ORIGINAL ARTICLE

Effect of Sensor, Alarm, Nonstress, Nonsensitive, Anti-rashes (SANSAR) Diaper on Pressure Ulcer Among Immobilized Patients Admitted in Critical Care Units, at Puducherry

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Abstract

Background: In hospitalized patients on bed rest, prolonged immobility has a variety of consequences on the body's various systems and can cause a negative physiologic reaction. Pressure ulcers are a common health problem in immobile patients.

Objectives: To assess the risk for developing pressure ulcer among immobilized patients admitted to critical care units, to evaluate the effectiveness of Sensor, Alarm, Nonstress, Nonsensitive, Anti-rashes (SANSAR) diaper on risk for pressure ulcer among immobilized patients, to find out the association between risk for pressure ulcer among immobilized patients and their selected demographic and clinical variables.

Methodology: Randomized control trial (RCT) design was adopted for the study. The population of the present study was immobilized patients who are at risk for pressure ulcer. Sixty samples were chosen using power analysis and divided into 30 subjects in each group, demographic and clinical variables were assessed using a structured interview questionnaire and pressure risk assessment for both groups using the Braden scale. Sensor, Alarm, Nonstress, Nonsensitive, Anti-rashes diaper was applied to patients in the experimental group with routine care for one week control group received routine nursing care and posttest was done after one week using Braden Scale.

Results: The study results show that posttest mean score in the experimental group was 15.10 $\pm$ 1.626 whereas in the control group was 12.50 $\pm$ 1.408. Sensor, Alarm, Nonstress, Nonsensitive, Anti-rashes diaper was most effective than the routine care at the *p*-value 0.001 level.

Conclusion: Critically ill patients are at increased risk for acquiring pressure ulcer compared with other hospitalized patients because of the critical illness itself, the preexisting comorbid conditions. The aim of the study was to evaluate the effect of SANSAR diaper on pressure ulcer among immobilized patients admitted to critical care units.

Keywords: Effect, Immobilized patients, Pressure ulcer, SANSAR-diaper.

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Introduction

Immobility is unable to independently move or change positions or movement is restricted for medical reasons. Immobility is involved in the development of a number of problems, including pressure ulcer.[1] Immobility complications can have a variety of negative implications, including increased morbidity and death, longer hospital stays, higher healthcare costs, and a contribution to the global disease burden.[2] The diaper is used not only for convenience but also to help patients who are unable to control their bodily functions completely.[3] The aim of this study was to evaluate the effect of SANSAR diaper on pressure ulcer among immobilized patients admitted to critical care units.

Need for Study

During hospitalization, the incidence of pressure ulcers continues to rise (80%). Patients in the intensive care unit have the highest prevalence rates of acquired pressure ulcers among all hospitalized patients, ranging from 14 to 42%.[4] Pressure ulcers have also been linked to death. Within 1 year of departure from the hospital, mortality rates for older people with pressure ulcers might reach 60%.[5,6] As the investigator was working in the clinical sector, witnessed many immobilized patients with risk for pressure ulcer of different origins being admitted to the hospital.[7] The researcher felt that diapers help serve individuals who face daily problems, whether it is those with dementia, urinary or fecal incontinence, diarrhea, or experience mobility impairment and effect on pressure ulcer among immobilized patients.[8] Thus, the investigator had taken up this study with the aim of evaluating the effect of SANSAR diaper on pressure ulcer among immobilized patients.

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Statement of the Problem

"A study to evaluate the effect of SANSAR diaper on pressure ulcer among immobilized patients admitted in critical care units in Mahatma Gandhi Medical College Research Institute, Puducherry".

Objectives of the Study

- To assess the risk for developing pressure ulcer among immobilized patients admitted to critical care units at MGMCRI.
- To evaluate the effectiveness of SANSAR diaper on risk for pressure ulcer among immobilized patients.
- To find out the association between the risk for pressure ulcer among immobilized patients with selected demographic and clinical variables.

Hypotheses

- H1—There is a difference in the level of pressure ulcer among immobilized patients before and after the application of SANSAR diaper.
- H2—There is an association between pressure ulcer among immobilized patients with selected demographic and clinical variables.

Methodology

A randomized control trial was used for this study. Institutional human ethical clearance was obtained. The immobilized patients who satisfied the inclusion criteria during the data collection period from the intensive care unit were selected using a simple random sampling technique. Odd and even number method was adopted to select and divide the subjects into two groups using lots each day, subjects who took lot holding even numbers allotted to group I (experimental group) and odd numbers allotted to group II (control group). A pilot study was conducted to assess the reliability of the tool. A pretest was conducted using a structured questionnaire and Braden scale for both the groups. Sensor, Alarm, Nonstress, Nonsensitive, Anti-rashes diaper was applied to group I (experimental group) twice daily and routine care was given to group II (control group) for 1 week. After 1 week, a posttest was conducted using the Braden scale.

Criteria for Sample Selection

Inclusion Criteria

- Immobilized patients who are admitted to critical care units in the medical intensive care units and surgical intensive care units.
- Male and female patients who are immobilized for more than 3 days and are dependent on caregivers or healthcare professionals.
- Patients above 18 years of age.
- Patients available during the time of data collection.

Exclusion Criteria

- Patients who already developed pressure ulcer.
- Patients on Foleys catheter.
- Patients not willing to participate.

Results and Discussion

Table 1 shows that frequency and percentage distribution of pretest and posttest risk for pressure ulcer among immobilized patients admitted to critical care units in the control group. In the pretest, the majority of immobilized patients 16 (53.3%) had a high level of risk and 14 (46.7%) had a moderate level of risk. In the posttest, the majority of immobilized patients 15 (50%) had a high level of risk, 13 (43.3%) had a moderate level of risk, and 2 (6.7%) had a mild level of risk. In experimental group, in the pretest, the majority of immobilized patients 16 (53.3%) had high level of risk, 12 (40%) had moderate level of risk, and 2 (6.7%) had mild level of risk. In the posttest, the majority of immobilized patients 19 (63.3%) had a mild level of risk, 9 (30%) had a moderate level of risk, and 2 (6.7%) had a high level of risk.

Table 2 shows in the control group the mean and standard deviation of pressure ulcer risk score among immobilized patients during the pretest was 12.23 ± 1.501 and the mean score in the posttest was 12.50 ± 1.408. The calculated paired "*t*" test value of $t = -1.278$ shows statistically not significant. Whereas in the experimental group, the pretest was 12.30 ± 1.512 and the posttest was 15.10 ± 1.626, respectively. The calculated paired *t*-test value of $t = -8.764$ shows statistically highly significant. Hence the stated hypothesis H_1 was accepted.

Table 1: Frequency and percentage distribution of pretest and posttest risk for pressure ulcer among immobilized patients admitted to critical care units in the control group and experimental group ($N = 60$)

Risk for pressure ulcer	*Control group*				*Experimental group*			
	Pretest		*Posttest*		*Pretest*		*Posttest*	
	Frequency (n)	*Percentage (%)*	*Frequency (n)*	*Percentage (%)*	*Frequency (n)*	*Percentage (%)*	*Frequency (n)*	*Percentage (%)*
Very high risk (<9)	0	0	0	0	0	0	0	0
High risk (10–12)	16	53.3	15	50	16	53.3	2	6.7
Moderate risk (13–14)	14	46.7	13	43.3	12	40	9	30
Mild risk (15–18)	0	0	2	6.7	2	6.7	19	63.3
Total	30	100	30	100	30	100	30	100

Table 2: Pre- and posttest mean, standard deviation of pressure ulcer among immobilized patients within control group and experimental group ($N = 60$)

Group	*Test*	*Mean*	*Standard deviaton*	*Mean difference*	*"t" value paired t-test*	*df*	*"p" value*
Control group	Pretest	12.23	1.501	−0.266	−1.278	29	0.211
	Posttest	12.50	1.408				NS
Experimental group	Pretest	12.30	1.512	−2.800	−8.764	29	0.000***
	Posttest	15.10	1.626				HSS

***p <0.001 highly statistically significant; NS, nonsignificant

Association between the Pretest for Pressure Ulcer among Immobilized Patients Admitted in Critical Care Units with Selected Demographic and Clinical Variables in Control Group

The clinical variables patients voiding through had shown a statistically significant association between the pretest level of pressure ulcer among immobilized patients admitted in critical care units with selected demographic and clinical variables in the control group with a Chi-square value at $p < 0.05$ level. Hence the stated hypothesis H_1 was accepted.

Association between the Pretest for Pressure Ulcer among Immobilized Patients Admitted in Critical Care Units with Selected Demographic and Clinical Variables in Experimental Group

The demographic variable and clinical variables family income per month in rupees, present occupational status, length of hospital stay had shown a statistically significant association between the pretest level of pressure ulcer among immobilized patients admitted in critical care units with selected demographic and clinical variables in the experimental group with Chi-square value at $p < 0.05$ level. Hence the stated hypothesis H_1 was accepted.

Recommendations

- The study can be replicated with a large sample for better generalization.
- A similar study can be conducted in long-term care and home care units.
- A similar study can be done in large scale as a longitudinal study.

Conclusion

The statistical evidence proved that the SANSAR diaper was effective in reducing the pressure ulcer among immobilized patients admitted to critical care units while comparing the experimental and control group. Hence the researcher concluded that the SANSAR diaper can be provided for pressure ulcer among immobilized patients.

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