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Effectiveness of Planned Teaching Programme on Knowledge Regarding Safe Handling of Chemotherapeutic Drugs among Intern Nursing Students of Selected Nursing Colleges: A Quasi Experimental Study

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Abstract: ***Aim of the study: The study aims to find the Effectiveness of planned teaching programme on knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges. Objectives of study: Primary objectives 1) To assess the knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.2) To evaluate the effectiveness of planned teaching programme on knowledge regarding safe handling of chemotherapeutic drugs among Intern nursing students of selected nursing colleges. Secondary objectives 1) To associate the post-test knowledge score with selected demographic variables. Method: One group pre-test post-test research design and based on quantitative approach carried out on 100 intern nursing students selected by simple random sampling technique. Results: The presents study evaluates and found that demographic variables, The study reveals that pre- test 20 (20%) were poor level of knowledge, 60 (60%) were fair level of knowledge, 18 (18%) had good level of knowledge and 2(2%) had very good knowledge. Minimum score was 6 and maximum score 20. Mean knowledge score 12.02±1.45 and mean percentage score was 32.12±12.51 and post-test 07 (07%) had good level of knowledge, and 24(24%) had very good level of knowledge and 69(69%) had excellent knowledge. Minimum score was 15 and maximum score 28. Mean knowledge score 25.68±1.75 and mean percentage score was 69.15±5.585. Interpretation and conclusion: Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n = 100 i.e., 99 degrees of freedom. The calculated 't' value i.e., 36.22 are much higher than the tabulated value at 5% level of significance for overall knowledge score of population which is statistically acceptable level of significance. Hence it is statistically interpreted that the knowledge score in pre and post-test of regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.***

Keywords: safe handling of chemotherapeutic drugs, nursing students knowledge, planned teaching programme, chemotherapy safety practices, nursing education training

1. Introduction

"Wherever the art of medicine is loved, there is also a love of humanity."

- Hippocrates

The word chemotherapy means the use of any drug (such as aspirin or penicillin) to treat any disease, but to most people chemotherapy refers to drugs used for cancer treatment. It's often shortened to "chemo." Two other medical terms used to describe cancer chemotherapy are antineoplastic (meaning anti-cancer) therapy and cytotoxic (cell killing) therapy. Treatments like radiation and surgery are considered local treatments. They act only in one area of the body such as the breast, lung, or prostate and usually target the cancer directly. Chemotherapy differs from surgery or radiation in that it's almost always used as a systemic treatment. This means the drugs travel throughout the body to reach cancer cells wherever they are. Chemotherapy is used to treat many cancers. More than 100 chemotherapy drugs are used today.

Accidental exposure to such agents can occur in several ways: by direct absorption of a drug through the skin; by ingestion while eating or drinking after hand contact with a drug; and by inhalation of airborne droplets. Today cancer patients are diagnosed earlier than in the past, and many receive multiple courses of chemotherapy for a longer period of time.

Need for the study

Protection of health care workers (HCWs) who are exposed to cytotoxic drugs is a global concern. Working in a chemotherapy unit increases the exposure of health care workers, especially nurses, to numerous hazardous materials if they do not protect themselves according to standard guidelines.

Occupational exposure may occur directly through preparation, administration and handling of drugs or indirectly through contact with contaminated surfaces and patients' secretions (e.g., urine, vomits, etc.). Absorption of a cytotoxic drug may occur via the skin, mucous membrane or through the inhalation of drug particles.

The exposed health care workers may suffer from nausea, vomiting, headache, vertigo, hair loss, abdominal pain, and skin and allergic reactions. Pregnant staffs run the risk of

developing more serious complications including abortion, congenital anomalies and premature births. These exposures are as dangerous to a nurse's health as being accidentally stuck with a needle

Therefore, according to investigator felt that there is a clear need to evaluate the effectiveness of planned teaching programme on knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students.

2. Review of Literature

A study was conducted on an evaluator research approach was used to find out the effectiveness of PTP on safe handling of cancer chemotherapeutic drugs for nursing officers is pre-experimental one group pre-test post-test design (2023-24). Through these years chemotherapy nurses have mastered clinical expertise in areas which contribute to patient care. Research Methodology: Dependent Variables: Knowledge level of nursing officers' cancer chemotherapeutic drugs. Independent Variables:

Planned teaching programme. Data Collection: Demographic variables and structured knowledge questionnaire were developed. Results: Descriptive and inferential statistics. The effectiveness of PTP was identified using frequency and percentage. Paired 't' test was used to find out the significant difference between the pre-test and post-test knowledge scores and the mean post-test knowledge scores (56.5) was higher than the mean pre-test knowledge scores (21.57). The computed 't' value is 54.058 is higher than the tabled value t99 at $p<0.001$ level of significance the association between pre-test knowledge scores and selected variables were calculated using Chi square test. Conclusion: The nurse carries personnel responsibility for nursing practice and for maintaining competence by continuous learning. Planned teaching programme enhance the knowledge of nursing officers.

Hypothesis:

Hypothesis will be tested at o.o5 level of significance.

Ho - There is no significant difference between pre-test and post-test knowledge score regarding safe handling of chemotherapeutic drugs among intern nursing students

H1- There is significant difference between pre-test and post-test knowledge score regarding safe handling of chemotherapeutic drugs among intern nursing students.

3. Research Methodology

Research Approach: In this study Quantitative approach was used.

Research Design: In the present study the design was used quasi experimental one group pre-test post- test.

Variables

Independent variables: The independent variable in this study is planned teaching programme.

Dependent variables: The dependent variable in this study on knowledge regarding safe handling of chemotherapeutic drugs.

Research Setting

The present study was conducted in a selected nursing colleges after obtaining permission from concerned authority.

Population

The population in the study was Intern nursing students.

Target population

In this study the target population was intern nursing students of selected nursing colleges.

Accessible population

In this study, the accessible population was Intern nursing students of selected nursing colleges and are available during data collection who were fulfilling the inclusive criteria.

Sample and sampling technique

Sample: In this study, sample consisted of 100 Intern nursing students of selected nursing colleges and are available during data collection.

Sample Size:

Sample size consists of 100 intern nursing students of selected nursing colleges and are available during data collection.

Sampling technique

In the present study non probability purposive sampling technique was used.

Sampling Criteria

List of characteristics essential for inclusion or exclusion in the target population.

Inclusion criteria

The criteria that specify population characteristics are referred to as eligibility criteria or inclusion criteria.

In this study Intern nursing students who are -

- Willing to participate in study.
- Available at the time of data collection.

Exclusion criteria

Sampling criteria or characteristics that can cause a person or element to be Excluded from the target population. In this study the exclusive criteria were Intern who had participated in the similar type of the study less than 6 months.

Tool preparation

A self-structured knowledge questionnaire was constructed by reviewing the related literature and consultation with experts.

Section I- demographic variables

It includes total 7 demographic variables such as Age, gender, course of instructions, religion, Residential area, any family members working as health care providers and if yes then specify.

Section II – Self Structured questionnaire

Question on knowledge regarding safe handling of chemotherapeutic drugs as an assessment tool. Total score is 30. Each question carries 1 mark and zero for the wrong answer.

Content Validity
To ensure the content validity, the tool was distributed to 15 experts including medical surgical nursing experts, physician and statistician.

Experts were chosen according to their area of specialty. 15 tools were received after validation from the experts.
The experts include;

- 11- Medical surgical nursing subject expert
- 02- Statistician
- 02- Physician

Valuable suggestions were given by the experts. Necessary correction was done after discussion with guide. The tool was valid for the study.

Reliability.
In this study, Reliability of the tool was determined by administering tool to 10 samples. The stilt half method will be used for knowledge score.

The tool was said to be reliable if the correlation coefficient was more than 0.8. The correlation coefficient _roof the tool was 0.8321. Which was more than 0.8086 and hence the tool was found to be reliable.

Feasibility of the Study
The investigator did not find much difficulty in getting the subjects because accessible population and sample size was 100 respective to the inclusion criteria.

Pilot Study
Permission was taken from concerned authority. Pilot study was conducted 20/01/2025 to 27/01/2025 for a period of 07 days. A sample of 10 Intern nursing students was selected from the nursing college. The investigator approached the sample individually, discussed the objective of the study and obtained consent for participation in study. knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students was assessed by self-administering questionnaire.

Procedure for Data Collection
Data collection period was from 17/02/2025 to 24/02/2025.

- Permission was obtained from the higher Authority of the nursing institute and hospitals.
- Purposive sampling technique was done to select samples from selected nursing colleges.
- The sample was approached in a small group on daily basis.
- Before collecting the data, self-introduction was given by the investigator and the purpose and objectives of the study was explained.
- Written Consent from the samples was taken.
- Knowledge is assessed by administering self-administered questionnaire.
- After assessing the knowledge an information pamphlet regarding safe handling of chemotherapeutic drugs was given to improve their knowledge.

Plan for Data Analysis
The data was decided to be analyzed by both descriptive and inferential statistics on the basis of objectives of the study. To compare the data a master data sheet was prepared by the investigator including: Descriptive statistics (Frequency, Percentage and Standard Deviation) Inferential statistics (t-TEST AND ANOVA) will be used for analysis. The investigator will do analysis manually as well as will use appropriate statistical package for analysis.

4. Results

Organization of findings
The analysis and interpretation of the observations are given in the following section:

Section A: Distribution of participant with regards to demographic variables, n=100

Demographic variables	Frequency (n)	Percent (%)
Percentage wise distribution of participants according to their age		
20-21 years	20	20.0
22-23 years	42	42.0
24 and above years	38	38.0
Total	**100**	**100.0**
Percentage wise distribution of participants according to their gender		
Male	43	43.0
Female	57	57.0
Transgender	0	00
Total	**100**	**100.0**
Percentage wise distribution of participants according to their course of instruction		
Basic BSc Nursing Intern	0	00
General Nursing and Midwifery Intern	100	100
Total	**100**	**100.0**
Percentage wise distribution of participant according to their Religion		
Hindu	40	40.0
Muslim	15	15.0
Christian	10	10.0
Buddhist	20	20.0
Others	15	15.0
Total	**100**	**100%**
Percentage wise distribution of participants according to their residential area		
Urban	40	40
Semi-urban	20	20
Rural	40	40
Total	**100**	**100%**
Percentage wise distribution of participant according to their any family member working as a health care provider		
Yes	30	30
No	70	70
Total	**10**	**100%**
Percentage wise distribution of participant according to, if yes then specify? n=30		
Doctor	00	00
Nurse	10	33.33
Paramedical	08	26.66
Housekeepers	08	26.66
Any other	04	13.33
Total	**30**	**100%**

Section B: Assessment of the existing knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.

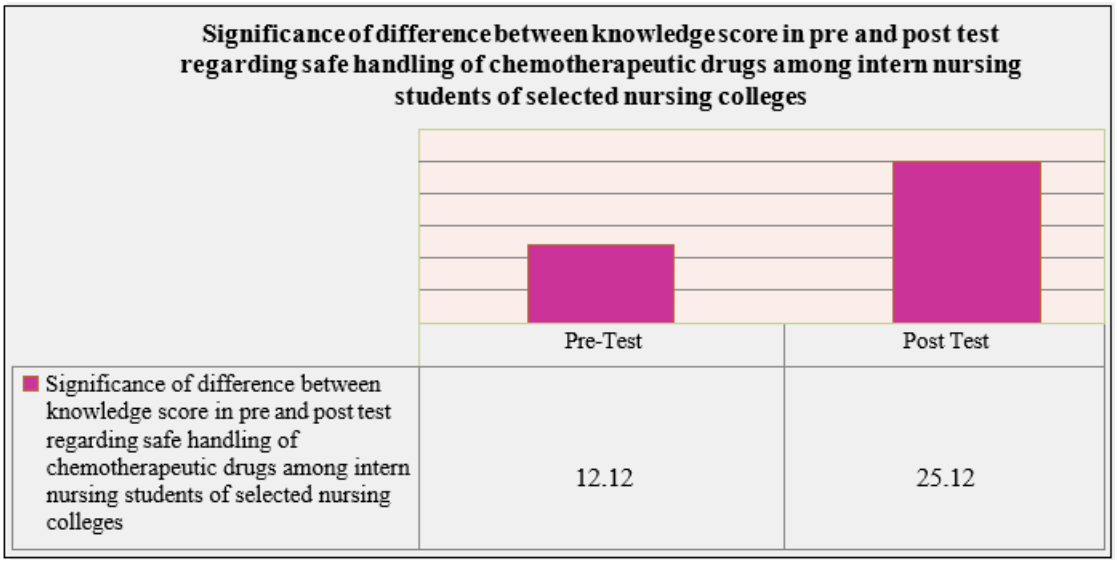
Level of Pretest knowledge	Score Range	Level of Pretest Knowledge Score	
		No of Participant	Percentage
Poor	0-6	20	20
Fair	6-12	60	60
Good	12-18	18	18
Very Good	18-24	2	2
Excellent	24-30	0	0
Minimum score		6	
Maximum score		20	
Mean knowledge score		12.02±1.45	
Mean % Knowledge Score		32.12±12.51	

Assessment of the post-test knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing college, n=100

Level of posttest knowledge	Score Range	Level of Post-test Knowledge Score	
		No of Participant	Percentage
Poor	0-6	0	0
Fair	6-12	0	0
Good	12-18	07	07
Very Good	18-24	24	24
Excellent	24-30	69	69
Minimum score		15	
Maximum score		28	
Mean knowledge score		25.68±1.75	
Mean % Knowledge Score		69.15±5.585	

Section C: Significance of difference between knowledge score in pre and post test regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges, n=100

Overall	Mean	SD	Mean Difference	t-value	p-value
Pre-Test	12.12	1.44	14.63±2.81	36.22	0.0001 S, p<0.05
Post Test	25.12	1.96			



This table shows the comparison of pretest and posttest knowledge score in pre and posttest of regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n = 100 i.e., 99 degrees of freedom. The calculated 't' value i.e., 36.22 are much higher than the tabulated value at 5% level of significance for overall knowledge score of population which is statistically acceptable level of significance. Hence it is statistically interpreted that the knowledge score in pre and post test of

regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.

Section D: Association of post-test knowledge score with demographic variables regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.

Demographic variables	Calculated value		Level of Significance	Significance
	F-Value	P-Value		
Age in years.	2.312	0.004	P<0.05	S
Gender	1.712	0.512	p>0.05	NS
Course of instruction	2.812	0.041	P<0.05	S
Religion	1.221	0.022	P<0.05	S
Residential area	4.401	1.1	p>0.05	NS
Any family member working as a Health care provider	2.442	1.312	p>0.05	NS
If yes then specify?	2.332	0.011	P<0.05	S

Research

Hypothesis H1 is accepted.: The study was conducted among intern nursing students in order to assess their knowledge regarding safe handling of chemotherapeutic drugs.

Comparison of pre-test and post-test knowledge score regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n = 100 i.e., 99 degrees of freedom. The calculated 't' value i.e., 36.22 are much higher than the tabulated value at 5% level of significance for overall knowledge score of population which is statistically acceptable level of significance.

5. Summary

The study reveals that pre- test 20 (20%) were poor level of knowledge, 60 (60%) were fair level of knowledge, 18 (18%) had good level of knowledge and 2(2%) had very good knowledge. Minimum score was 6 and maximum score 20. Mean knowledge score 12.02±1.45 and mean percentage score was 32.12±12.51 and post-test 07 (07%) had good level of knowledge, and 24(24%) had very good level of knowledge and 69(69%) had excellent knowledge. Minimum score was 15 and maximum score 28. Mean knowledge score 25.68±1.75 and mean percentage score was 69.15±5.585. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n = 100 i.e., 99 degrees of freedom. The calculated 't' value i.e., 36.22 are much higher than the tabulated value at 5% level of significance for overall knowledge score of population which is statistically acceptable level of significance. Hence it is statistically interpreted that the knowledge score in pre and post-test of regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.

6. Conclusion

After detailed analysis, this study leads to the following conclusion: Significance of difference at 5% level of significance is tested with student's paired 't' test and tabulated 't' value is compared with calculated 't' value. Also, the calculated 'p' values are compared with acceptable 'p' value i.e., 0.05.

Comparison of pre-test and post-test knowledge score regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n = 100 i.e., 99 degrees of freedom. The calculated 't' value i.e., 36.22 are much higher than the tabulated value at 5% level of significance for overall knowledge score of population which is statistically acceptable level of significance.

Hence it is statistically interpreted that the knowledge score in pre and post-test of regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.

7. Recommendations

- Similar studies can be replicated on a larger population for generalization of findings.
- Studies may be conducted to assess the knowledge regarding safe handling of chemotherapeutic drugs
- Similar studies can be carried out to evaluate the effectiveness knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students.
- Comparative studies can be carried out to assess the effectiveness of planned teaching on knowledge regarding safe handling of chemotherapeutic drugs among intern nursing students of selected nursing colleges.
- Similar study can be conducted to evaluate knowledge regarding safe handling of chemotherapeutic drugs
- Similar studies can be conducted on staff nurses to assess the knowledge regarding safe handling of chemotherapeutic drugs.

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