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"To Generate and Establish Efficacy of Training Protocol for Nurses Regarding Intravenous Administration of Chemotherapeutic Agents."

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KEYWORDS

chemotherapy, protocol, training, knowledge, skill.

ABSTRACT:

Introduction: According to Cancer statistics India, every year, new cancer are patients registered over 11, 57,294 lakhs. 30-35 % of patients are undergoing chemotherapy in India.

Purpose: The purpose of the study was to generate and establish efficacy of training protocol for nurses regarding intravenous administration of chemotherapeutic agents.

Objectives: The Objectives of the study was to assess the knowledge and skill of nurses regarding intravenous administration of chemotherapeutic agents in control and experimental group and generate a training protocol for augmenting knowledge and skill and associate the findings with selected demographic variables.

Material and Methods:160 nurses of were included in this study from Acharya Vinoba Bhave Rural Hospital (AVBRH) Sawangi Meghe, Wardha. Using 2 arm parallel randomized design the nurses were included in control and experimental group, consisting of 80 nurses per group. Training was provided to the nurses on administration of chemotherapy, post training assessment done after 1 and 3-month time period.

Result: Improvement in knowledge and skill in experimental group as compared to control group was seen.

Conclusion: The results of the current study proved the efficacy of intravenous chemotherapy training protocol in improving the knowledge and skill of nurses working in the oncology ward.

Introduction

"Knowledge without Practice is useless. Practice without knowledge isDangerous"

Confucius

In the present-day cancer patients are diagnosed much earlier than as it was earlier. Estimated number of people living with the disease is around 2.25 million. Major treatment modalities of cancer are chemotherapy, radiation, immunotherapy and surgery.[1]

Chemotherapy administration is the chief responsibility of the registered nurse who has specific knowledge about pharmacology and different doses of the drugs as well as skill in preparation, administration and management of toxicity.

The nurses providing care to cancer patients need to be trained and educated to provide high quality and cost-effective care.[2] It is therefore necessary to appoint nurses with master's degree in order to provide high-quality and cost-effective care to patients with chronic diseases.[3]

The Oncology nursing society is being providing information to nurses working in cancer unit with evidence-based education programs and treatment information to improve the quality of life of cancer patients and their families.[4]

Title of the study: "to generate and establish efficacy of training protocol for nurses regarding intravenous administration of chemotherapeutic agents."

Objectives of the study

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Knowledge and Skill and associate the findings with selected demographic variables.

Materials and Methods:

The Training Protocol was utilized for providing knowledge and developing skills. Those nurses who fit into the Inclusion & Exclusion criteria were included in the study. Written consent was taken. Using 2 arm parallel randomized design 80 nurses were in control group and 80 were in experimental group. After obtaining the baseline date from all participants. Nurses were divided into clusters of 26-28 based on their shift timings. On Job Training was provided to nurses in the Experimental group who are in the Evening shift. Each nurses underwent training with 2 sessions of 45 mins. Post test was conducted after 1 month of training. After 1 month the 3rd session of training was conducted as Reinforcement for 45 mins**.** Post test was again conducted after 3 months. The Control group underwent the routine in-service training program as per hospital policy. Post test was conducted after 1 month and again after 3 months

Results

The control and experimental groups were homogeneous in terms of demographic characteristics. As per Age 75% of control group participants were 21-30 years old, compared to 71.3% in the experimental group. Gender wise Control group had 23.8% males and 76.2% females; experimental group had 26.2% males and 73.8% females. For Professional Qualification in Control group 7.5% were BSc nursing, 92.5% GNM and in Experimental group 11.2% were BSc nursing and 88.8% were GNM. As per Work Experience in Control group 77.5% (1-3 yrs), 21.3% (4-6 yrs.), and 1.2% (7-10 yrs.) and in Experimental group 76.3% (1-3 yrs), 22.5% (4-6 yrs.), and 1.2% (7-10 yrs.). Chemotherapy Administration Frequency in Control group 43.7% administered chemotherapy weekly, 37.5% occasionally, 10% daily, 8.8% several times whereas in Experimental group 41.8% administered chemotherapy weekly, 38.1% occasionally, 11.3% daily, 8.8% several times. For Queries clarified from in Control group 36.3% did it from pharmacist, 45% from doctors, 11.3% from ward staff, 6.3% from nurse specialist and 1.3% colleagues. In the Experimental group35% from pharmacist, 4.9% from doctors, 10% from ward staff, 5.6% from nurse specialist, 1.3% from colleagues. Areas where the staff nurses did the administration of chemotherapy in Control group 78.8% did in chemotherapy ward, 8.7% in OPDs, 12.5% in day care. In the Experimental group 77.5% in chemotherapy ward, 11.2% in OPDs and 11.3% in day care.

Finding of baseline Knowledge regarding Intravenous administration of Chemotherapy.

The control group had 88.8% nurses having average knowledge, 11.30% with poor knowledge and no nurses were there in good knowledge category. In experiment group had 88.8% nurses having average knowledge, 11.30% with poor knowledge and no nurses were there in good knowledge category.

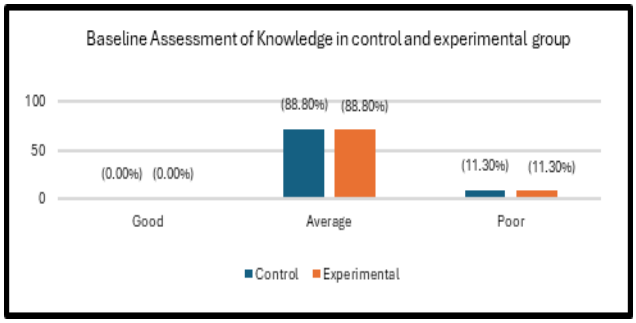

Figure 1: Baseline [pretest] knowledge assessment

Endline assessment of knowledge of nurses regarding intravenous administration of chemotherapeutic agents.

The endline assessment shows a significant difference in knowledge levels between control and experimental groups ($p < 0.01$). Post-intervention the experimental group's knowledge improved significantly, with 100% achieving good category. In contrast, the control group had 1.3% in good category, 90% average, and 8.8% poor.

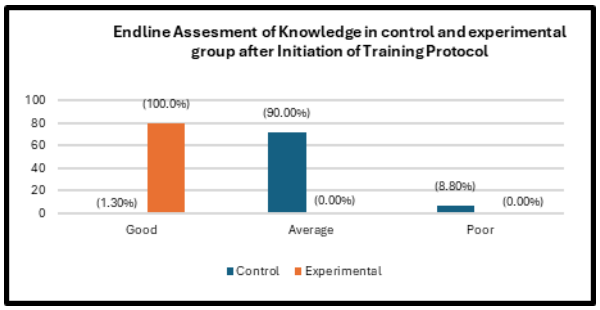

Figure 2: Endline [posttest] knowledge assessment

Finding of baseline Skill regarding Intravenous administration of chemotherapeutic agents

The control group 48.8 % nurses had Average practice score, 51.30% with poor practice score and no nurses were there in good practice category. The experiment 47.50% group nurses had Average practice score, 52.5 % with poor

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practice score and no nurses were there in good practice category.

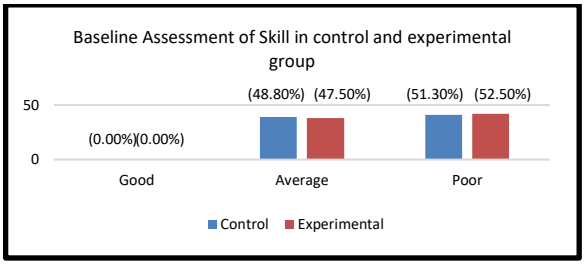

Figure: 3Baseline [pretest] Skill assessment

Endline assessment of Skill of nurses regarding intravenous administration of chemotherapeutic agents

The endline skill assessment shows a significant difference between control and experimental groups ($p < 0.01$).

the experimental group showed significant improvement

Post-intervention assessment the control group 62.5 % nurses had Average practice score, 37.5 % with poor practice score and no nurses were there in good practice category. The experiment group7.50% nurses had Average score in skill. 92.5 % nurses were there in good score inskillwhereas there was 0% poor skill category.

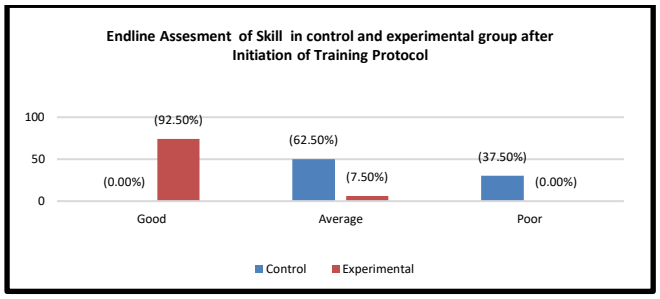

Figure 4: Endline [posttest] Skill assessment

Comparative evaluation of Improvement in Knowledge for Control and Experimental group

After initiating the Training Protocol, the findings were:

Baseline: Both groups had similar mean knowledge scores (9.97 vs 10.16) and % knowledge (45.34% vs 46.19%).

2nd assessment: The experimental group showed improvement (57.39% knowledge, mean 12.62), while the control group remained relatively stable (47.95% knowledge, mean 10.55).Endline: The experimental group showed significant improvement (93.30% knowledge, mean 20.52),while the control group showed minimal change (48.92% knowledge, mean 10.76).The experimental group had substantial knowledge improvement compared to the control group, suggesting the intervention was effective in increasing knowledge.

Table 1: Comparative Evaluation of Knowledge in control and experimental group.

Knowledge	**Control**				**Experimental**			
Group	Mean	Std. Deviation	%	% Improvemen	Mean	Std. Deviation	% Knowledge	% Improvemen
Baseline assessment of	9.97	2.068	45.34		10.16	2.119	46.1	
2ndassessmentof Knowledge	10.55	2.086	47.95	**3.57**	12.62	2.033	57.3	**47.10**
Endline assessment of	10.76	2.153	48.92		20.52	1.377	93.2	

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Comparative evaluation of Improvement in Skill for Control and Experimental group

After initiating the Training Protocol, the findings were:

Baseline: Both groups had similar mean skill scores (14.48 vs 14.35) and % skills (33.69% vs 33.37%).2nd assessment: The experimental group showed improvement (43.60% skills, mean 18.83), while the control group remained similar (34.46% skills, mean 14.8).Endline: The experimental group showed significant improvement (76.97% skills, mean 33.1), while the control group showed minimal change (35.46% skills, mean 15.25).The experimental group showed substantial improvement in skills compared to the control group, suggesting the intervention was effective.

The control group underwent routine in-service education as per hospital policy.

Table 2: Comparative Evaluation of Skill in control and experimental group

Skill Assessment	Control				Experimental			
Group	Mean	Std.	%	%	Mean	Std.	%	%
Baseline skill	14.48	2.63	33.69		14.35	2.36	33.37	
2ndassessmentof	14.8	2.61	34.46	**1.77**	18.83	2.71	43.80	
Endline skill	15.25	2.62	35.46		33.1	3.23	76.97	**43.60**

Findings related to Correlationbetweenthe betweenknowledgeandpractice.

The P-value is <0.01, indicating a highly significant correlation between knowledge and skill (statistically significant at 1% level).

Table 3: Correlation between Knowledge and Skill.

	Pearson correlation(r)	**P-value**
Knowledge vs Skill	0.732**	<0.01Highly signific

Findings related to Association of pre- test knowledge and skills of nurses with selected demographic variables.

No significant association was found between pretest knowledge and skill with selected demographic variables

DISCUSSION

The study developed and evaluated a training protocol for nurses on intravenous chemotherapy administration. Findings revealed the protocol significantly improved nurses' knowledge and skills, demonstrating that focused training can drive substantial improvements in their performance and ultimately enhance patient care.

A 2022 study by Rishab Kumar et al evaluated a planned teaching program on safe chemotherapy handling among 30 staff nurses. Results showed improved knowledge (pre-test mean: 15.64, post-test mean: 20) and practice scores (pre-test mean: 14.86, post-test mean: 18.08),[5] indicating the program's effectiveness in enhancing nurses' knowledge and skills.

A 2022 study by Rakhi Mishra et al found that a structured teaching program significantly improved nurses' knowledge (pre-test mean: 17.5, post-test mean: 27.03) and practice scores (pre-test mean: 9.13, post-test mean: 13.8). The t-test values (26.78 and 28.91) indicated highly

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significant improvements at $p < 0.05$,[6] highlighting the program's effectiveness in enhancing nurses' competency.

Correlation for knowledge and practice was done. The findings show there is positive correlation between knowledge and skill as the score is $r = 0.732$ and its p value <0.01. This contrasts with a 2015 study by Dler Hamad Esmail, which reported a significant negative association ($r = -0.469$, $p = 0.012$).[7]

A 2012 study by Najma Khan et al found that only 3% of nurses scored ≥80% on chemotherapy knowledge, while 54% scored ≥60%. Nurses also scored only 60% on chemotherapy administration knowledge (11 items). The findings highlight knowledge gaps, emphasizing the need for targeted education and training in chemotherapy care.[8]

Conclusion:

Nurses play a pivotal role in delivering quality care to cancer patients. To ensure optimal outcomes, administrators should prioritize regular training programs that enhance nurses' knowledge and skills in oncology care. This will not only boost patient compliance but also minimize adverse effects. Implementing a standardized training protocol can elevate the quality of care across oncology wards.

Acknowledgement

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Conflict of Interest: No conflicts of interest were reported by the authors.

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