Original Article

"Effectiveness of Planned Demonstration on Aseptic Medical Wound Dressing in Terms of Practice among Staff Nurses in Selected Hospitals of Gwalior"

Manisha Shrivastava[1], Anil Singh Bhadouria[2], Tanima Verma[2], Ruby Singh[3]

[1]Assistant Professor, Avadh Hospital Group of Institutions, Gonda, U.P.

[2]Principal, Avadh Hospital Group of Institutions, Gonda,U.P.

[3]Nursing Tutor, KGMU College of Nursing, King George's Medical University, Lucknow, U.P.

[3]Associate Professor, Parul Institute of Nursing, Parul University, Vadodara, Gujarat.

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Abstract

Background: Wound dressing procedures are very common and if wound contamination is limited, then there is a less chance of infection. The investigator felt a strong need to conduct a planned demonstration on aseptic wound dressing technique which would help the staff nurses to develop proper practice and skill in aseptic wound dressing. The aim of the study was to determine the practice on aseptic medical wound dressing technique among staff nurses before planned demonstration as measured by an observation checklist and evaluate the effectiveness of planned demonstration in terms of practice of aseptic medical wound dressing technique among staff nurses.

Materials and Method: A quasi experimental, time series design was adapted for the study. The conceptual framework of the present study was developed by the investigator based on the Weidenbach's Prescriptive Theory. Purposive sampling technique was used to select the XI samples consisted of 30 staff nurses based on their inclusion criteria. A structured observational checklist consisted of 51 items was used to evaluate the effectiveness of planned demonstration on aseptic medical wound dressing technique.

Results: In pre- test majority (66.7%) of the staff nurses have an average practice on aseptic medical wound dressing where as in post test 1, majority (96.7%) of the staff nurses have good practice and in post test 2 (100%) and post test 3 all (100%) the staff nurses have good practice on aseptic medical wound dressing. The mean post-test 1 (44.5±4.2), post test 2 (48.7±0.93) and post test 3 (48.7±0.93) practice scores are higher than pre-test practice score (21.5±5.5). The calculated t value (33.3) is greater than table value (t 29=2.262) at 0.05 level of significance. There is a significant association of source of knowledge of staff nurses with pre-test practice scores and there is no significant association found between age, sex, education, years of experience and present area of working with pre- test practice scores. Also there is no significant association found between age, sex, education, years of experience, present area of working and source of knowledge with post- test practice scores.

Conclusion: The findings of the study proved that the planned demonstration on aseptic medical wound dressing is an effective measure to improve the staff nurses level of practice. The nurses can learn about the aseptic measures maintained during dressing preparation phase, dressing execution phase and post procedure phase.

Keywords: Effectiveness, planned demonstration, aseptic wound dressing.

INTRODUCTION

The skin is the body's largest organ. It is portal of entry for microorganisms. It is estimated that three million micro-organisms per cm2 which feed on its scales and secretions. Skin forms a barrier between the internal organs and the external environment and participates in the vital body functions. Break in the continuity of the skin is wound. It is a type of physical trauma where the skin layers are torn, cut or punctured. This trauma can either cause an open wound or a closed wound. An open wound always has high chance of bacterial infections. Dressing is an effective barrier to reduce infections in moderate to heavily exuding partial and full thickness wounds. It can protect wounds from additional trauma and help to prevent contamination of the wound. An aseptic technique is the method employed to prevent contamination of the wound and other susceptible sites by organisms that could cause infection. It also aims to prevent staff from acquiring an infection from the wound site.

A wound is defined as a disruption of the integrity and function of tissues in the body. The state of having a wound infers an imperfection, an insult resulting in a physical and emotional vulnerability. In India, it is reported that 10,000 of Indians are dying every year due to wound infection. The main causes postulated for the development of wound infections in India are the indiscriminate use of antibiotics, failure of many hospitals to follow basic infection control methods like hand washing, gloving, sterilization, overall lack of hygiene in public hospitals and in the Government hospitals. A study conducted by Ganguly et al (2000) in one of the hospitals in Utter Pradesh, India showed that out of 422 surgical patients 164 developed nosocomial infections. These results illustrate that surgical wound infection is a major problem in Indian health care institutions where wound infection rates have been identified. Unfortunately, rates that have been identified in India between 27% and 39% are higher when compared with these from other countries where wound infection rate is around 5- 10%.

MATERIAL AND METHOD:

An experimental approach with one group time series design was adopted to determine the effectiveness of planned demonstration on aseptic medical wound dressing in terms of practice among 30 staff nurses in selected hospitals in Gwalior. The researcher collected the information over different times and an intervention was introduced during that period. The research instrument included questions based on the objectives; a baseline proforma and structured observational checklist were prepared and administered to evaluate the effectiveness of the planned demonstration of aseptic medical wound dressing technique. The items of the tool were modified according to the recommendations and suggestions of the six experts.

The data obtained was analyzed by both descriptive and inferential statistics on the basis of objectives of the study. To compute the data, a master data sheet would be prepared by the investigator. Baseline proforma was analyzed using frequency and percentage. The performance of staff nurses after the demonstration of aseptic medical wound dressing was analyzed by frequency and percentage. Range, mean, median, and standard deviation of the performance of staff nurses after demonstration of aseptic medical wound dressing were be calculated. Unpaired 't' test was used to determine the difference between the pre-test and post-test experimental scores. Chi-square test was considered suitable to find out the association of performance scores with selected demographic variables at 0.05 level of significance.

RESULT

Table 1: Frequency and percentage distribution of sample according to the demographic variables

No.	Socio-demographic variable	Frequency	Percentage
1	Age (in years)		
	a. 20 – 30	18	60.00
	b. 31 – 40	12	40.00
	c. 41 – 50	--	--
2	Sex		
	a. Male	5	16.70
	b. Female	25	83.30
3	Education		
	a. GNM	10	33.33
	b. B.Sc.(N)	17	56.67
	c. P.B.B.Sc.(B)	3	10.00
4	Years of Experience		
	a. 1 month – 1 year	15	50.00

	b. 1 – 5	8	26.7
	c. 5 – 1	7	23.3
	d. > 10	--	--
5	Present area of working		
	a. Medical ward	18	60
	b. Surgical ward	12	40
6	Source of knowledge		
	a. Experience	25	83.3
	b.Special training programme workshop	--	--
	c. Research studies	--	--
	d. Hospital manual	5	16.7

Section- A

Data in Table 1 shows the following findings-

Age (in years): Majority of the staff nurses (60%) are in the age group of 20- 30 years.Sex: Majority of the staff nurses (83.3%) are females.Education: Majority of the staff nurses (56.67%) have completed B. Sc. (N). Years of experience: Majority of the staff nurses (50%) have 1 month-1 year experience,Present area of working: Majority of the staff nurses (60%) are working in the medical ward.Source of knowledge: Majority of the staff nurses (83.3%) have knowledge from their own experiences.

Section -B

Level of Practice of the Staff nurses on the Aseptic Medical Wound Dressing Technique

Practice of 30 staff nurses are assessed by using observation checklist and analysed by descriptive statistics as presented in table 2.

Table 2: Frequency and percentage distribution of samples based on the level of practice

Level of practice	**Rang of score**	**Pre-test**		**Post-test 1**		**Post test 2**		**Post-test 3**	
		f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Poor	0-17	10	33.33	-	-	-	-	-	-
Average	18-34	20	66.7	1	3.3	-	-	-	-
good	35-51	-	-	29	96.7	30	100	30	100

The data presented in Table 2 shows that in pre-test majority (66.7%) of the staff nurses have average practice on aseptic medical wound dressing whereas in post-test 1 majority (96.7%) of the staff nurses have good practice and in post-test 2 and post-test 3 all (100%)the staff nurses have good practice on aseptic medical wound dressing.

Table: 3 Range, mean, median, standard deviation and mean percentage of the pre-test and post-test practice

	Range	**Mean**	**Median**	**SD**	**Mean percentage**
Pre test	11-29	21.5	22	5.50	74.13
Post test 1	28-49	44.5	46	4.20	90.82
Post test 2	44-49	48.7	49	0.93	99.40
Post test 3	44-49	48.7	49	0.93	99.40

Data in Table 3 shows that the post-test practice score range (28- 49) is significantly higher than pre-test practice score range (11-29).Data also depicts that the mean post-test 1 practice score (44.5±4.2), post- test 2 practice score (48.7±0.93) and the post-test 3 practice score (48.7±0.93) are higher than mean pre-test practice score (21.5±5.5). The mean post-test 2 practice score (48.7±0.93) and the post-test 3 practice score (48.7±0.93) are also higher than the mean post-test 1 practice score (44.5±4.2). The median value of the post-test 1 (46), post-test 2 (49) and post-test 3 (49) are higher than the pre-test median value (22).

Table 4: Frequency, percentage and cumulative frequency distribution of the pre-test and post-test 1, post-test 2, post-test 3 practice scores of staff nurses on aseptic medical wound dressing

Range	**Pre-test**				**Post-test 1**				**Post-test 2**				**Post-test 3**			
	f	**%**	**cf**	**cf%**	**f**	**%**	**cf**	**cf%**	**f**	**%**	**cf**	**cf%**	**f**	**%**	**cf**	**cf%**
0-6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7-13	1	3.3	1	3.3	-	-	-	-	-	-	-	-	-	-	-	-
14-21	10	33.3	11	36.6	-	-	-	-	-	-	-	-	-	-	-	-
22-29	19	63.4	30	100	1	3.3	1	3.3	-	-	-	-	-	-	-	-
30-37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38-45	-	-	-	-	10	33.3	11	36.6	1	3.3	1	3.3	1	3.3	1	3.3
46-53	-	-	-	-	19	63.4	30	100	29	96.7	30	100	29	96.7	30	100

The cumulative frequency distribution of the pre-test and post-test practice scores presented in Table 4 and Figure 4 shows that the pre-test median (22) is less than post-test 1 (46), post-test 2 (49) and post-test 3 (49).The post-test 1, post-test 2 and post-test 3 ogive lies to the right of the pre-test ogive over the entire range showing that the post-test practice scores is consistently higher than the pre-test practice scores.

Table 5: Area- wise mean standard deviation of the pre-test and post-test practice scores

Area	**Max Score**	**Pre-test**			**Post-test 1**			**Post-test 2**			**Post-test 3**		
		Mean	**SD**	**Mean %**	**Mean**	**SD**	**Mean %**	**Mean**	**SD**	**Mean %**	**Mean**	**SD**	**Mean %**
Dressing preparation phase	26	10	3.2	71.4	22.8	2.5	95	23.8	0.34	99	23.8	0.34	99

Dressing execution phase	20	9.6	1.9	80	19.4	1.3	97	19.3	0.73	96.5	19.3	0.73	96.5
Post-Procedure phase	5	1.6	0.95	54.3	3.8	0.98	76	6	0	100	6	0	100

The data in table 5 and Figure 5 shows that the mean post-test practice is significantly higher than the mean pre-test practice scores in all the areas. Both the pre-test and post-test scores are the highest in (80% and 97%) dressing execution phase whereas the post-test 2 and post-test 3 scores are the highest (100%) in post procedure phase.

Table 6: Area-wise mean percentage and mean gain of the pre-test and post-test 1 practice scores

Area	**Mean % scores**		**Mean possible gain %**	**Mean actual gain %**	**Modified gain %**
	Pre-test	**Post-test 1**			
Dressing preparation phase	71.42	95	28.58	23.58	82.50
Dressing execution phase	80.00	97	20.00	17.00	85.00
Post procedure phase	54.30	76	45.70	21.70	47.50

Data in Table 6 shows that mean percentage of pre-test score is higher in the dressing execution phase (80%) and the least in the post-procedure phase (54.3%). The mean percentage of post-test 1 score is higher in the dressing execution phase (97%) and the lowest in post-procedure phase (76%). Data in Table 6 also shows that the highest modified gain is in the execution phase (85%) and the least (47.5%)) in the post-procedure phase.

Table 7: Area-wise mean percentage and mean gain of the pre-test and post-test 2 practice score

Area	**Mean % scores**		**Mean possible gain %**	**Mean actual gain %**	**Modified gain %**
	Pre-test	**Post-test 2**			
Dressing preparation phase	71.42	99.0	28.58	27.58	96.5
Dressing execution phase	80.00	96.5	20.00	16.50	82.5
Post procedure phase	54.30	100.0	45.70	45.70	100.0

Data in Table 7 shows that the mean percentage of the pre-test score is the highest in dressing execution phase (80%) and the least in the post procedure phase (54.3%). The mean percentage of post-test 2 score is highest in the post procedure phase (100%) and the least in dressing execution phase. Data in Table 7 also shows that the highest modified gain is in the post procedure (100%) phase and the least in (82.5%) the execution phase.

Table 8: Area-wise mean percentage and mean gain of the pre-test and post-test3 practice scores

Area	Mean % scores		Mean possible gain %	Mean actual gain %	Modified gain %
	Pre-test	Post-test 3			
Dressing preparation phase	71.42	99.0	28.58	27.58	96.5
Dressing execution phase	80.00	96.5	20.00	16.50	82.5
Post procedure phase	54.30	100.0	45.70	45.70	100.0

Data in Table 8 shows that the mean percentage of the pre-test score is the highest in the dressing execution phase (80%) and the least in the post procedure phase (54.3%). The mean percentage of post-test 2 score is the highest in the post procedure phase (100%) and the least in the dressing execution phase. Data in table 8 also shows that the highest modified gain is in the post procedure (100%) phase and the least in (82.5%) the execution phase.

Table 9: Mean, mean difference & t - value on the pre-test and post-test 1 practice scores

Parameters	Mean	SD	Mean difference	t value
Pre-test	21.5	5.5	23	*33.3
Post-test 1	44.5	4.2		

t29 = 2.262: P<0.05 *significant

The data in Table 9 shows the mean post-test 1 practice score (44.5±4.2) is higher than the pre-test practice score(21.5±5.5). The calculated t value (33.3) is greater than the table value (t29=2.262) at 0.05 level of significance. Hence the null hypothesis H01 is rejected and the research hypothesis (H1) is accepted.

Table 10: Mean, mean difference and t value on pre-test and post-test 2 practice score

Parameters	Mean	SD	Mean difference	t value
Pre-test	21.5	5.50	27.2	*33.8
Post-test 2	48.5	0.93		

t29 = 2.262: P<0.05 *significant

The data in Table 10 shows the mean post-test 2 practice score (48.7±0.93) is higher than the pre-test practice score (21.5±5.5). The calculated t value (33.8) is greater than the table value (t29=2.262) at 0.05 level of significance. Hence the null hypothesis H01 is rejected and the research hypothesis (H1) is accepted.

Table 11: Mean, Mean difference and t-value on the pre-test and post-test 3 practice score

Parameters	Mean	SD	Mean difference	t value
Pre-test	21.5	5.50	27.2	*33.7
Post-test 3	48.7	0.93		

t29 = 2.262: P<0.05 *significant

The data in Table 11 shows the mean post-test 2 practice score(48.7±0.93) is higher than the pre-test practice score (21.5±5.5). The calculated t value (33.8) is greater than the table value (t29=2.262) at 0.05 level of significance. Hence the null hypothesis H01 is rejected and the research hypothesis (H1) is accepted.

Table 12: Mean, Mean difference, SD, and t-value on the pre-test and post-test 1 scores- area-wise

Area	Pre-test		Post-test 1		Mean Difference	t value
	Mean	SD	Mean	SD		
Dressing preparation phase	10.00	3.22	22.8	2.50	12.80	*24.80
Dressing execution phase	9.60	1.90	19.4	1.30	9.80	*5.05
Post procedure phase	1.63	0.95	0.95	0.98	2.17	*16.90

Data in Table 12 shows that the mean percentage of post-test 1 practice score in all areas is higher than the mean pre-test score. The calculated 't' value in all areas is significantly higher than the table value (t29=2.262) at 0.05 level of significance. This suggests that the demonstration is effective in improving the practice of staff nurses.

Table 13: Mean, Mean difference, SD and t- value on pre-test & post-test 2 scores- area-wise

Area	Pre-test		Post-test 2		Mean Difference	t value
	Mean	SD	Mean	SD		
Dressing preparation phase	10.00	3.22	23.8	0.34	13.80	*22.58
Dressing execution phase	9.60	1.90	19.3	0.73	9.70	*28.20
Post procedure phase	1.63	0.95	6.0	0.00	4.37	*24.75

t29 = 2.262: P<0.05 *significant

Data in Table 13 shows that the mean post-test 2 practice score in all areas is higher than the mean pre-test score. The calculated 't' value in all areas is significantly higher than the table value (t29=2.262) at 0.05 level of significance. This suggests that the demonstration is effective in improving the practice of staff nurses.

Table 14: Mean, mean difference, SD and t value on pre-test and post-test 3 scores- area-wise

Area	Pre-test		Post-test 3		Mean Difference	t value
	Mean	SD	Mean	SD		
Dressing preparation phase	10.00	3.22	23.8	0.34	13.80	*22.58
Dressing execution phase	9.60	1.90	19.3	0.73	9.70	*28.20
Post procedure phase	1.63	0.95	6.0	0.00	4.37	*24.75

t29 = 2.262: P<0.05 *significant

Data in Table 14 shows that the mean post-test 3 practice score in all areas is higher than the mean pre-test score. The calculated 't' value in all areas is significantly higher than the table value (t29=2.262) at 0.05 level of significance. This suggests that the demonstration is effective in improving the practice of staff nurses.

Table 15: Chi- square test showing the association between the pre-test practice score and selected demographic variables

Demographic variables	Chi-square value	Inference
Age	0.83	Not significant
Sex	2.57	Not significant
Education	0.98	Not significant
Years of experience	1.42	Not significant
Present area of working	0.50	Not significant
Source of knowledge	7.11	Not significant

Table 16: Chi-square test showing association between the post-test practice score and selected demographic variables

Demographic variables	Chi-square value	Inference
Age	0.50	Not significant
Sex	3.50	Not significant
Education	0.62	Not significant
Years of experience	0.15	Not significant
Present area of working	0.02	Not significant
Source of knowledge	0.09	Not significant

There is no significant association found between age, sex, education, years of experience, present area of working and source of knowledge with the post-test practice scores. there is a no significant association of source of knowledge of staff nurses with

the pre-test practice scores and there is no significant association found between age, sex, education, years of experience and present area of working with the pre-test practice scores.

DISCUSSION

The pre-test scores shows that in the pre-test, majority (66.7%) of staff nurses have average practice scores and 33.3% have poor practice scores. None of them have good practice scores. The above study finding is supported by a descriptive study conducted in England on examination of nurses' practices when performing aseptic technique for wound dressings. The study findings revealed that in pre-test most of the nurses did not practice aseptic technique. Only 3.6% had done hand washing properly and 9 nurses (42.9%) were aware of principle of glove technique and 1 nurse used transfer technique. The findings indicated the poor practice of staff nurses.

The present study findings are also supported by a descriptive study was conducted in China on aseptic technique in wound dressing practices among staff nurses. The pre-test score revealed that 43% of staff nurses have poor wound dressing practice. In the area 'during wound dressing procedure score was 47% and in the area 'after wound dressing procedure' was 36%. 35 This finding emphasizes the need to educate the staff nurses regarding the aseptic wound dressing practice.

This study was supported by the study conducted on quality assessment and effectiveness of structured teaching programme on wound dressing procedure among nurses at SVIMS University Hospital, India. The study findings revealed that there was no association of demographic variables such as age, sex, professional qualification and years of experience with pre-test and post-test wound dressing practices.

CONCLUSION

The findings of the study proved that the planned demonstration on aseptic medical wound dressing is an effective measure to improve the staff nurses level of practice. The nurses can learn about the aseptic measures maintained during dressing preparation phase, dressing execution phase and post procedure phase.

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CONFLICT OF INTEREST

There is no conflict of interest, according to the authors.

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