



RESEARCH ARTICLE

OPEN ACCESS

EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE AND PRACTICES REGARDING HANDLING OF CHEMOTHERAPEUTIC DRUGS AMONG THE STAFF NURSES

*Meera John

H. No. 4, Lal kothi CMC and Hospital Ludhiana

ARTICLE INFO

Article History:

Received 09th May, 2019
Received in revised form
21st June, 2019
Accepted 03rd July, 2019
Published online 30th August, 2019

Key Words:

Effectiveness, Knowledge,
Practice, Structured
Teaching programme.

ABSTRACT

Cancer therapy is broadly based upon the use of chemotherapeutic drugs with strong anti-cancer cytotoxic effects. In order to minimize occupational exposure to chemotherapeutic cytotoxic drugs, special department design and equipment are necessary as well as personal protective measures and safety practices during all procedures involving the use of these agents, such as transportation, storage, preparation, reconstitution, administration and care of patients and finally disposal. A Quasi Experimental approach will be applied and the study will include 60 staff nurses selected by Systematic Random Sampling, from Mohan Dai Oswal hospital, Ludhiana, Punjab. Structured teaching program will be prepared and conducted on knowledge and practices regarding handling and safety measures of chemotherapy drugs. It will be evaluated by structured questionnaire method after 7 days of the teaching. The findings depict that in experimental group, pre-posttest knowledge mean scores were 18.8 and 28.9 which were higher than control group, pre-posttest knowledge scores mean i.e. 17.4 and 21.6. Hence it is concluded that difference in post-test knowledge score of control group was found significant i.e. 't' 7.06, due to test-retest method effect and difference in post test knowledge score of experimental group was found to be highly significant i.e. 't' 12.2, hence structured teaching program had made the impact to increase the knowledge of experimental group. Practices were assessed with the help of observational checklist. The findings depict that in control group pre-post observation scores i.e. 15.5 and 15.7 were less than the experimental group pre-post observation scores i.e. 15.9 and 16.2 respectively. Even though mean differences were increased in both control and experimental group while calculating the statistical differences were found non-significant in both control and experimental groups and findings also depict that practices scores were 100% unsatisfactory in pre-post observation in control and experimental groups. Hence experimental group practices were not improved after structured teaching program.

Copyright © 2019, Meera John. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Meera John. 2019. "Effectiveness of structured teaching program on knowledge and practices regarding handling of chemotherapeutic drugs among the staff nurses", *International Journal of Development Research*, 09, (08), 29285-29289.

INTRODUCTION

Cancer is the group of more than 200 diseases characterized by uncontrolled and unregulated growth of cells. It is the major health problem that occurs in people of all ethnicities. Many cancers once considered incurable are now controlled with the discovery of different methods like surgery, radiation, and chemotherapy. At the turn of century Paul Ehrlich, who coined the term chemotherapy and was named the "Father of Chemotherapy". The modern era of chemotherapy was initiated by the discovery of the effective use of estrogen in prostate and breast cancer (Margret Barton, 1995). Chemotherapeutic agents are widely used in cancer therapy because they can inhibit growth by disrupting cell division and

killing actively growing cells. With increasing understanding of cell biology over the last four decades, administration of antineoplastic agents has become one of the most important modalities of treating cancer (Constantinidis T, 2001). Educational programmes about cancer and safe handling of cancer chemotherapeutic drugs provide the nurses to safeguard themselves as well as patients. Dissemination and current information permits the nurses in general practice and other specialties to learn about recent advances in cancer research and ongoing clinical trials. In addition, the health care professional must be familiar with the medication, mode of action, side effects, appropriate administration and disposal procedure (WHO, 2015).

Need of the study

Cancer is an abnormal cell growth and chemotherapy is a drug regimen designed to stop that growth. Chemotherapy can also harm healthy cells, according to the National Institutes of Health (NIH), and cause side effects in cancer patients. Healthy cells often recover and side effects gradually disappear in many cases. Chemotherapy is administered intravenously, orally or intrathecally. Without taking proper precautions, nurses and other health industry workers can be exposed to the drugs (Martin Larson, 2015). Nurses must be aware of the safe handling of the chemotherapeutics, its classification, its action on cells and the safe handling and disposal to prevent the hazards. They must be conscious about their own health. Although there has been an increased awareness and concern regarding the issue of safe handling of chemotherapeutic drugs, many nurses still do not follow the guidelines and procedures in the hospital settings and are not using the recommended safety equipment. In hospitals, especially nurses are exposed while preparing and administering the chemotherapeutic drugs. Nurses are the main groups that are exposed to these drugs in hospital setting (Stellman JM, 1984).

Problem statement: "A Quasi Experimental Study to assess the effectiveness of structured teaching program on knowledge and practices regarding handling and safety measures of chemotherapy drugs among nurses in Mohan Dai Oswal hospital, Ludhiana, Punjab during the year 2014-2015"

Objectives of the study

- To assess and compare the pre-test and post-test knowledge and practices of nurses regarding handling and safety measures of chemotherapy drugs in control and experimental group.
- To ascertain the co-relationship between post-test knowledge and post-test practices of nurses regarding handling and safety measures of chemotherapy drugs.
- To ascertain the association of pre-test and post-test knowledge and practices on handling and safety measures of chemotherapy drugs among nurses in control and experimental group with selected variables like age, professional qualification, area of work, experience in years, source of information.

Hypothesis

H₁: Experimental group will have a significant gain in knowledge regarding handling and safety measures of chemotherapy drugs as compared to control group as measured by self-structured questionnaire at 0.05 level.

H₂: Experimental group will have a significant gain in practices regarding handling and safety measures of chemotherapy drugs as compared to control group as measured by observational checklist at 0.05 level.

RESEARCH METHODOLOGY

Research approach: A quantitative approach.

Research design: Quasi – experimental research design was utilized for collection and analysis of the data. In this design, control and experimental groups were selected without randomization, and dependent variables were observed in

experimental as well as control group before intervention. Later, the experimental group received treatment and after that posttest observation of dependent variables was carried out for both the groups to assess the effect of treatment on experimental group.

Population: Nurses working in Mohan Dai Oswal hospital, Ludhiana, Punjab.

Sample and sampling technique: 60 nurses and Purposive sampling technique.

Research setting: The study is conducted in Mohan Dai Oswal hospital, Ludhiana, Punjab.

Development and description of tools: In this study structured data collection tool was divided into 3 parts:

Part -1: Sample characteristics

Part -2: Self-structured knowledge questionnaire

Part -3: Observational checklist to assess the practices

Part -1: This part consist of 5 items for obtaining information of research subjects about age, professional qualification, area of work, experience in years and source of information.

Part -2: Knowledge questionnaire was consist of multiple choice questions used to assess the knowledge of nurses, consist of 36 items having 6 areas. There were 6 items for the introduction part, 10 for classification/drug dose/route, 6 items for preparation, 5 for administration, 5 for spillage management and 4 items for complication.

Criterion measures

Levels of knowledge Score%

Excellent	30- 36	>80
Very good	22- 29	61-80
Good	13- 21	40 -60
Average	≤ 12	33-39

Part 3: Observational checklist was used to assess the practices regarding handling and safety measures of chemotherapy drugs by non-participant observation method. It consists of 26 items.

Practice score

Levels of practice	Score	%
Satisfactory	≥21	>80
Unsatisfactory	<21	<80

Content validity: Content validity of the structured tool was determined by the expert's opinion on the relevance of items. These experts were the doctors, professors and lectures from different specialties of medical surgical nursing. Their valuable suggestions were obtained and included. The revised questionnaire with 36 items and observational checklist with 26 items were finalized for the collection of the data.

Reliability of tools: Reliability of structured data collection tool and observational checklist was computed by split half technique by using Karl Pearson's correlation coefficient formula. The reliability of the knowledge questionnaire tool was 0.7 and the reliability of the observational checklist for

practice was 0.8. Thus the structured data collection tool was reliable.

Data collection procedure: Data was collected after obtaining formal permission from the Principal, College of nursing, Nursing Superintendent, Mohan Dai Oswal hospital, Ludhiana, Punjab. The data was collected from 60 staff nurses working in selected areas, from 1st February 2015 to 20th February 2015, purposive sampling method were used for data collection. Depending on the availability of staff nurses the questionnaire was given individually to the each on duty staff nurses and data collected. Investigator visited all the selected areas personally at fixed time to observe practices. Practices observations were entered in the observational checklist simultaneously for analysis.

Table 1. Mean and SD of pre-test and post-test knowledge and practices score of control and experimental groups of nurses N=60

Group	Knowledge score						Practices score						
	Pre-test			Post – test			Pre- obs.		Post – observation				
	N	mean	SD	Mean	SD	df	t	mean	SD	mean	SD	df	t
Control	30	17.4	2.7	21.6	1.8	58	7.06*	15.5	1.6	15.7	1.5	58	0.43 ^{NS}
Experimental	30	18.8	3.5	28.9	2.9	58	12.2*	15.9	1.6	16.2	1.6	58	0.68 ^{NS}

Max knowledge score =36 * significant at 0.05 level Max practices score =26 non-significant
Min knowledge score =0 ***significant at .001 level Min practice score=0

Table 2.

Scoring levels	Mean	mean%	r
knowledge	28.9	80.3	-0.5
Practice	16.2	62.3	

FINDINGS

Section-I: Demographic characteristics of sample.

According to age, majority of nurses in control and experimental group belongs to the age group of 21-30 years 80% and 60% followed by 31-40 years 20% and 30% whereas only 10% of nurses fall in the age group of 41-50. According to professional qualification, majority of nurses in both control and experimental groups belongs to GNM category 90% and 76.7% followed by B.Sc (N) 10% and 23.3%. According to area of work, nurses for both control and experimental group are selected from the selected areas like medicine ward 23.3% and 26.7%, Surgery ward 26.7% and 13.3%, chemotherapy /selectron ward 13.3% and 23.3% ,followed by private 13.3%, Peadiatric13.3% and 10% and neutropenia ward 10% and 13.3%. According to experience in years, nurses with 0-2 years experience are in majority 40% and 36.7%, followed by above 5 years 26.7% and 40% whereas 3-5 years had the lowest percentage 33.3% and 23.3% in both control and experimental groups and according to source of information, majority of nurses in both control and experimental groups gain more information during training period 43.3% and 60%, followed by in service education 53.3% and 33.3% whereas nurses gain less information from journals 3.3% and 6.7%. While applying the chi-square between control and experiment groups which was found non-significant. Hence the group was homogeneous.

Section 1: To assess and compare the pre-test and post-test knowledge and practices of nurses regarding handling and safety measures of chemotherapy drugs in control and experimental group. Table 1 depicts that in experimental group, pre-test knowledge mean scores was 18.8 and post-test knowledge scores mean was 28.9, which was higher than

control group, pre-post test knowledge scores mean i.e.17.4 and 21.6. Difference in post test knowledge score of control group was found to be significant i.e. 't' 7.06, due to test-retest method effect and difference in post test knowledge score of experimental group was found to be highly significant i.e. 't' 12.2. Hence structure teaching program had made the impact to increase the knowledge of experimental group. Table 1 depicts that in control group pre-post observation scores i.e. 15.5 and 15.7 was less than the experimental group pre-post observation scores i.e. 15.9 and 16.2 respectively. Even though mean differences were increased in both control and experimental group while calculating the statistical differences was found non-significant in both control and experimental groups.

Section-II: Co –relation between post knowledge and post practices score of nurses regarding handling and safety measures of chemotherapy drugs

Table 2 depicts that the r value for knowledge and practices score of nurses was $r = -0.5$, which indicate that there was a moderately negative co- relation between post knowledge and post practices score of nurses. Hence it was concluded that with the increased level of knowledge, practices were not improved so nurses need to improve their practices regarding handling and safety measures of chemotherapy drugs.

Section-V: Findings related to association of pre-test and post-test knowledge on handling and safety measures of chemotherapy drugs among nurses in control and experimental group with selected variables. According to age group, statistical difference was found significant in both control and experimental groups at level of 0.05. Hence, it can be concluded that the age had impact on knowledge of nurses regarding handling and safety measures of chemotherapy drugs.

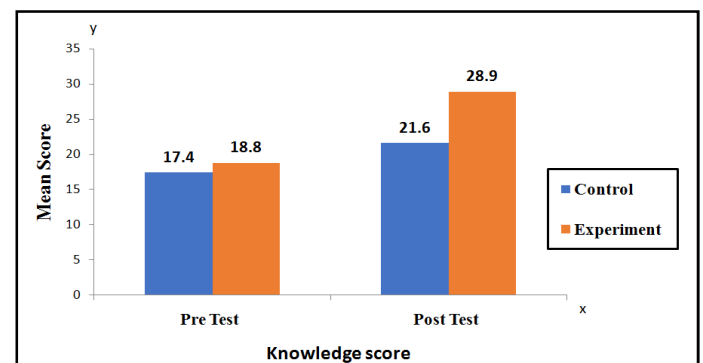


Fig. 1. Mean of pre-test & post test knowledge score of control group and experimental group of nurses

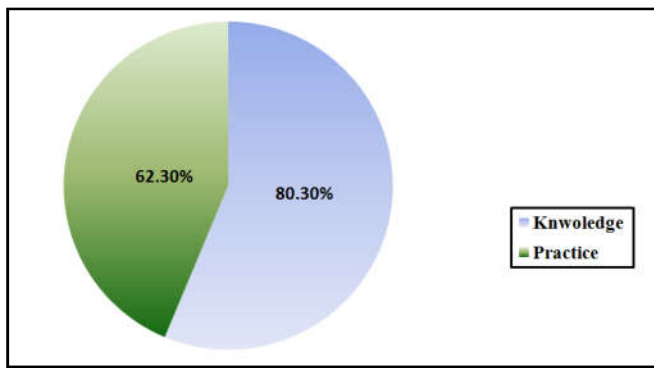


Fig. 2. Co –relationship between knowledge & practice score of nurses regarding handling & safety measures of chemotherapy drugs

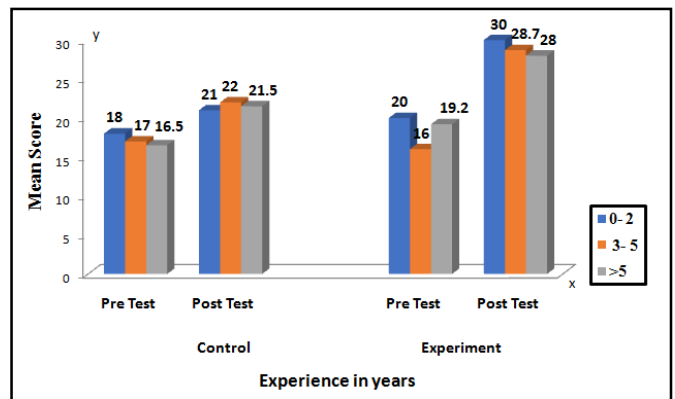


Fig. 5. Comparison of pre test & post test mean knowledge score among control & experimental group nurses according to experience in years

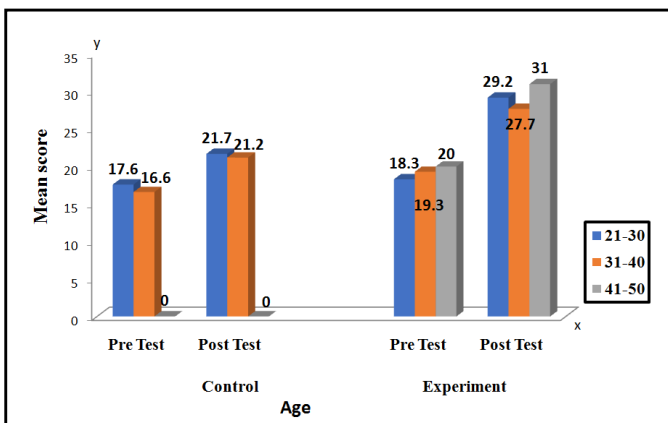


Fig. 3. Comparison of pre test & post test mean knowledge score among control & experimental group according to age

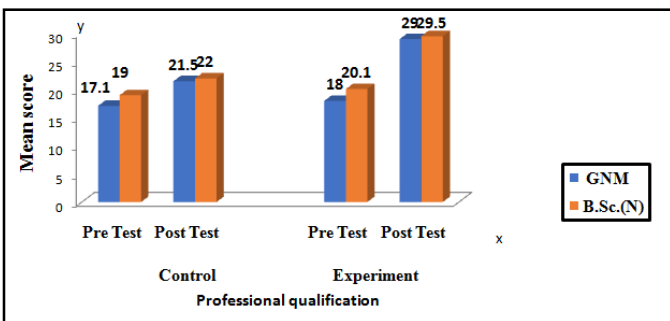


Fig. 4. Comparison of pre test & post test mean knowledge score among control & experimental group nurses according to professional qualification

Figure 4 depicts that there was statistically significant effect of professional qualification on knowledge scores at 0.05 level, which indicate that Professional Qualification, had significant impact on knowledge of handling and safety measures of chemotherapy drugs.

Comparison of pre-test and post-test mean knowledge score among control and experimental groups nurses according to Area of work: According to area of work, there was statistically significant difference observed in post-test mean knowledge scores of both control and experimental groups at 0.05 level. Hence it can be concluded that area of work had an impact on the knowledge of nurses regarding handling and safety measures of chemotherapy drugs.

There was statistically significant difference observed in post-test mean knowledge scores of both control and experimental groups at 0.05 level. Hence it can be concluded that experience in years had influence on the knowledge of nurses regarding handling & safety measures of chemotherapy drugs.

Comparison of pre-test and post-test mean knowledge score among control and experimental groups nurses according to source of information: According to source of information in control group post-test highest mean knowledge score was 21.6 and 21.5 during training period and in-service education and lowest scores found in journals i.e. 21 and Pre-test higher mean knowledge score was 20 in journals, followed by during training period and in-service education 18 and 16.5 respectively, whereas in experimental group post-test highest mean knowledge score was 32 during in-service education, followed by during training period and journal i.e. 29 and 27 and pre-test higher mean knowledge score was 19.2 during in-service education, followed by during training period and journal i.e. 18.7 and 17.5 respectively. There was statistically significant difference observed in mean knowledge scores of both control and experimental groups at 0.05 level. Hence it can be concluded that source of information among nurses had an impact on the knowledge regarding handling & safety measures of chemotherapy drugs.

Section-VI: Findings related to association of pre-test and post-test practices on handling and safety measures of chemotherapy drugs among nurses in control and experimental group with selected variables.

Comparison of pre-test and post-test mean practices score among control and experimental group according to their age

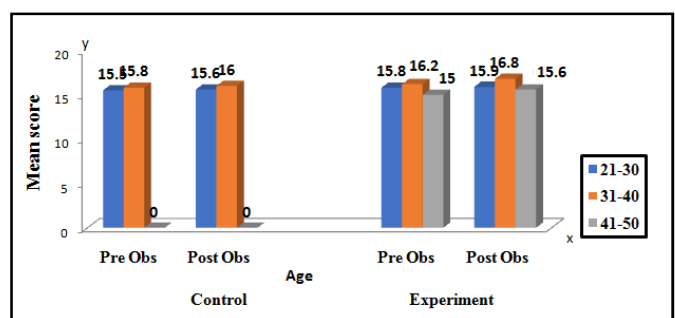


Fig.6. Comparison of pre -test & post -est mean practices score among control and experimental group according to age

Figure 6 depicts that according to age group, statistical difference was found non-significant in both control and experimental groups at level of 0.05. Hence, it can be concluded that age had no influence on the practices of nurses regarding handling and safety measures of chemotherapy drugs.

Comparison of pre-test and post-test mean practices score among control and experimental groups nurses according to their professional qualification: According to category of professional qualification, control group post-test highest mean practices scores was 16.1 of B.Sc nurses followed by GNM nurses i.e.15.8 and in pre-test higher mean practices score i.e. 16 of B.Sc nurses followed by GNM i.e. 15.5 respectively, whereas experimental group post-test highest mean practices scores was 16.9 of B.Sc nurses, followed by GNM i.e. 15.9 and pre-test higher mean practices score i.e. 16 in GNM nurses, followed by B.Sc nurses i.e.15.6 respectively. Based on t-values, calculated value was found statistically non-significant at 0.05 level. Hence it can be concluded that Professional Qualification of nurses had no influence on practices of handling & safety measures of chemotherapy drugs.

Comparison of pre-test and post-test mean practices score among control and experimental groups nurses according to Area of work: According to area of work, there was statistically non-significant difference observed in mean practices scores of both control and experimental groups at 0.05 level. Hence it can be concluded that area of work had no any impact on the practices score of nurses regarding handling and safety measures of chemotherapy drugs.

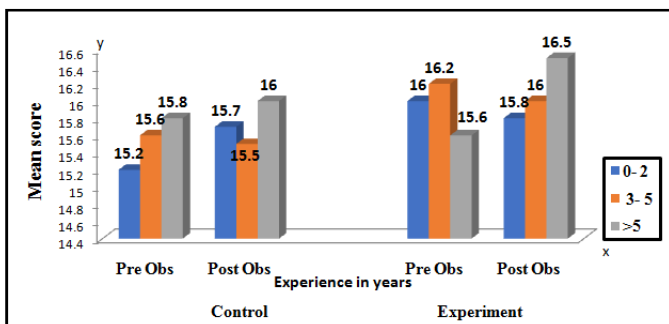


Fig.7. Comparison of pre -test and post -test mean practices score among control and experimental group nurses according to experience in years

Figure 7 shows that according to experience, there was statistically non-significant difference observed in mean practices scores of both control and experimental groups at 0.05 level. Hence it can be concluded that experience in years had no any impact on the practices score of nurses regarding handling and safety measures of chemotherapy drugs.

Comparison of pre-test and post-test mean practices score among control and experimental groups nurses according to source of information: According to source of information, based on the f-value, calculated value was statistically non-

significant observed in both control and experimental groups at 0.05 level. Hence it can be concluded that source of information had not any impact on the practices regarding handling and safety measures of chemotherapy drugs.

Conclusion: Both control and experimental group of nurses have less pre-test knowledge scores and pre-observation practices scores. After exposure to structured teaching program knowledge has been increased in experiment group post-test more than the post-test scores of control group. So structured teaching program is an effective tool to increase the knowledge of nurses regarding handling and safety measures of chemotherapy drugs whereas pre-test and post-test observational practices were totally unsatisfactory in both control and experimental group. So structured teaching program not made an impact on the practices of nurses. Hence nurses need to improve the practices by implanting the knowledge into practices.

Nursing implications: The study findings have certain very important implication for the nursing profession i.e. nursing education, nursing administration and nursing research. Nurses have expanded and extended role for promotive, preventive, curative and rehabilitative services at individual, family and community level. Nurses act as an educator, counselor, organizer, direct care provider, leader and motivator.

Limitations

- The size of the sample was only 60 nurses; hence it was difficult to make a broad generalization.
- The study was conducted only in one institution which restricted the generalization of the study.

Recommendations

- The study can be replicated on a large sample of staff nurses to generalize the findings.
- A similar study can be done on a large sample of student nurses/ doctors.
- A comparative study can be done among B.Sc. and GNM staff nurses.

REFERENCES

- Margret Barton, Gail M. Wilkes. Cancer chemotherapy. 2nd ed. Jones and Barlett publishers. 1995;P-23.
- Constantinidis T, Vagka, Pullidow. Occupation health and safety of person handling chemotherapeutic agents. European jnl of cancer care 2001 Jan; 20(1):123-31.
- World health organization. Preventing occupational exposure to antineoplastic drugs in health care settings[online]. Available from:URL:<http://www.who.int/en/reviewed> on April 2015
- Martin Larson, Polovich, Martin. Chemotherapy Risk for Nurses, [http:// library](http://library) Reviewed on 15 /4/2015.
- Stellman JM, Aufiero BM, Taub RN. Assessment of potential exposure to antineoplastic agents in the health care setting 1984 May;13(3):245-55.