

Effect of Nursing Intervention for the Prevention of Phlebitis Among Patients Receiving Chemotherapy Admitted in Oncology Ward of Selected Hospital

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Abstract

Introduction: Chemical phlebitis is caused by drug or fluid being infused through IV cannula. Factors such as pH and osmolarity of substances have a significant effect on the incidence of phlebitis. If left untreated, it can lead to infection or thrombus formation. Hence it is essential for the nurses to prevent and treat the phlebitis promptly with cost effective way, thus preventing occurrence of phlebitis during chemotherapy treatment.

Material and method: Quasi experimental two groups post-test only design was selected for the study with a sample size 50 in each group. Nonprobability purposive sampling technique was used, patient selected for both groups with lottery method. Inclusion criteria were patient who were receiving chemotherapy, conscious and oriented to time place and person. Exclusion criteria were patient already developed phlebitis at IV infusion site, suffering with peripheral vascular disorder, receiving chemotherapy through central venous catheter or Port A catheters. The control group received hospital existing intervention for the prevention of phlebitis at infusion site, while experimental group received nursing interventions comprised of NS flush, MGSO₄ local application and cold application for three days (table no.1, 2). Visual infusion phlebitis scale was used to assess the occurrence of phlebitis. Baseline data was collected from patient. Unpaired t test was used to compare the effectiveness between two groups.

Result: In control group the mean score of post-test (0.48) and in Experimental group the mean score of post-test (1.2). Unpaired 't' test calculated value for this present study was 2.68 while tabulated value was 2.0086 with 98 degrees of freedom (table no.3). There was significant association found between prevention of phlebitis with type of family (7.13), income (4.67), type of cancer (4.28) and systemic disease (6.62). So the null hypothesis was rejected at 0.05 level of significant.

Conclusion: The study findings revealed that use of nursing intervention for patient receiving chemotherapy is more effective than the hospital existing practice for the prevention of phlebitis.

Keywords: Nursing intervention; Phlebitis; Chemotherapy.

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Introduction

Cancer is life threatening disorder, chemotherapy is treatment of cancer, and phlebitis is common side

effect of chemotherapy. It may cause interruption in treatment. Phlebitis is caused by mechanical trauma to the vein and the chemical irritation of some substances introduced in to the vein. Patients may complain of burning or pain along the veins, nurse may notice redness, swelling and increased body temperature. The treatment for phlebitis is to stop the infusion immediately. Restart it at another site. This may dislodge any clot and it cause pulmonary embolism.¹

Over 90% of hospitalized patients will receive some form of intravenous therapy during the course of their care, and intravenous medication administration represents one of the highest-risk, most invasive procedures performed by nurses and

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thrombophlebitis has become one of the common complications of IV cannulation.²

There are multiple risk factors for the development of thrombophlebitis. The longer duration of cannulation is proportional to the risk of thrombophlebitis. Catheters placed in the veins that overlay joints are more likely to cause thrombophlebitis, as motion of the joint can cause frictional trauma between the endothelium and the catheter. Stagnant blood flow in the lower extremities makes veins in this location more likely to develop thrombophlebitis. Numerous intravenous fluid solutions, such as potassium chloride, barbiturates, phenytoin, and chemotherapeutic agents, are known to cause endothelial damage and inflammation. Finally, poor technique and multiple attempts lead to vascular damage and thrombophlebitis.³

The incidence of phlebitis is 10% to 90% peripheral intravenous catheterization. It is common complication associated with the peripheral intravenous catheterization.⁴ Chemotherapy is the treatment of disease by the use of chemical substances especially the treatment of cancer by cytotoxic and other drugs.⁵ Chemotherapy drugs interfere with steps of the cell cycle specifically involved in synthesis of DNA or replication of tumor cells. In this resting stage the cells are out of cycle for temporarily. RNA and protein are the gap in resting and DNA synthesis while the Second gap, during the cell constructs the mitotic apparatus and lastly Mitosis. Molecular and targeted therapy in combination with chemotherapy are shown increases in response to survival molecular targeted agents interfere in specific steps in the process of cancer development chemotherapy destroy the cancer cell, by damaging the cell's DNA to cause apoptosis, other molecular agents stop cancer growth and development of new blood vessels or invasion of other healthy tissues.⁶

Peripheral-catheter related phlebitis is caused by the inflammation of tunica intima of a superficial vein due to irritation of the tunica by mechanical, chemical or bacterial sources. It is estimated that in U.K 2080% of patients with peripheral venous cannula develop phlebitis.⁷

Problem statement: Effect of nursing intervention for the prevention of phlebitis among patients receiving chemotherapy admitted in Oncology ward of selected hospital.

Objectives of study

Primary Objectives:

1. To assess the effect of hospital existing practice for prevention of phlebitis among patient receiving chemotherapy.
2. To assess the effect of nursing intervention for prevention of phlebitis among patient receiving chemotherapy

Secondary Objectives:

1. To compare the effect of hospital existing practice with nursing intervention for prevention of phlebitis among patient receiving chemotherapy.
2. To find out association between prevention of phlebitis and selected baseline proforma among patients receiving chemotherapy.

Hypotheses

(All hypotheses will be tested at 0.05 level of significance)

H_{01} : There will be no significant effect of nursing intervention on prevention of phlebitis among patient receiving chemotherapy.

H_{11} : There will be significant effect of nursing intervention on prevention of phlebitis among patient receiving chemotherapy.

H_{02} : There will be no significant association between prevention of phlebitis among patient receiving chemotherapy and there selected baseline Performa.

H_{21} : There will be significant association between prevention of phlebitis among patient receiving chemotherapy and there selected baseline Performa.

Ethical aspect: To obtain ethical committee approval for conducting research study permission was taken from institutional ethics committee research study was conducted after availing permission and procedure required for ethical committee was fulfilled. Written informed consent was taken from the patient after informing details regarding research study, its benefits and effect of participation in the research study.

Conceptual framework: the conceptual framework of the study based on Faye Glenn Abedallah. Problem solving approach consist of identification of problem, assessment of problem, intervention, implementation and evaluation; she also states that conceptual framework is a cohesive supportive linkage of selected interrelated concept.^{8,9}

Review of literature: Review of literature refers to an extensive, exhaustive and systematic

examination of publications relevant to the research project. A literature review is an account of what has been already established or published on particular research topic by accredited scholars and researchers. A review of literature is helpful to gain deeper insight of the research topic. An extensive review of related literature enable the researcher to develop the conceptual frame work, tool, selection of research design and plan for data analysis. Review of literature for the present study is divided under two aspects. A. Review related to phlebitis. B. Review related to prevention of phlebitis.

Materials and methods

Research approach: Researcher selected experimental approach for this research study.

Research design

Research design adopted for the present study is quasi experimental two group’s post-test only controls group research design.

Research study setting

Research study setting for the present study was oncology ward of selected hospital.

Population: The study population was patient undergoing chemotherapy admitted in oncology ward of selected hospital.

Sample size: In this study the sample size consisted of 100 patients who were undergoing chemotherapy in selected hospital.

Sampling technique: the sample drawn for the present study with simple random sampling technique.

Method of selection of study subjects

Inclusion criteria: The patient receiving chemotherapy who are,

1. Between the age 18 to 65 years of both gender
2. Able to follow instructions

Table No. 2: Intervention schedule.

| Sr. No. | Nursing intervention | Day 1 | Day 2 | Day 3 | Final score |
|---------|---|--|--|--|---|
| 1. | Cold application given at 9am. | | | | |
| 2. | Ns flush given before and after giving IV medication. | Post-test done after intervention at 6pm | Post-test done after intervention at 6pm | Post-test done after intervention at 6pm | Final score was aggregated according to three days score. |
| 3. | MgSO ₄ local application done at 2pm. | | | | |

3. Receiving chemotherapy through IV cannula.

Exclusion criteria: The patient receiving chemotherapy who are,

1. Already developed phlebitis at IV infusion site.
2. Suffering with peripheral vascular disorder.
3. Receiving chemotherapy through central venous catheter or port A catheters.
4. Tool consists of baseline Performa and visual infusion phlebitis scale.

Tool: Tool consists of baseline Performa and visual infusion phlebitis scale.

Section A: Baseline Performa.

Section B: Standardized visual infusion phlebitis scale for assessing the phlebitis.

The assessment of phlebitis done with help of visual infusion phlebitis scale. In the VIP scale assessment done by following criteria.

- (a) Healthy IV site -0
- (b) Possible first sign of phlebitis -1
- (c) Early stage of phlebitis-2
- (d) Medium stage of phlebitis-3
- (e) Advance stage of phlebitis-4
- (f) Advanced stage of thrombophlebitis-5

Intervention

Table No. 1: Intervention.

| Sr. No. | Intervention | Frequency | Duration |
|---------|--|--|----------|
| 1. | Cold Application (ice pack) | During injection administration on IV site | 15 min |
| 2. | Ns flush 5ml | Before and after injection every time | - |
| 3. | MgSO ₄ (20mg) + Glycerine (100ml) local application | In afternoon at 2pm. | 15 min |

The nursing intervention schedule is followed for 3 days.

Method of analysis

The data obtained was analyzed and interpreted by descriptive and inferential statistics based on the objective of the study.

Result

Analysis of the first section revealed that Majority (40%) of chemotherapy patient under study were joint family in control group and Experimental group (52%) of them were joint family. Highest percentage (72%) of samples had 16,194Rs.-21,591Rs income in control group and 64% of samples had 16,194Rs-21,591Rs income in experimental group. The findings show that in control group (50%) of them had 2nd stage of cancer in experimental group (52%) of them had 2nd stage of cancer. Majority (80%) of them not had any systemic disease in control group and Experimental group (64%) of them not had any systemic disease.

Effect of hospital existing practice for prevention of phlebitis among patient receiving chemotherapy.

Findings shows that in control group 16 (32%) of them had healthy iv site (score-0), 16 (32%) of them had possible first sign of phlebitis (score-1), 12 (24%) of them had early stage of phlebitis(score-2), 4 (8%) of them had medium stage of phlebitis (score-3), 2 (4%) of them had advance stage of phlebitis (score-4) and 0 (0%) of them had advance stages of thrombophlebitis (score-5). The mean score, SD± of selected chemotherapy receiving patient in post-test of control group. The mean score of post-test was 30 and SD±was 1.08.

Assess the effect of nursing intervention on prevention of phlebitis among patient receiving chemotherapy.

Findings shows that in experimental group 34 (68%) of them had healthy iv site (score-0), 10 (20%) of them had possible first sign of phlebitis (score-1), 4 (8%) of them had early stage of phlebitis (score-2), 2 (4%) of them had medium stage of phlebitis (score-3), 0 (0%) of them had advance stage of phlebitis (score-4) and 0 (0%) of them had advance stages of thrombophlebitis (score-5). The mean score, SD± of selected chemotherapy receiving patient in post-test of experimental group. The mean score of post-test was 16 and SD ± was 0.81.

Table No. 3: Comparison between post-test of control group and experimental group phlebitis among patient receiving chemotherapy in experimental group. n=50

| Group | Post-test | | Unpaired 't' test value |
|--------------------|------------|------|-------------------------|
| | Mean score | SD± | |
| Experimental group | 16 | 0.81 | |
| Control group | 30 | 1.08 | 2.68 |

Find out association between prevention of phlebitis and selected baseline Performa among patient receiving chemotherapy.

Chi-square test was used for find out the association between prevention of phlebitis with selected baseline Performa. Result shows that there is significant association between prevention of phlebitis with type of family (7.13), income (4.67), type of cancer (4.28) and systemic disease (6.62). However there is no association between selected prevention of phlebitis with gender, marital status, occupation, diet, religion, history of cancer, personal habit, duration of cancer, category of cancer, stages of cancer, purpose of treatment, cycle of chemotherapy, chemotherapy drug, diagnosis since how many years, site of cannula and size of cannula.

Implication of study

Nursing practice

- This study findings also helpful for the patient those who are receiving chemotherapy.
- These study findings would help the oncology nurses to understand nursing intervention which will prevent the phlebitis.
- Prevention of phlebitis is an important challenge to the oncologist they can advise nursing intervention to the patient receiving chemotherapy. The prime role of oncology nurses is to prevent, detect and provide intervention.
- This study would help staff nurses to understand the effect of nursing intervention for prevention of chemotherapy induced phlebitis.
- Evidence based practice helps the staff to update their clinical knowledge.

Nursing education

- Nursing education is developing rapidly in India and nurses are providing care through base of scientific nursing education.

- It is helpful to student nurses to understand the effect of nursing intervention for prevention chemotherapy induced phlebitis and apply this knowledge in clinical practice.
- This study is useful for nursing personal to increase the professional knowledge and apply this knowledge in clinical practice.
- It is also helpful to the other researcher for to conduct the study in new setting, and on large sample size and its finding can be generalized for students training.
- Every nurse can take the benefit of study findings.
- Nursing students could learn the assessment of phlebitis.
- Nursing students should be taught about the importance of phlebitis management.
- Adequate practical training can be given to the nursing staff and students regarding treatment of intravenous phlebitis.

Nursing research

- The nurse researcher should be able to conduct the research on various aspect of awareness about prevention of chemotherapy induced phlebitis.
- Nursing education must emphasize on evidence based practice in view to manage the phlebitis.
- Nurses need research because it helps them advance their field, stay updated and offer patient better care.
- Researchers acquire new knowledge in the field of patient care.
- It is useful to develop the new treatment modalities.
- It helps to improve quality of nursing care.

Nursing administration

- Nurse administrator can seek various areas in patient care for patient receiving chemotherapy for prevention of phlebitis.
- The nurse administrator should plan and organizing continuing education program on phlebitis prevention.
- Nurse administrator can arrange in-service education program, conference, workshop etc.

- This enables the nurse to update the knowledge and render the effective care to the public.

Recommendations

- Based on study finding the following recommendation have made for the further study
- Similar study may be replicated on large sample for wider generalization.
- True experimental study can be conducted on patient receiving chemotherapy.
- Comparative study can be done to assess the effectiveness with different treatment modalities.
- Similar study can be done on specific chemotherapy drugs.
- Similar study can be done different nursing interventions.
- Similar study can be undertaken in different settings with modification in inclusion and exclusion criteria.

Limitations

Despite all the efforts made by the researchers, the present study had some limitations which are as following

- The present study sample size was small.
- Present study was conducted only on chemotherapy patient.
- Nursing intervention was given for 3 days.
- During the course of study researcher encountered the difficulties in managing extraneous variables, which can directly or indirectly affect the study findings.

Conclusion

Phlebitis in the patient receiving chemotherapy is commonly identified. If the prompt and appropriate measure not taken these phlebitis can lead to serious health issues. Nursing intervention such as normal saline flush, MgSO₄ application, cold application can help the patient to prevent the occurrence of phlebitis. The study finding revealed that the use of nursing intervention for patient receiving chemotherapy is more effective than the hospital existing practice.

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