

Effect of Vibration Effleurage Petrissage MASSager Device on Prevention of Pressure Ulcer among Immobilized Patients: An Experimental Study

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ABSTRACT

Background: Pressure ulcers are a type of injury that breaks the skin and underlying tissue. Among patients, it increases the discomfort, cost of treatment specifically for pressure ulcer. The treatment modalities of pressure ulcer include skin assessment, reposition, and skin massages.

Aims and objectives: This paper aims to assess the risk score of pressure ulcer among immobilized patients, evaluate the effectiveness of Vibration Effleurage Petrissage MASSager (VEPMAS) device on prevention of pressure ulcer, and associate the risk of pressure ulcer among immobilized patients with selected demographic variables.

Methods: Quantitative research with true experimental research design was adopted for this study. One hundred samples (50 in control group and 50 in experimental group) were selected using simple random sampling technique. Pretest was done in both groups using structured questionnaire for demographic variables and pressure ulcer risk using Braden Scale. VEPMAS device was applied to experimental group, and routine nursing care was given to control group. Posttest was done using Braden Scale in both the groups.

Results: The study result shows that experimental group posttest mean score of risk of pressure ulcer was 13.9 ± 1.705 , whereas in control group 13.4 ± 1.498 . This shows VEPMAS device was most effective than manual back massage in preventing pressure ulcer among immobilized patients.

Conclusion: A simple and effective method of preventing the pressure ulcer will be skin massage. Thus the study finding shows VEPMAS device was effective than routine nursing care.

Keywords: Effleurage, Immobilized patients, Petrissage, Pressure ulcer, Vibration Effleurage Petrissage MASSager device, Vibration.

Pondicherry Journal of Nursing (2021): 10.5005/jp-journals-10084-13123

INTRODUCTION

An individual is admitted in hospital for the treatment of many diseases. In India per 1,000 population, hospitalization rate was increased from 16.6 to 37.¹ The patients who were hospitalized or confined to bed for prolonged period of time develop complications such as increased blood coagulopathy, constipation, depression, pressure ulcer, weak bones, and weak muscle. Among those complications, pressure ulcer was most common one.² Pressure ulcers are a type of injury that breaks the skin and underlying tissue when the part of skin is placed under constant pressure for certain period of time and causing tissue to become ischemic,³ cessation of nutrition and oxygen supply to the tissues, and eventually tissue necrosis.⁴ The areas that are particularly prone to pressure sores are those that cover the bony areas such as occiput, trochanters, sacrum, malleoli, and heel.⁵ The prevalence rates varying from 8.8 to 53.2%, and incidence rates varying from 7 to 71.6%.⁶ Risk factors such as diabetes mellitus, old age, anemia, malnutrition, fracture, bowel and bladder incontinence increase the risk of developing pressure ulcer about 4.94%.⁷ A literature review conducted in India suggests that massage techniques have some beneficial effect on prevention of pressure ulcer especially effleurage technique with moderate pressure applied twice daily had decreased the incidence of pressure ulcer about 30%.⁸

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of Vibration Effleurage Petrissage MASSager (VEPMAS) device on prevention of pressure

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How to cite this article: Chinnappan PR, Aruldass KA, Kandasamy R. Effect of Vibration Effleurage Petrissage MASSager Device on Prevention of Pressure Ulcer among Immobilized Patients: An Experimental Study. *Pon J Nurs* 2021;14(4):83–85.

Source of support: Nil

Conflict of interest: None

ulcer among immobilized patients admitted in Mahatma Gandhi Medical College and Research Institute (MGMCRI), Puducherry.

Objectives

- To assess the risk score of pressure ulcer among immobilized patients admitted in MGMCRI hospital Puducherry.
- To evaluate the effectiveness of VEPMAS on prevention of pressure ulcer among immobilized patients admitted in MGMCRI hospital Puducherry.
- To associate the risk of pressure ulcer among immobilized patients with selected demographic variables.

Hypotheses

- H1: There will be a difference in risk score of pressure ulcer among immobilized patients before and after application of VEPMAS device.
- H2: There is an association between risk score of pressure ulcer among immobilized patients and selected demographic variables.

RESEARCH METHODOLOGY

Quantitative research approach and true experimental research design were adopted for this study. Institutional Human Ethical clearance was obtained, and informed consent was obtained from study participants. During data collection period, pretest was performed using a structured interview questionnaire, and Braden scale used to assess pressure ulcer risk for 50 samples of experimental group and 50 samples of control group who were selected using a simple random sampling technique. Back massage given to experimental group using VEPMAS device for 5–10 minutes twice daily for 5 days and manual back massage given to control group for every fourth hourly. After 5 days, posttest was conducted in both groups using Braden scale.

Inclusion Criteria

- Patients who are admitted in ward and critical care units with risk score of 7–14 for pressure ulcer.
- Male, female, and transgender patients.
- Patient above 18 years of age.
- Patient available during time of data collection.

Exclusion Criteria

- Patient who already developed pressure ulcer.
- Patient not willing to participate.
- Pressure risk score of ≤ 6

RESULTS AND DISCUSSION

Table 1 depicts before the intervention, 46% had moderate risk of pressure ulcer, 34% had mild risk of pressure ulcer, and 20% had high risk of pressure ulcer in experimental group, and in control group, 48% had moderate risk of pressure ulcer, 26% had severe risk of pressure ulcer, and 26% had mild risk of pressure ulcer.

After the intervention in experimental group, 76% had mild risk of pressure ulcer 6% had moderate risk, 19% had no risk of pressure ulcer, 52% had mild risk of pressure ulcer 30% had moderate risk, and 2% had no risk of pressure ulcer in control group as shown in Table 1.

Table 2 shows that in experimental group, the mean and standard deviation of pressure ulcer risk score among immobilized patients during pretest was 13.9 ± 1.705 and posttest was 17.06 ± 1.449 , respectively. In control group, the mean and standard deviation of pressure ulcer risk score among immobilized patients during pretest was 13.4 ± 1.498 and posttest was 14.94 ± 1.973 , respectively. The calculated paired “t” test value for experimental group was $t = 14.355$ at $p \leq 0.001$, which was highly significant, and the calculated paired “t” test value for control group was $t = 5.839$ at $p \leq 0.001$. But the mean difference of experimental group was high, i.e., 13.9–17.06, whereas in control group, i.e., 13.4–14.94. Hence, the stated hypothesis H₁ was accepted.

Table 3 shows the association between the risk of pressure ulcer among immobilized patients with selected demographic

Table 1: Frequency and percentage distribution of pressure ulcer risk score among immobilized patients in experimental group and control group during pretest and posttest (N = 100)

Risk score of pressure ulcer	Pretest				Posttest			
	Experimental group		Control group		Experimental group		Control group	
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)
High risk	10	20	13	26	0	0	8	16
Moderate risk	23	46	24	48	3	6	15	30
Mild risk	17	34	13	26	38	76	26	52
No risk	0	0	0	0	9	18	1	2
Total	50	100	50	100	50	100	50	100

Table 2: Pretest and posttest pressure ulcer risk score among immobilized patients within experimental and control groups (N = 100)

Group	Comparison of risk score of pressure ulcer	Mean	Standard deviation	“t” value	“p” value
Experimental group	Pretest	13.9	1.705	14.355	<0.001***hss
	Posttest	17.06	1.449		
Control group	Pretest	13.4	1.498	5.839	<0.001***hss
	Posttest	14.94	1.973		

***hss, highly statistically significant

Table 3: Association between effectiveness of VEPMAS device on prevention of pressure ulcer among immobilized patients with selected demographic variables in both the groups (N = 100)

Sl. No	Demographic variables	Mean	Median	MW/KW		
				test	Df	p value
1	Presence of comorbid illness					
	Yes	13.65	14	8.0344	1	0.0453* _S
2	No	13.65	14			
	Fecal incontinence					
	4 times	13.8	14	6.1777	2	0.0456* _S
	3 times	13.52	13			
	2 times	10.5	10.5			

*_S, significant

variables. The clinical variables such as presence of comorbid illness and fecal incontinence had significant association with risk score of pressure ulcer among immobilized patients in both the groups. Hence, the stated hypothesis H₂ was accepted.

RECOMMENDATIONS

The study can be replicated with a larger sample for better generalization. A similar study can be conducted only for the orthopedic patients.

CONCLUSION

The study reveals that VEPMAS device application is more effective than routine nursing care in preventing risk of developing pressure ulcer among immobilized patients.

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