

The Effectiveness of Self-Instructional Module on Knowledge of Staff Nurse regarding Cryotherapy for Relieving Pain of Arteriovenous Fistula in Hemodialysis Patients in Selected Hospitals at Bangalore

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Abstract: Background: The pain during arteriovenous cannulation is remain a common problem in haemodialysis patient. Patient undergoing haemodialysis are frequently exposed to pain from approximately 300 puncture per year to their AV site. Methods: A pre-experimental one-group pretest-posttest design was used. Data were collected using a structured knowledge questionnaire. The pre-test mean score was 19.83, and the post-test mean score was 34.63, with a mean difference of 14.8. The paired t-test value ($t = 1.96$) indicated statistical significance. Results: The SIM significantly improved the knowledge of staff nurse regarding cryotherapy for relieving pain of AV Fistula in haemodialysis patient. Conclusion: SIM is effective in improving the knowledge of staff nurse regarding effectiveness of cryotherapy for relieving pain of AV Fistula in haemodialysis patient.

Keywords: Arteriovenous fistula, cryotherapy, Self-instructional module (SIM), Cryotherapy, Knowledge

1. Introduction

Chronic kidney disease and end stage renal disease have worldwide public health problem. These condition increases the patient morbidity and mortality risk and put major economical strain on the health system. Chronic kidney disease burden is increasing rapidly worldwide. At the end of 2004, 1783,000 patients were receiving treatment for end stage renal disease, of which 77% were on dialysis and this number is increasing at a rate of 7% every year. The average incidence of ESRD in developing countries is 150 per million population. In India it is estimated that 1, 00,000 new patients of ESRD enter renal replacement program annually. The global burden of disease (GBD) 2015 study estimated that 1.2 million peoples were died from kidney failure and it is increased by 32% since 2005. In 2010, it is estimated 2.3-7.1 millions peoples with ESRD died without access to chronic Dialysis. The Saudi Centre for organ transplantation reported in 2015 that there were 17000 diagnosed with CKD cases in kingdom of Saudi Arabia of which 15000 undergone regular hemodialysis. In India, according to survey conducted by National Kidney Foundation, the kidney diseases rank third amongst life-threatening diseases and estimates approximately 200,000 people in India to go into terminal kidney failure annually and millions more suffer lesser forms of kidney disease.

Patient with end stage renal disease undergoing hemodialysis is repeatedly exposed to stress and pain from approximately 300 punctures per year to their arteriovenous fistula. Considerable patient discomfort and stress can be associated with the insertion of large-gauge needles into an arteriovenous fistula. Pain inflicted by the insertion of large

cannula into the arteriovenous fistula is a significant cause of concern for adults on regular hemodialysis.

Cryosurgery is the application of extremely low temperatures used in an effort to relieve muscle pain, sprains and swelling after soft tissue damage or surgery.

A quantitative pre-experimental research design on 60 Hemodialysis patients with AV fistula were selected by non-probability purposive sampling. Data was collected from selected hospitals of Pune City. Cryotherapy as an intervention in to relive the pain during AV fistula puncture. A highly significant difference was found between pre- test and post- test mean score on level of pain ($p < 0.05$ at 5% level of significance).

Cyotherapy is effective in alleviating pain. Nurses have a key role to play in relieving pain of AVF in hemodialysis patient. Therefore, the nurses need to have adequate knowledge regarding cryotherapy to relieve pain of AVF in hemodialysis patients.

The quasi- experimental study was conducted to assess the effectiveness of cryotherapy to relive the AVF puncturing related pain among 50 purposive samplings of hemodialysis patient at Mangalore (25 experimental group and 25 control group). The study result revealed that there was significance difference between pre-test and post-test behavioral response scores and pain scores in the experimental groups. The mean post-test behavioral response scores of the experimental groups ($3.2 \pm 1.05, 2.8 \pm 1.11$) was lower than the mean post-test behavioral response of score of control group ($4.6 \pm 1.22, 4.5 \pm 0.86$) in the post-test 1,2 respectively.³²

The the study consisted staff nurses who are working in Nephrology hospital at Bangalore.

Self -instructional module has been found effective in previous studies in improving staff knowledge in a variety of domains. SIM is a self-contained, independent learning package that guides learners through a specific topic at their own pace without a live instructor. Implementing this approach may improve knowledge of staff nurse regarding cryotherapy for relieving pain of arteriovenous fistula in hemodialysis patients.

Hence, this study aims to assess the effectiveness of self -instructional module on knowledge of staff nurse regarding cryotherapy for relieving pain of arteriovenous fistula in hemodialysis patients.

2. Materials and Methods

To achieve the current study's goals, a single group pre-test post-test (pre-experimental) design was employed. The study was carried out at NU hospital of Bangalore. Independent variable is the self-instructional module and dependent variable is the knowledge of the staff nurses regarding the effect of cryotherapy for relieving pain of arteriovenous fistula in hemodialysis patients NU Hospital at Bangalore

Nephrology staff nurse from NU hospital at Bangalore. were the study's target group. Data was gathered from 60 Nephrology staff nurse chosen using the non-probability purposive sampling technique. The study data collection was carried out for 6 weeks from 01/06/2021 to 3/07/2021, SPSS for Windows, Version 16.0, was used to evaluate the data once it was imported into Excel sheets.

Regarding duties and responsibilities in participant recruiting and data collection, the researcher complied with a number of important ethical guidelines. 1] Written permission from the authorities of the NU Hospital, Rajajinagar, Bangalore. 2] Informed consent from the subjects were obtained before conducting the study. 3] Preserve data confidentiality.

Inclusion criteria of sample

Staff nurse who,

- 1) Are working in nephrology unit.
- 2) Can read and understand English.
- 3) Are present in nephrology unit during data collection.

Exclusion criteria of sample

Staff nurse who,

- 1) Are not willing to participate in the study.
- 2) Have undergone educational program on effectiveness of cryotherapy in relieving pain of arteriovenous fistula in hemodialysis patient within past 6 months.

The Split Half method was employed to determine the tool's reliability, and the raw score formula was utilized to get the reliability coefficient. The created tool was proven to be extremely dependable, with an estimated "r" value of 0.9

Description of the tool

The tool consisted of three sections.

Section I

It comprised of 9 items seeking information on demographic data such as age, gender, religion, residence, educational qualification, number of years of experience, under gone any dialysis training program, knowledge regarding cryotherapy for relieving pain of AVF and sources of information.

Section II

It comprised of the 40 structured knowledge questions.

Section III

It comprised of self-instructional module which included kidney functions, kidney failure and its treatment, hemodialysis, vascular access, pain associated with pain AVF, effect of cryotherapy in relieving pain of AVF in hemodialysis patient.

3. Results

With regard to age the table showed that 27 (45%) were in the age group between 30-35 years, 18 (30%) were in the age group between 36-40 years, and 15 (25%) were in the age group between 41-46 years.

In the distribution of samples based on gender shows that majority of clients 45 (75%) were females and 15(25%) were Males.

In the distribution of samples based on religion status showed that majority 39(65%) of them were belonged to Hindu, 15(25%) were Christian and 6(10%) were Muslims.

In the distribution of samples based on residence showed that majority 46(76.7%) were urban and 14(23.3%) were Rural.

The distribution of samples based on their educational qualifications showed that among the 60 samples, 43(71.7%) samples were GNMs, 12 (20%) were B.Sc. qualified, 5 (8.3%) were M.Sc. nursing qualification and none of the samples were with. P.B.B.Sc staffs

In the distribution of samples based on work experience in nephrology unit shows that among the 60 samples, 15 (25%) samples were having 7-11 years of experience, 27 (45%) samples were having 11-14 years of experience, and 18 (30%) samples were having 15-18 years of experience.

In the distribution of samples based undergone any dialysis training program showed that among 60 samples, all 60(100%) samples were not undergone any training program related to dialysis.

In the distribution of samples based on Knowledge on effect of cryotherapy for relieving pain of Arteriovenous fistula among 60 samples, 21(35%) samples were had knowledge, and 39(65%) samples were not having knowledge in cryotherapy for relieving pain of arteriovenous fistula.

In the distribution of samples based on source of information showed that among 60 samples 12 (20%) samples received the information through printed media, 3 (5%) samples had information through electronic media and 6 (10%) samples had previous knowledge through in-service education sources.

Knowledge of staff nurse regarding cryotherapy for relieving pain of arteriovenous fistula in hemodialysis patients in selected hospitals at Bangalore. Before administering the self-instructional module

The findings revealed that among 60 samples, 21 (35%) samples were had knowledge, and 39 (65%) samples were not having knowledge in cryotherapy for relieving pain of arteriovenous fistula.

The mean pre-test knowledge score was **19.83**, with a **mean percentage of 49.6%** and a **standard deviation of 3.88**. These results indicate that although the few staff nurse had some awareness of cryotherapy for relieving pain of arteriovenous fistula in hemodialysis patient there was still a significant gap in knowledge that warranted educational intervention.

Effectiveness of Self-instructional module by comparing mean pretest and posttest knowledge scores of staff nurses regarding effectiveness of cryotherapy for relieving pain of AVF in hemodialysis patient was effective.

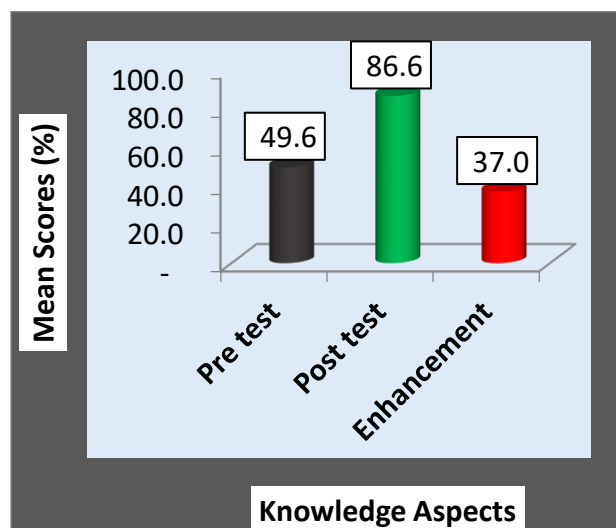


Figure 14: Over all Pre- test and Post- test Mean Knowledge scores on Cryotherapy for relieving pain of Arteriovenous fistula

The comparison of overall knowledge scores of staff nurse regarding effectiveness of cryotherapy in relieving pain of arteriovenous fistula in hemodialysis patients before and after the Self-instructional module. The mean post test score (34.63) of the group was higher than the mean pre- test score (19.83) of the same group. The mean difference between pre- test score and post test score was significant at 0.05% level as the $t=1.96$ ($p<0.0001$).and is significant.

4. Discussion

The present study aimed to assess the effectiveness of self-instructional module on knowledge of staff nurse regarding cryotherapy for relieving pain of arteriovenous fistula in hemodialysis patients. The findings demonstrated a significant improvement in knowledge following the intervention.

The mean pre-test knowledge score was **19.83**, with a **mean percentage of 49.6%** and a **standard deviation of 3.88**. The result of the **paired t-test ($t = 1.96$)** confirmed that the improvement in knowledge was **statistically significant**, indicating the effectiveness of Self-instructional module as an educational strategy.

5. Nursing Implications

The present study emphasizes on the enhancements in the knowledge regarding effectiveness of cryotherapy for relieving pain of AVF in hemodialysis patient. The expanded role of the professional nurse emphasizes those activities, which promotes health among the people. In hospital setups nurses play an important role.

The nurses must have the adequate knowledge regarding effectiveness of cryotherapy for relieving pain of AVF in hemodialysis patient. The nurses should take active participation in education program. They should be given proper education during the program. Therefore, in-service education is must for improving the knowledge of the staff nurses in the hospital.

6. Conclusion

The findings of the present study, it was concluded that the level of knowledge of staff nurses regarding cryotherapy for relieving pain of AVF in hemodialysis patient was inadequate during the pre-test assessment. However, the findings of the post-test in the group, the level of knowledge has improved. The improvement is due to the administration of the SIM.

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