



EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAMME ON KNOWLEDGE REGARDING NEGATIVE PRESSURE WOUND THERAPY FOR WOUND HEALING AMONG STUDENT NURSES OF SELECTED COLLEGES: A STUDY PROTOCOL

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ABSTRACT

Background: A break in the skin or other body tissues caused by injury or surgical incision is called Wound. Negative pressure wound therapy (NPWT) is novel approach for wound management that can be helpful to speed up wound healing in both acute and chronic wounds. The appliance of NPWT dressing requires perceptive of how the therapy works and training in the use of device. Personnel accountable for dressing change should have the proper knowledge and practice to make sure best wound care. **Objectives:** To evaluate the effectiveness of Video Assisted Teaching Programme on knowledge regarding Negative Pressure Wound Therapy (NPWT) for wound healing among student Nurses of selected colleges. **Material and methods:** Quantitative research approach with pre-experimental one group pre-test post-test research design will be used. 60 student nurses of selected colleges will be selected by simple random sampling technique. Self structured knowledge questionnaire regarding NPWT will be administered to assess knowledge of which validity and reliability will be conducted. Duration of the study will be 1 month. The collected data will be analysed using descriptive and inferential statistics. **Expected outcomes:** Expected improvement in knowledge of student Nurses regarding NPWT will be about 30% after video assisted teaching programme. **Limitations:** The study will be conducted only on student nurses and in selected colleges. In this study only knowledge of student Nurses regarding NPWT will be assessed. **Conclusion:** Video assisted teaching programme may be effective in improving student Nurses' knowledge regarding NPWT for wound healing. Properly designed educational program is necessary to train student nurses regarding NPWT for better quality of care.

KEYWORDS : Wound, Negative Pressure Wound Therapy, Video Assisted Teaching Programme, Student Nurses.

INTRODUCTION

The negative pressure wound therapy has been found to be convincing to the various treatments of wound management and has been widely used as it is safe and effective in promoting wound healing. Hospital stay as well as comorbidity had reduced which result in improved quality of life of these patients as well cost effectiveness.¹ Acute and chronic wounds are a major cause of morbidity and impaired quality of life and a significant risk factor for hospitalization, sepsis, amputation, and even death which affect at least 1% of the population.²

Negative pressure wound therapy is a unique system that aids in optimization of wound healing through the application of sub-atmospheric pressure which help to promote granulation tissue by reducing inflammatory exudates. It can be used to manage any type of wounds, ranging from diabetic foot ulcers, open fasciotomy wounds to closed surgical incisions. Disposable wound vacuum-assisted closures are available for smaller wounds. An emergent adaptation is using fluid instillation in conjunction with NPWT facilitates the direct administration of saline or antibiotic-containing solution into the wound area, followed by a period of time ranging from 10 to 20 minutes to allow for the distribution of the solution throughout the wound. Negative pressure is then applied at 125 mmHg below atmospheric pressure for a sustained duration of up to 6 hours, after which the fluid instillation recurs.³

First nursing assignment of Miss Florence Nightingale's along with her squad was to provide wound care to injured soldiers in Crimean War, the most exigent of her life. She treated wounds while working in dreadful conditions, for recovering sanitary conditions, nutritional needs, and establishing a library to stimulate intellect.⁴ Wound management is a important and rising issue worldwide. In holistic wound management to ensure evidence-based wound care, information of dressing products and clinical expertise in dressing assortment are two major components. There is need to update clinician knowledge of dressing properties in wound

care as there is an increasing global market of dressing products.⁵ Within a busy ward schedule, Nurses are expected to learn highly specialised skills quickly. There is scope for future research for development of an online training tool to assist nurses in knowing and performing a new procedure like NPWT.⁶

Another study was conducted by Enda Hannan et al. in 2021, which is a retrospective review with the objective to estimate outcomes in patients with pilonidal sinus disease treated by a complete surgical excision followed by the application of NPWT. 61 patients undergone treatment throughout the study period. There was 100% compliance with NPWT. All patients' wounds healed successfully, with the average time to healing within 28 days. 1 patient (1.6%) developed persistent PSD and needed further surgery. 2 patients (3.3%) developed postoperative wound infections. 5 patients, who had been managed previously by other operative approaches and developed recurrence, were successfully managed by this technique. Most patients (52.4%) were managed as a day case procedure.⁷ It is observed that health education program implementation has a positive effect on nurses' knowledge and practices level regarding NPWT in post intervention programme compared to preprogram implementation.⁸

Eman Mohamed et al. concluded that nurse's knowledge and practice by application of an educational program regarding negative pressure wound therapy application can be improved.² The hospital should motivate nurses and nursing students and encourage them to update their knowledge by arranging innovative educational programmes and motivate them for self learning, encourage ward-based education through live demonstrations, video-assisted teachings and workshops rather than lectures only.

OBJECTIVES:

1. To assess the knowledge regarding negative pressure wound therapy (NPWT) for wound healing among student nurses of selected colleges.

- To evaluate the effectiveness of Video Assisted Teaching Programme on knowledge regarding Negative Pressure Wound Therapy (NPWT) for wound healing among student Nurses of selected colleges.
- To associate the study findings with selected demographic variables.

MATERIALS AND METHODS:

Study Design: Pre experimental one group pre-test post-test design

Study Setting: The Study will be conducted in selected Nursing Colleges of Nagpur district, Maharashtra, India.

Participants: 60 student nurses studying in 2nd and 3rd year B.Sc. Nursing course in selected Nursing colleges.

Estimation of Sample Size:

$$N = \frac{(Z(\alpha/2) + Z_{\beta})^2 (P_1(1-P_1) + P_2(1-P_2))}{(P_2 - P_1)^2}$$

$$Z \alpha/2 = \text{at } 95 \% \text{ (CI)} = 1.96$$

Represents the desired level of statistical significance

$Z\beta = 1.28$: Represents the desired power = 1.28 for 90%

N

= Minimum samples required for each group

Where ,

Considering Knowledge before giving the video assisting program = 30 %

(Assumed)

Considering Knowledge after giving the video assisting program = 60 %

(Assumed)

Expected effect size of (30% improvement)

At Level of significance at 5 % and power 90%

With clinically significant margin of 30%

Minimum sample size required

$$n = (1.96 + 1.28)^2 ((0.3) * (1 - 0.3))$$

$$+ ((0.60) * (1 - 0.60)) / (0.60 - 0.30)$$

$$= 52 \text{ per group}$$

Considering 15% drop out = 8

$$N = \text{Samples required } 52 + 8 = 60 \text{ each}$$

Sampling Technique: Simple random sampling.

Inclusion Criteria:

- Student Nurses who are willing to participate in the study.
- Students who are studying in 2nd and 3rd year B.Sc. Nursing.

Exclusion Criteria

- Student Nurses who have attended the specialised certified training programme on Negative Pressure Wound Therapy (NPWT) for wound healing.

Assumption: Student Nurses may have knowledge regarding Negative Pressure Wound Therapy (NPWT) for wound healing.

Hypothesis:

- H_0 = There is no significant difference between pre-test and post-test score of video assisted teaching programme on knowledge regarding Negative Pressure Wound Therapy (NPWT) for wound healing among student Nurses.
- H_1 = There is significant difference between pre-test and post-test score of video assisted teaching programme on knowledge regarding Negative Pressure Wound Therapy (NPWT) for wound healing among student Nurses.

Data Collection Tools: Demographic sheet and Self structured knowledge questionnaire.

Description of Video on NPWT: Investigator will prepared video regarding Negative pressure wound therapy by using various advanced animated applications. Investigators voice and various attractive colors, animations will be used to prepare the video. The length of video will be approximately of 20 to 30 minutes and will be in English language. Content of video will be validated by 10 experts of the concerned field. The content of Video will be anatomy of skin, functions of skin, what is wound, how to perform wound care, what is wound healing, phases of wound healing , micro-organisms responsible for wound infection, what is Negative Pressure Wound Therapy, Vacuum Assisted Closure device, how the VAC works including standard pressure for suction, Its indications and contraindications and Nursing care for patients on Negative Pressure wound Therapy.

Procedure: The Study shall be conducted only after the approval of the IEC. Permission to conduct the Study shall be taken from head of the institution. Written informed consent shall be taken from the participants. Student Nurses who fulfill inclusion criteria shall be taken as subjects in the study. Pre-test using self structured knowledge questionnaire will be conducted and then video assisted teaching programme as an intervention will be delivered to the subjects. Post-test using same self structured questionnaire will be administered after seven days of intervention. Validity over the questionnaire will be established for build up through both the construct & content manner to seek for the results what has intended purposely for the inferences & conclusion to measure. Content validity for the questionnaire will be the part of the process through selection of the questions / items in development phase from its initial form.

Expertise from the medicine, surgery and medical surgical nursing will judge the content validity of the questionnaire whether the questions are adequately measuring & assessing the overall knowledge of the interest related to topic that has intended for the purpose. Construct validity of the questionnaire will be govern using the statistical test mentioned below to set with the extent of measuring the match with the multiple dimensions (domain) of the questionnaire. Reliability of the questionnaire will be calculated at using the appropriate statistical test mentioned below.

Data Analysis :

All the results will be tested and performed using R-studio software 4.3 version. Overall results for the outcome variables will be listed in tables for both descriptive & inferential statistics. Descriptive statistics will give the frequency & % information over demographic variables whereas measuring data will be presented with mean std dev median, range (minimum & maximum) . The full data analysis will be performed only with samples not lacking any missing data or value.

The data over the questionnaire firstly will be tested for construct validation over the questionnaire to find the extent of assessment with the match for different domain (factors) using confirmatory factor analysis (CFA). Normality distribution of each item (question) will be explore initially. CFA test will be performed to match for the fit, then overall reliability of the questionnaire will be tested using Cronbach's (α) test. Paired t - test will be used to find the significance difference between two groups (before & after), as data for the questions initially processed for the normality test using Kolmogorov & Smirnov test. Association results will be analyzed using chi square analysis for the factors (demographic) tested for significance responsible for discrepancy in distribution of knowledge among demographic category.

Expected Outcome: Expected improvement in knowledge of student Nurses regarding NPWT will be about 30% after video assisted teaching programme.

DISCUSSION:

Present study findings will be supported by the result of Study conducted by Hala Abd El-Salam (April 2020) that there was a highly statistically significant difference in Nurses' practice between pre, post and after 3 months following educational program regarding to NPWT among patients with acute and chronic wounds.⁸ The conclusion of this study will be reinforced by another study by Sahar Dalvand et al (2018) that overall knowledge of Nurses on pressure injury prevention was lower than the recommended level (60%). Review of PI prevention guidelines and regular training courses can be useful in updating the knowledge of assistant Nurses and Nursing students on prevention of PI.⁹

CONCLUSION:

After the completion of data collection, the conclusion will be drawn from the data analysis. Video assisted teaching programme may be effective in improving knowledge of student Nurses' regarding NPWT for wound healing. Nurses need to be empowered with knowledge and skills of newer therapies for wound management by using appropriate teaching methods.

Consent And Ethical Approval: Approval will be obtained from Institutional Ethical Committee. Written consent will be taken from the subjects for participation in the study. Student Nurses will be instructed that their participation in this study is entirely voluntary and they may opt out at any moment. Prior permission will be taken from head of the selected Nursing institutions. Throughout the Study, confidentiality will be maintained. The study's findings will be disseminated to participants and published in a peer reviewed journal.

Competing Interests:

The authors declare no conflicts of interest.

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