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Effectiveness of prophylactic dressing in reduction of pressure ulcer

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Abstract
A pressure ulcer is an irregularly shaped, depressed area that results from necrosis of the epidermis and/or dermis layers of the skin. Prolonged pressure causes inadequate circulation, ischemic ulceration, and tissue breakdown. Bedsores can develop quickly and are often difficult to treat. Hence prevention is the best way to avert the damage from occurring. The study aimed to identify patients at risk for developing a pressure ulcer and find the effectiveness of prophylactic dressing in the prevention of pressure ulcers. A quasi-experimental research design was used with the sample size being 100 (50 in experimental and 50 in the control group). The samples were patients admitted in the ICU who were at a high risk of developing a pressure ulcer. Tools used for the study were demographic tool and pressure ulcer risk assessment sheet (Braden scale). The prophylactic foam dressing was used in the pressure ulcer prone area i.e) on the sacral region and heel of the feet on the experimental group(N=50) and no prophylactic foam dressing was used on the control group(N=50). Results showed that among the control group,20%(N=10) of the patients developed pressure ulcer whereas among the experimental group only 2%(N=1) of the patients developed pressure ulcer. However, it was identified that the patient who developed pressure ulcer among experimental group was on inotropic support. Hence it is recommended that the prophylactic foam dressing applied on the high-risk patients will help reduce the incidence of pressure ulcer.

Keywords: pressure ulcer, effectiveness, prophylactic dressing

1. Introduction
Pressure ulcers are localized injuries to the skin and/or underlying tissue as a result of pressure, or pressure in combination with shear. Pressure ulcers can have a significant impact on a patient's quality of life, both physically and psychologically. Literature also suggests that the development of Pressure ulcer results in impaired physical function, an increased incidence of infection, higher healthcare costs and increased levels of care required. Professional international organizations suggest that prevention of pressure ulcer should focus on risk assessment scales, skin care, positioning and repositioning schedules, nutritional supplementation, support surfaces and education and training programs. Risk assessment scales are defined as instruments for scoring patients at risk according to a series of parameters considered to be the risk factors.
Once higher risk patients are identified, appropriate prevention strategies should be implemented to relieve intensive and prolonged pressure and address factors such as malnutrition, fecal incontinence and shear and friction forces. Several measures that aim to reduce interface pressure, shear, friction and moisture include the application of special skin care products (such as moisturizers, prophylactic dressings, cleansers and bed-bath wipes), frequent patient repositioning and pressure redistributing. support surfaces

2. Aim
To identify patients at risk for developing pressure ulcer and find the effectiveness of prophylactic dressing in reduction of pressure ulcer.

3. Objectives
- To assess the patient at risk for developing pressure ulcer in Intensive Care Unit.
- To evaluate the effectiveness of Prophylactic dressing among the high-risk patient for developing pressure ulcer.
- To compare the incidence of pressure ulcer between the experimental and control group

4. Materials and Methods
- Research Design- Quasi - Experimental Research design.
- Population- Patient admitted in Intensive Care Unit.
- Sample – Patient with risk for developing pressure ulcer
- Sampling technique- Non probability sampling (Purposive)
- Sample size – 100 (50 Experimental and 50 control group).
- Intervention-Application of prophylactic dressing.
- Period of Data Collection: June 2018 to June 2019
- Design: 2 group post-test only Design

4.1 Inclusion Criteria
Patients on
1. High Inotropic support
2. Dialysis Patient SLED
3. Combination of Both

4.2 Exclusion criteria
Patients admitted with Pressure ulcer

5. Tools

5.1 Tool 1: Demographic tool consisting of the patient name, age, gender, Diagnosis, Admitted with pressure ulcer (yes/No), Co morbidities

5.2 Tool 2: Pressure ulcer risk assessment sheet (Braden scale)

6.Results

6.1 Experimental group: (Prophylactic dressing applied)

Table 1: Details of experimental group

Inotropic support	Dialysis	Combination of Inotropes/ Dialysis	Total - 50
24	14	12	50

Among the experimental group, polyurethane foam dressing was applied on the sacrum and the heel of the feet in addition to Nursing measures such as 2nd hourly back care and change of position

6.2 Control group: (Prophylactic dressing not applied)

Table 2: Details of control group

Inotropic support	Dialysis	Combination of Inotropes/ Dialysis	Total - 50
25	15	10	50

Among the control group, Nursing measures such as 2nd hourly back care and change of position was implemented.

6.3 Comparison of patients who developed Pressure Ulcer among Experimental and Control group

Table 3: Comparison of patients who Developed pressure ulcer with and without application of prophylactic dressing

Group	Number of samples	Developed pressure ulcer	Percentage
Experimental	50	1	2%
Control	50	10	20%

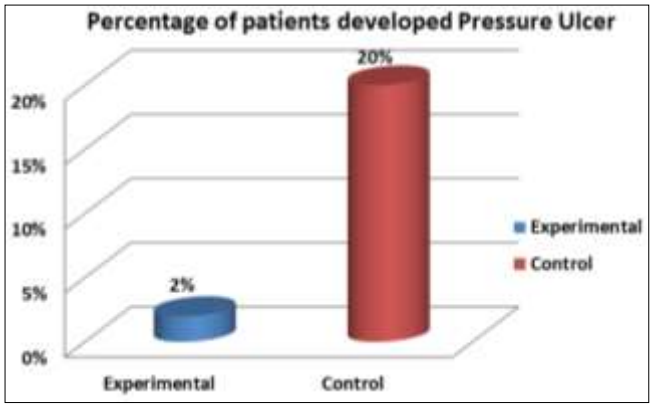

Fig 1: Comparison of patients who Developed pressure ulcer with and without application of prophylactic dressing

6.4: Degree of Pressure Ulcer Developed

Table 4: Degree of Pressure Ulcer developed

	Degree of Pressure Ulcer			
Group	1 Degree (Persistent Redness)	2 Degree (Blisters/ abrasion)	3 degree (Exposure of subcutaneous tissue)	Total
Experimental	1	0	0	1
Control	9	0	1	10

Once the pressure ulcers was identified it was prevented from further deterioration and healed by strict adherence to the back care and positioning every 2nd hourly.

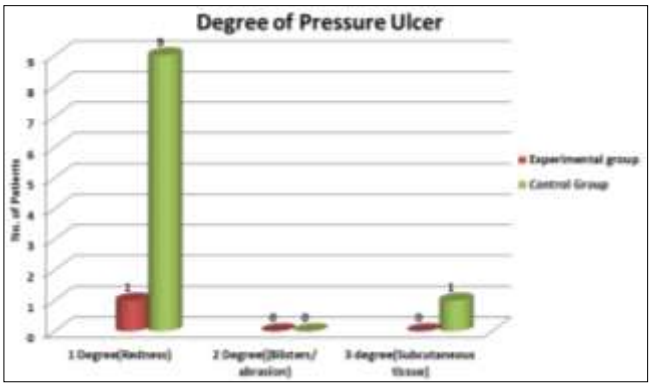

Fig 2: Degree of Pressure Ulcer developed

7. Results and Discussion

The results from the study show that the application of the prophylactic dressing has reduced the incidence of pressure ulcer among the patients who were at high risk of developing pressure ulcer. A study conducted by Byrne J, Nicholas P, on effectiveness prophylactic dressing on prevention of pressure ulcer, it was found that the incidence of pressure ulcer decreased to 3.4 per 1000 inpatient days. A 2013 study by Cubit *et al*. demonstrated that application of a protective sacral dressing with low-shear backing is a simple preventative strategy to reduce the risk of pressure ulcers. The results comparing the 51 patients in the interventional group to patients with similar demographics demonstrated that the control group was 5.4-times more likely to develop pressure ulcers. However, it was found that for the patients with inotropes, developed pressure ulcer even with prophylactic dressing due to vasoconstriction which leads to inadequate tissue perfusion.

8. Conclusion

Prevention of pressure ulcer is extremely important because not only does the patient suffer from the pressure ulcer, but there is an economic impact related to them as the hospital may incur additional costs related to pressure ulcer management. All the patients admitted in the hospital, especially in the ICU should be assessed for risk of developing pressure ulcer. Use of prophylactic dressing as barrier against irritation and constant pressure to the skin should be effectively utilized in pressure ulcer prevention.

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