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Assess effectiveness of structured teaching program on knowledge of intravenous chemotherapy among nurses in selected hospitals of Pune city

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Abstract

Introduction: Every year new cancer patient registered is over 11, 57,294 lakhs. Estimated number of people living with the disease is around 2.25million. Chemotherapy is often given for a specific period of time, such as 6 months or a year. The purpose of this study was to assess the effectiveness of structured teaching program on knowledge of nurses regarding intravenous administration of chemotherapy.

Method: Pre experimental study design was adopted using 100 nurses. Structured teaching program was provided to the participants working in chemotherapy wards on the second day. Post-test was taken after 14 days of administering structured teaching program.

Results: The findings of the study suggested nurses have average knowledge level regarding intravenous chemotherapy. 90% of nurses had average knowledge score (8-15), 5% of nurses had poor knowledge score and 5% had good knowledge score. In post-test 100% of nurses had good knowledge score (16-22). This indicates that the structured teaching program was effective. There was no association of selected demographic variables with knowledge level.

Conclusion: The oncology nurses need to be provided with more of in-service programs with emphasis on increase in their knowledge and skills.

Keywords: Chemotherapy cycle, cancer, treatment, structured teaching program, oncology

Introduction

Greek for "cancer" is "crab," which Hippocrates believed resembled a tumor; the term "malignant neoplasm" refers to a group of diseases. Cancer is the uncontrolled, abnormal proliferation or growth of immature cells. Today cancer patients are diagnosed earlier than in the past and many receive multiple cycle of chemotherapy for a longer period of time.

Every year new cancer patient registered is over 11, 57,294 lakhs. Estimated number of people living with the disease is around 2.25million^[1]. Chemotherapy is the drug used for cancer patients. Chemotherapy is often given for a specific period, such as 6 month or a year. Oncology nurses need to be informative as chemotherapy medications are weight based and specific to each patient. Being first line healthcare providers, nurses are ethically responsible for providing quality care to cancer patients.

Need of the study

The growing burden of cancer in the developing country such as India is going to increase the workload of nurses and cause a strain on the manpower of hospitals. Worldwide the nurses consist of the largest group of health care providers. The nurses have to provide care for cancer patients in spite of various challenges such as patient frequently coming with various symptoms, inadequate essential supplies and medications and lack of training in the field of oncology. All these factors can make the nurse feel helpless and disappointed^[2]. A study conducted by Elaine Lennan on Complications of delivering IV chemotherapy stated there are settings where chemotherapy is delivered in both in patient as well as out-patient department. Correct choices of intravenous access devices are essential, peripheral cannulas are the most commonly used devices. Nurses are in the position to safely administer intravenous chemotherapy drugs without discomfort or tissue damage and without compromising venous access, especially when long-term therapy is advised.

Nurses also need skill in management of extravasations and any hypersensitivity reactions [3]. A literature review conducted on Journals on the role of nurses and educational knowledge in chemotherapy administration and safety standards in clinical practice. The findings of their view stated the role of nurses did not provide good expected role models and nurses administration behaviors was not according to the standards. The educational program provided in this study for nurses had a significant effect in minimizing the hazards [4]. Hence keeping all this in mind the Researcher felt a need to assess the effect of structured teaching program on the knowledge level of nurses regarding chemotherapy administration for cancer patients. The study will provide insights into the impact of educational interventions on nursing practice and patient care.

Objectives of the study

1. To assess the existing level of knowledge of intravenous chemotherapy among nurses.
2. To develop and implement a structured teaching program on intravenous chemotherapy
3. To evaluate the effectiveness of the structured teaching program on knowledge of intravenous chemotherapy among nurses.
4. To associated the findings with selected demographic variables.

Hypothesis

Null Hypothesis: There is no significant difference in the knowledge of intravenous chemotherapy among nurses before and after the structured teaching program.

Alternative Hypothesis: There is a significant difference in the knowledge of intravenous chemotherapy among nurses before and after the structured teaching program.

Materials and Methods

Methods

The method used to collect the information needed to analyze the research problem and provide answers to the study's research questions is known as the methodology. It aids the researcher in constructing a blueprint for the carried out research. The systematic process that the researcher follows from the moment the problem is first identified until it is resolved is included in the research methodology.

For the present study the Research approach adopted was quantitative approach. The research design used was Pre-experimental research design. The target population for this study consist of nurses working in the oncology wards of selected hospitals of Pune district. The data collected from 2nd July to 1st December 2022. The sampling technique adopted was purposive sampling. The sample size consists of 100 nurses working in oncology ward. The inclusion

criteria for selecting the samples were nurses working in oncology wards. The settings for the study were selected hospitals of Pune city. The variables under study are dependent variable is knowledge of intravenous chemotherapy administration and independent variable is structured teaching program. The baseline data and pre-test of knowledge from the participants was collected on 1st day. On 2nd day the structured teaching plan was administered in the oncology wards. After 14 days the post test was conducted.

Material

The tool utilized for gathering data was as follows:

Section I: Socio- demographic data. It consisted of personal information such as name, age, gender, professional qualification, year of experience, duration of work.

Section II: Structured Questionnaire to assess the knowledge of Nurses regarding intravenous chemotherapy. Questions were 22 in number.

Scoring for pre-test & post-test

Sr. No	Level	Scoring
1.	Good knowledge	16-22
2.	Average knowledge	8-15
3.	Poor knowledge	0-7

Results

The analysis of the data was done in accordance with the study's goals and hypothesis. Analysis was conducted using descriptive and inferential statistics.

According to the results of the current study, 95% of the samples were between the ages of 21- 30 years, and 5% of the samples were between the ages of 31- 40 years.

Analysis of demographic data:

In Gender wise distribution all samples were females. In Professional qualification 80% of samples were diploma holders [GNM] and 20% of staff nurses were B.Sc nurses. In work experience 70% of samples were having the experience of working 1-3 years, 20% were having 4-6 years of experience and 10% were 7-10 years of work experience. In Frequency of administration of chemotherapeutic agents 95% of nurses administered chemotherapy daily and 5% of nurses administered chemotherapy weekly. With regards to queries regarding whom the staff nurses approached when they had any queries or doubts the findings showed 40% of nurses approached the consultant or doctor, 40% of nurses approached the pharmacist and 20% of nurses approached the ward sister in-charge. All participants had administered chemotherapy in the chemotherapy ward. (Table no. 1)

Table 1: Frequency Distribution of Demographic Characteristic n=100

Demographic variables		Frequency(n)	Percentage (%)
Age	21-30	95	95
	31-40	5	5
Gender	Female	100	100
Professional Qualification	B.Sc. Nsg	20	20
	Diploma	80	80
Work Experience in oncology ward	1-3	70	70
	4-6	20	20
	7-10	10	10
Frequency of administering chemotherapy drugs	Daily	95	95

	Weekly	5	5
For Queries regarding chemotherapy drugs, the approach is towards	Consultant	40	40
	Pharmacist	40	40
	Ward Sister	20	20
Area of administering chemotherapy	Chemo Ward	100	100

Analysis of knowledge

The findings related to pre-test and post-test knowledge of nurses administering chemotherapy, 90% of nurses had average knowledge score, 5% of nurses had poor knowledge score and 5% had good knowledge score. In post-test 100% of nurses had good knowledge score. This indicates that the structured teaching program was effective. So Null hypothesis is rejected and alternative hypothesis is accepted.

Table 2: Frequency Distribution of Pre-test & Post-test Knowledge score n=100

Knowledge score	Frequency	Percentage (%)
Pre Test Knowledge score	Poor	5
	Average	90
	Good	5
Post-test Knowledge score	Good	100

The findings related to the effectiveness of structured teaching program regarding administration of chemotherapy were effective as the p-value is <0.001 thus the null hypothesis is rejected. The significant increase in the mean knowledge score from pretest to post-test 10.90 to 22.25 suggests an improvement in knowledge after the intervention. The calculated t-value 19.36 is greater than the tabulated t-value 1.729, indicating that the difference between the pretest and post-test scores is statistically significant. The p-value is less than 0.001, which is well below the typical significance level of 0.05. This indicates strong evidence against the null hypothesis, suggesting that the observed difference is statistically significant.

Table 3: Effectiveness of Structured teaching program n=100

	Mean	SD	Cal. value	Tab. value	P-value
Knowledge Score	Pretest	10.90	2.77	19.36	1.729
	Post test	22.25	5.37		

Association of variables with findings of study

The findings related to association of variables the study showed there is no association of knowledge level with the selected demographic variables as the pvalue is <0.05. So the null hypothesis is accepted. It shows the knowledge does not depend on the nurse's age, years of experience and qualification. With repeated "Continuous Nursing Education" the knowledge can be upgraded.

Discussion

The above findings of the study suggest there is a change in the knowledge level after administering the structured teaching program. A study done by Devi Sarita *et al.* on knowledge of nurse stated that nurses had poor knowledge regarding safe handling of chemotherapy drugs [5]. Assessment of staff nurses' attitudes and knowledge regarding the nursing care of cancer patients receiving chemotherapy at particular cancer hospitals in Punjab was the focus of a study by Choudhary VS. According to the study's findings, nurses seem to have an average understanding of nursing care for cancer patients receiving chemotherapy. Therefore, CNE programs that update nurses' knowledge should be regularly held in order to improve

their knowledge [6]. The null hypothesis is rejected as there is a change in the level of knowledge of nurses after administration of structure teaching program. There was no association found with any of the demographic variables so the null hypothesis is accepted. Supporting this research is a study conducted by LeBaron, Gayatri Palat *et al.*, finding suggested recommendations to support nurses through providing educational programs, the study also suggested strong institutional commitment and leadership to implement interventions to support nurses. A solid knowledge of chemotherapy is necessary to assist new nursing graduates to work as competent beginner to practitioner within healthcare settings. Therefore, competency in chemotherapy administration is vital component for implementing high quality care [7].

Implication

Nursing Education: Although theory is taught to the students the practical knowledge aspects are not taken care of. If we have more practical knowledge during the curriculum it will enrich their knowledge and this knowledge will be reflected when they are working as Chemotherapy nurses.

Nursing Administration: The Administrators should conduct more of Continuing nursing education and workshop through in-service education for increasing the knowledge and uplifting the standard of our profession.

Nursing Research: More such studies should be carried out considering the multiple chemotherapy cycles and nurses who play a key role in administration of the medication.

Conclusion

Cancer is a life threatening disease. There are many treatment modalities for the patient diagnosed with cancer. Chemotherapy is the most common treatment advised for the patient. Nurses administer chemotherapy to the patients. Throughout the cancer journey nurses are involved inpatient care regarding all aspects of treatment; therefore, it becomes very essential that they are having adequate knowledge about chemotherapy and also the necessary skills for administration. Based on these results, it explains that the structured teaching program had a significant positive effect on the knowledge of intravenous chemotherapy among nurses, as evidenced by the improvement in knowledge scores from pretest to post-test.

Competing interests: The authors declare no competing interest.

Authors' contributions

1. Dr. Archala Ganesh Khemnar: The author planned how to conduct the study and did the validity and reliability of the tool. Collected the data for the study and compiled for analysis. Write up done for the manuscript.
2. Dr. Seema Singh: The author is the Guide for this study; contribution was done by guiding, approving each step of research process and doing the necessary

correction of the manuscript.

3. Dr. Ganesh Khemnar: The author has helped in data collection, compilation and statistical analysis of the data. Contributed in the write up of manuscript and sending for publication.

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