was analysed by using descriptive and inferential statistics.

Results

Prior to the data collection permission was obtained from the concerned authority for conducting the study. The data collection period extended from 4 to 25 March 2019. Subjects were selected according to the selection criteria and confidentiality was assured. Written consent was obtained from the subjects. Subjects were assigned through convenient sampling technique. A pre-test was done on the staff nurses during wound dressing using observational checklist. Wound dressing technique was taught individually to the subjects. A post-test was conducted to observe the performance of wound dressing once after the demonstration on day 7 of the intervention of demonstration using the same observation checklist.

Demographic Variable of the Samples

This data was collected by using structured knowledge questionnaire and deals with the characteristics of samples in terms of their age, professional qualification and experience of working in medical and surgical wards. The analysis of this section

was done using frequency and percentage.

Of 60 samples, 18 (30%) were in the age group of up to 30 years and 25 (41.67%) in the age group 31-40 years, 12 (20%) was in the age group 41-50 years and more than 50 years age group 5 (8.33%) (Table 1). As regards gender, 60 (100%) were female. As for professional education, of all the respondents ($n=60$, 57 (95 %) had GNM, 2 (3.33%) were in the BSc Nursing, 1 (1.67%) was in the MSc Nursing. As for experience of working in medical and surgical wards, 24 (40%) had upto 10 years experience while 21 (35%) had 11- 20 years and 15 (25%) had 21-30 years of working experience in medical and surgical wards.

Level of Practice of the Staff Nurses on Wound Dressing Technique

This data was collected using the structured observational checklist and deals with the three content areas: pre-procedure steps, during procedure steps and post-procedure steps. Table 2 shows that the practice area was divided into 3 sub areas i.e. pre-procedure steps, during procedure steps and post-procedure steps. The mean pre-test score of area related to pre-procedure steps was 4.2 (70%) and mean post-test score was 4.7 (78.33%). Hence the gain in this area was 8.33 percent. The mean pre-test area related to during procedure steps of wound dressing procedure was 3.5 (38.88%) and the mean post-test score was 6.8 (75.55%). Hence the gain in this area was 36.37 percent. The mean pre-test score of area related to post-procedure steps was 2.2 (24.44%) and mean post-test score was 4.1 (82%). Hence the gain in this area was 57.56 percent. The mean pre-test score of area related to steps of the procedure was 9.9 (44.44%) and mean post-test score was 15.6

Table 1: Frequency and percentage distribution of samples characteristics (N=60)

S.N.	Variables	Frequency	Percentage
1	Age		
	a. Up to 30 years	18	30
	b. 31-40 years	25	41.67
	c. 41-50 years	12	20
	d. More than 50 years	5	8.33
2	Gender		
	a. Male	0	0
	b. Female	60	100
3	Professional Qualification		
	a. GNM	57	95
	b. BSc Nursing	2	3.33
	c. PB BSc Nursing	0	0
	d. MSc Nursing	1	1.67
4	Experience of working in medical and surgical Wards		
	a. Up to 10 years	24	40
	b. 11 years – 20 years	21	35
	c. 21 years – 30 years	15	25
	d. More than 30 years	0	0

Table 2: Area-wise mean, mean percentage, and percentage gain of pre-test and post-test practice scores on wound dressing (n=60)

S. No.	Task	Max. score	Pre-test score		Post-test score		Percentage gain
			Mean score	Percentage (%)	Mean score	Percentage (%)	
1	Pre-procedure steps	6	4.2	70	4.7	78.33	8.33
2	During procedure steps	9	3.5	38.88	6.8	75.55	36.37
3	Post-procedure steps	5	2.2	24.44	4.1	82.00	57.56
Total		20	9.9	44.44	15.6	78.62	34.08

(78.62%). Hence the gain in this area was 34.08 percent.

The lowest pre-test mean percentage practice score (24.44%) was in the area related to post-procedure steps. The data in the Table 2 further indicates that the post-test mean percentage practice scores in all content areas were higher than the pre-test mean percent practice scores. Table 3 shows that in pre-test majority (81%) of the staff nurses had poor practice and (19%) good practice on wound dressing whereas in post-test all (100%) of the staff nurses had good practice in wound dressing. An observational checklist of 20 items was developed to evaluate the practice of staff nurses on wound dressing. The investigator observed the performance of wound dressing times and places a tick mark (✓) in the appropriate column as indicated by 'Yes' if 'Done' and 'No' if 'Not Done'. The scoring was done by giving '1' mark for the correct performance and '0' mark for the incorrect responses. The highest possible score was 20. It was arbitrarily classified into two levels: poor performance (0-10 score) and good performance (11- 20 score). The areas including were:

- Pre-procedure steps
- During procedure steps
- After procedure steps

Table 4 shows the comparison between pre-test and post-test practice score obtained by the sam-

Table 3: Frequency and percentage distribution of samples based on the level of practice (N=60)

Level of practice	Score	Pre-test		Post-test	
		Frequency	%	Frequency	%
Poor	0-10	41	81	0	0
Good	11-20	19	19	60	100

Table 4: Mean, mean difference and standard deviations of pre & post-test practice scores of staff nurses on wound dressing (N=60)

Practice Score	Mean	Mean diff	SD	Calculated t-value	Tabulated t-value
Pre-test	9.9	5.7	2.12	19.56	2.00
Post-test	15.6		1.18		

ples on wound dressing. There were total 20 items. The mean post-test practice scores (15.6) was higher than the mean pre-test Practice score (9.9) with a mean difference of 5.7 (Table 4). Further, the standard deviation of post-test practice score (1.18) was lower than the pre-test score (2.12). Thus, the planned demonstration was effective in increasing the practice of the

staff nurses. Obtained mean difference was found to be statistically significant as evident from 't' value. The calculated t value (19.56) was greater than the table value ($t_{59}=2.00$) at 0.05 level of significance.

Association of Practice Scores with Selected Demographic Variables

To find out the association of practice scores with the selected demographic variables Chi square test was used. In order to test the statistical significance of pre-test and post-test practice scores with selected demographic variable. The following null hypotheses was formulated.

H02: There is no significant association of the pre-test and post-test practice scores of staff nurses with the selected demographic variables.

Table 5 shows that there is a significant association between experience and professional education of staff nurses with the pre-test practice scores and no significant association was found between age, and gender, with the pre-test practice scores.

There was no significant association found between age, gender, education, and years of experience with the pre-test practice scores. Mean pre-test practice scores obtained by samples were 60 and mean post-test practice scores were 78.62 with the difference of 34.08 (Table 6). Thus, the increased practice scores in the post-test indicate that the planned demonstration was effective in improving the practice of the staff nurses on wound dressing. The post-test mean percentage practice scores in all content areas were higher than the pre-test means percent practice scores that also indicates that the planned demonstration on wound dressing was effective in increasing the practice of the staff nurses in all three areas of the contents.

Discussion

This study evaluated the effectiveness of a planned demonstration on wound dressing in terms of practice among the staff Nurses in IKDRC-ITS, Ahmedabad. The investigator used

Table 5: Chi-square test showing the association between the pre-test practice score and selected demographic variables (N=60)

S. No.	Demographic variables	Chi-square value	p-Value	Inference
1	Age	4.15	0.12	Not significant
2	Gender	0.33	0.84	Not significant
3	Professional education	6.81	0.33	Significant
4	Experience in years	8.84	0.01	Significant

df (2); $\chi^2=5.99$

Table 6: Chi-square test showing the association between the post-test practice score and selected demographic variables (N=60)

S. No.	Demographic variable	Chi-square value	p-Value	Inference
1	Age	0.00	1.00	Not significant
2	Gender	0.33	0.84	Not significant
3	Professional education	0.00	1.00	Not significant
4	Experience in years	0.00	1.00	Not significant

structured knowledge questionnaire and observational checklist for evaluating the practice of staff nurses. It was revealed that out of 60 samples, pre-test majority i.e. 41 (81%) of the staff nurses had poor practice and 19 (19%) follow good practice on wound dressing whereas in post-test majority 60 (100%) of the staff nurses had good practice in wound dressing. Thus the planned demonstration was effective in increasing the practice of staff nurses in wound dressing techniques.

A similar study conducted by Maria & Lobo (2013) to assess the effectiveness of planned demonstration on aseptic medical wound dressing in terms of practice among staff nurses in selected hospitals in Mangalore showed remarkable improvement in the practice of staff nurses in aseptic medical wound dressing techniques after planned demonstration. The study revealed that corresponding p-value was 0.00 which is small (< 0.05), hence the null hypothesis is rejected. There was a significant association of the source of knowledge of staff nurses with pre-test practice scores and no significant association was found between age, sex, education, years of experience and present area of working with pre-test and post-test practice scores.

Implications

Nursing practice: The art of nursing lies in the nursing practice; the nurse can act as a care provider, organiser, leader, educator, counsellor, motivator, supervisor and team member. Staff nurses need to improve their practice on wound dressing. Nurses need to upgrade their practice on management and prevention of complications of wounds.

Nursing education: In-service education programme for the nursing personnel on the wound dressing can upgrade the practice thereby and

helps to prevent wound infections. The study insists the need for the teaching on wound dressing technique to the nursing students and making them expert over the practice. Nursing curriculum should enable nursing students to develop advanced knowledge and acquire skills in the practice of wound dressing technique.

Nursing administration: Nursing administrators can carry out in-service education programme in healthcare setting. Nursing leaders must utilise available resources, which are technologically sound in teaching staff nurses through mass education programme both in the hospital and community settings. Nursing administrators should provide adequate infrastructure facilities and resources in teaching and practicing wound dressing technique. Nursing leaders should enhance nursing service by providing adequate knowledge regarding wound dressing.

Nursing research: This study will serve as a valuable reference material for future investigators. Other methods of teaching, such as planned teaching programme, SIM, prevalence studies, descriptive studies, can be implemented based on the interests, video-assisted education programmes and education of the investigator at various settings.

Recommendations

- A similar study can be undertaken (a) on larger scale, (b) with the control group, (c) by using different teaching methods.
- A comparative study can be done in surgical wound dressing.
- Studies are needed to develop standardised tool on the practice of wound dressing technique.

Conclusion

Wound management has changed dramatically over recent years and is becoming an exciting and innovative area of patient care. Nurses have a critical role to play in the prevention and management of wounds since each nurse is professionally accountable for his or her practice. The planned demonstration on wound dressing is an effective measure to improve the practice level of staff nurses.

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