



'KNOWLEDGE REGARDING SAFE HANDLING OF CYTOTOXIC DRUGS AMONG STAFF NURSES WORKING IN SELECTED HOSPITALS, KAMRUP (METRO), ASSAM, WITH A VIEW TO DEVELOP AN INFORMATION BOOKLET: A DESCRIPTIVE STUDY'.

Rupanylla Bareh*

M.Sc. Nursing 2nd year (Medical Surgical Nursing), Asian Institute of Nursing Education, Guwahati, Assam, India. * Corresponding Author

Mitali Barman

Associate Professor, Asian Institute of Nursing Education, Guwahati, Assam, India.

ABSTRACT

National Institute for Occupational Safety and Health (NIOSH), 2019 stated that about 8 million healthcare workers are potentially exposed to hazardous drugs in their workplace. Indian Council of Medical Research (ICMR), 2019 reported around 16.9% of nurses had their skin or eyes exposed to chemotherapy drugs. Widespread use of cytotoxic drugs in the treatment of cancer has led to higher health hazards among nurses who handle and administer such drugs, so nurses should know how to protect themselves from the effects of cytotoxic drugs by following safety measures during preparation, administration of cytotoxic drugs, cytotoxic waste disposal, cytotoxic spills and rationale use of PPE (Personal Protective Equipment) like mask, cap, two pairs of gloves, gown and shoe cover.

Aim: The aim of the study was to assess the knowledge regarding safe handling of cytotoxic drugs among staff nurses working in selected hospitals, Kamrup(Metro), Assam.

Methods And Materials: A quantitative descriptive study was conducted on safe handling of cytotoxic drugs among staff nurses. 100 staff nurses who were working in selected hospitals, Kamrup (Metro), Assam and who fulfilled the inclusion criteria have been selected by using convenience sampling technique. The conceptual framework used in the study was based on modified Ludwig Von Bertalanffy (1968) general system theory. The tools used for the study were structured knowledge questionnaire to assess the knowledge regarding safe handling of cytotoxic drugs.

Results: Data analysis was done by calculating mean, SD and chi-square test. It was found that majority i.e. 56% of the staff nurses had moderate knowledge, 38% had adequate knowledge and 6% had inadequate knowledge. There was significant association of knowledge with selected demographic variables like working area, physical contact towards cytotoxic drugs exposure and training attended on safe handling of cytotoxic drugs. However, there was no significant association of knowledge with other demographic variables i.e. age, educational qualification, specialized oncology training, total years of working experience and total years of experience in specific working area.

Conclusion: Through this study, the investigator concluded that staff nurses are moderately aware regarding safe handling of cytotoxic drugs. It was expected that all the staff nurses should have adequate knowledge on safe handling of cytotoxic drugs. An information booklet was provided to the staff nurses of selected hospitals and vigorous training should also be provided to the staff nurses in order to update their body of knowledge.

KEYWORDS : Knowledge, safe handling, cytotoxic drugs, staff nurses.

INTRODUCTION

Cytotoxic drugs are used widely in healthcare settings for the treatment of cancers. It is also known as antineoplastics which are toxic to cells, preventing their replication or growth, and so are used to treat cancer. They can also be used to treat a number of disorders such as rheumatoid arthritis and multiple sclerosis. Once inside the body, their action is not generally tightly targeted and they can produce side effects both to the patients and others who become exposed.¹ Control of Substance Hazardous to Health (COSHH) in 2002, defined cytotoxic drugs as hazardous substances.²

Occupational exposure to cytotoxic drugs may occur during preparation, administering, transporting, storing drugs, handling cytotoxic waste and cleaning up cytotoxic spills. Exposure may occur through skin absorption, inhalation of aerosols and drug droplets, eye contact through a splash of liquids, ingestion and sharp stick injury. Nurses who are exposed to cytotoxic drugs have acute health effects such as hair loss, skin rash, eczema, lightheadedness, nausea and vomiting. Among the possible reproductive side effects experienced by exposed nurses were infertility, abortion and abnormalities in fetuses.³

A report of NIOSH, 2019 stated that about 8 million healthcare workers are potentially exposed to hazardous drugs in their workplace.⁴ Indian Council of Medical Research (ICMR), 2019 reported around 16.9% of nurses had their skin or eyes exposed to chemotherapy drugs.⁵ Annals of Work Exposure and Health (2017) stated that approximately 75,000 healthcare Canadians are estimated to occupationally exposed to antineoplastic agents and 75% are female which are at higher risk for infertility.⁶

OBJECTIVES OF THE STUDY

1. To assess the knowledge regarding safe handling of cytotoxic drugs among staff nurses working in selected hospitals, Kamrup (Metro), Assam.
2. To find out the association of knowledge with selected demographic variables.
3. To develop an information booklet on safe handling of cytotoxic drugs.

REVIEW OF LITERATURE

Section I: Literature related to prevalence of effects of cytotoxic drugs exposure among staff nurses.

Hosseini EI, EA Ghanem, DA Gamal (2019) conducted a cross sectional study to find out the prevalence of effects of cytotoxic drugs exposure among staff nurses in Oncology and Hematology unit at Ain Shams University Hospitals, Egypt. A convenience sampling method was used to select the study subjects of 73 nurses. The prevalence of the effects of cytotoxic drugs exposure was found that almost half of the study nurses (64.4%) frequently complained from recurrent headache, skin irritation (63%), eye irritation (61.6%), and hair loss (52.1%), reproductive effects were also found i.e. menstrual irregularities (32.9%), low birth weight babies (23.3%), premature labor (19.2%) and malignancy (15.1%).⁷

Section II: Literature related to knowledge regarding safe handling of cytotoxic drugs among staff nurses.

Devi Sarita, Sharma Preksha, Kaur Shaminder, Banipal Raja PS (2019) conducted a descriptive cross sectional survey on knowledge and attitude regarding safe handling of chemotherapeutic drugs among 60 nursing personnel at department of oncology in tertiary care hospital of India. Convenience sampling was used to select the study subjects and they reported that majority of nursing personnel (55%) had poor knowledge and near to half of nursing personnel (45%) had average knowledge regarding safe handling of cytotoxic drugs with mean of 19.08 and SD of 4.47.⁸

RESEARCH METHODOLOGY

Research Approach: Quantitative research approach

Research Design: Descriptive research design

Research Variable: Knowledge

Demographic Variable:

In this study the demographic variables are age, gender, marital status,

educational qualification, specialized oncology training, total years of working experience, working area, total years of experience in specific working area, physical contact towards cytotoxic drugs exposure and training attended on safe handling of cytotoxic drugs.

Setting of The Study:

Selected hospitals, Kamrup (Metro), Assam.

Population:

Staff nurses

Target Population:

Staff nurses working in oncology ward (i.e. chemotherapy ward and day care), medical ward and surgical ward.

Accessible Population:

Staff nurses working in oncology ward (chemotherapy ward and day care), medical ward and surgical ward in selected hospitals, Kamrup (Metro), Assam.

Sample:

Staff nurses working in oncology ward (chemotherapy ward and day care), medical ward and surgical ward in selected hospitals, Kamrup (Metro), Assam and who fulfilled the inclusion criteria.

Sample size: 100

Inclusion Criteria:

In this study, the inclusion criteria include the staff nurses who were:

- a. present during the period of data collection
- b. in direct patient care

Exclusion Criteria:

In this study, the exclusion criteria include the staff nurses who were:

- a. not willing to participate

Tools and Technique:

Structured knowledge questionnaire to assess the level of knowledge and the technique was self report.

Scoring Key:

Structured knowledge questionnaire on safe handling of cytotoxic drugs.

The correct answer was given score of 1 (one) and wrong answer score 0 (zero). The total score on knowledge regarding safe handling of cytotoxic drugs was 34.

Category Of Knowledge

Inadequate knowledge: <17 (<50%)

Moderate knowledge: 17-26 (50-75%)

Adequate knowledge: >26 (>75%)

Content Validity Of The Tool:

The prepared tool (structured knowledge questionnaire and information booklet) along with the problem statement and objectives was submitted to three experts in the field of oncology nursing, three experts in the field of medical surgical nursing, one expert in the field of pharmacology, one medical oncologist and one clinical oncologist.

Reliability Of The Tool:

The reliability of the tool was done by using Split half method for structured knowledge questionnaire. It was revealed that the tool was reliable as reliability of the knowledge questionnaire was 0.93.

Pilot Study:

The pilot study was conducted from 9th November to 14th November 2020. 10 samples were selected using convenience sampling technique and the study was found to be feasible.

Main Study:

The main study was conducted from 14th December 2020 to 14th January 2021. Prior to data collection, the investigator obtained permission from Medical Superintendent of Health City Hospital, Northeast Cancer Hospital and Research Institute, Ayursundra Superspecialty Hospital and Saint John Hospital, Kamrup (Metro), Assam. The investigator visited the hospitals on the due dates and was introduced to the Nursing Superintendent and nursing incharges of the respective wards prior to collection of the data. A brief self introduction

and the purpose of the study were explained to the staff nurses prior to data collection and assured them of the confidentiality and anonymity to get their co-operation and prompt responses during data collection.

The data was collected after obtaining the informed consent from the staff nurses. A structured knowledge questionnaire was provided to assess the knowledge of staff nurses regarding safe handling of cytotoxic drugs and the staff nurses took approximately 30-40 minutes to complete the questionnaire. The staff nurses interacted and cooperated well. The information booklet was then provided to the staff nurses after the data collection.

RESULTS

Table I: Frequency And Percentage Distribution Of Staff Nurses According To Demographic Variables

VARIABLES		Frequency (f)	Percentage (%)
a. Age	21- 25 years	28	28%
	26- 30 years	62	62%
	31- 35 years	9	9%
	36- 40 years	1	1%
	Above 40 years	0	0%
b. Gender	Male	3	3%
	Female	97	97%
c. Marital status	Married	16	16%
	Unmarried	84	84%
d. Educational qualification	G.N.M	66	66%
	B.Sc (Nursing)	30	30%
	Post Basic BSc(Nursing)	4	4%
	M.Sc (Nursing)	0	0%
e. Specialized oncology training	Yes	3	3%
	No	97	97%
e(a). Type of oncology training	Post Basic Diploma in Oncology Nursing	2	67%
	Nursing Fellowship Program	1	33%
f. Total years of working experience	< 1 year	18	18%
	1-5 years	68	68%
	5- 10 years	11	11%
	>10 years	3	3%
g. Working area	Chemotherapy ward	18	18%
	Day care	8	8%
	Medical ward	69	69%
	Surgical ward	5	5%
h. Total years of experience in specific working area	< 1 year	41	41%
	1-5 years	56	56%
	5-10 years	3	3%
	>10 years	0	0%
I. Physical contact towards cytotoxic drugs exposure	Yes	6	6%
	No	94	94%
i(a). Type of effect of cytotoxic drugs exposure	Skin irritation	4	67%
	Headache	2	33%
j. Training attended on safe handling of cytotoxic drugs	Yes	4	4%
	No	96	96%
j(a). Type of training attended	Workshop	3	75%
	Seminar	1	25%
j(b)Session attended regarding safe handling of cytotoxic drugs.	1 session	3	75%
	2 session	1	25%
	>2 sessions	0	0%

Table II: Association Of Knowledge Of Staff Nurses With Their Selected Demographic Variables.

Demographic Variables	Chi square value	df	P- value	Remarks
1)Age	3.534	6	0.895	NS at p> 0.05
2) Educational Qualification	8.112	4	0.064	NS at p> 0.05
3) Specialized oncology training	3.626	2	0.223	NS at p> 0.05

4) Total years of working experience	5.538	6	0.439	NS at p> 0.05
5) Working area	48.987	6	0.0001	S at p< 0.001
6) Total years of experience in specific working area	1.472	4	0.881	NS at p> 0.05
7) Physical contact towards cytotoxic drugs exposure	11.188	2	0.002	S at p<0.01
8) Training attended on safe handling of cytotoxic drugs	7.616	2	0.017	S at p< 0.05

NS- Non significant, S- Significant, df- Degree of freedom, ***p<0.0001, **p<0.01, *p<0.05.

Table II: Shows that there was a significant association between the knowledge with the selected demographic variables like working area (p=0.0001), physical contact towards cytotoxic drugs exposure (p=0.002) and training attended on safe handling of cytotoxic drugs (p=0.017). The other demographic variables had not shown statistically significant association with knowledge of staff nurses regarding safe handling of cytotoxic drugs.

n= 100

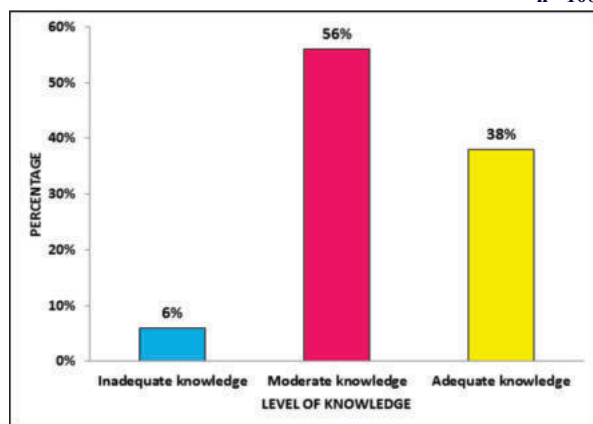


Figure 1: Bar Diagram Showing Level Of Knowledge Of The Staff Nurses

The result of the study showed that majority of the staff nurses i.e. 56 % had moderate knowledge, 38% had adequate knowledge and 6% had inadequate knowledge regarding safe handling of cytotoxic drugs.

DISCUSSION

The finding of the study revealed that out of 100 staff nurses, majority i.e.56(56%) of staff nurses had moderate knowledge, 38 (38%) had adequate knowledge and 6(6%) staff nurses had inadequate knowledge regarding safe handling of cytotoxic drugs. It was also found out that out of 100 staff nurses i.e. 68% had 1-5 years of working experience and 96% had not attended any training on safe handling of cytotoxic drugs which result majority of the staff nurses i.e. 56% to had moderate knowledge regarding safe handling of cytotoxic drugs. The result of the present study was in contrast with the study conducted by Zayed HA, Saied SM, Sallamy RM and Wala MSI (2018), a cross sectional study on knowledge, attitude and practice regarding safe handling of cytotoxic drugs among nurses in Tanta University Hospital, Egypt. A total of 55 nurses selected in the study by convenience sampling technique. The study result showed that nearly half of the participants (45.5%) had work experience more than five years and 54.5% of nurses had previous training on safe handling of cytotoxic drugs. Regarding knowledge about safe handling of cytotoxic drugs, the result indicated that about 67.3% of the nurses had a satisfactory level of knowledge (score>75) and 33% had unsatisfactory level of knowledge (score<75%). Mean 19.05 and SD 4.8.⁹

The result of the study also revealed that there was significant association between the knowledge with the selected demographic variables like working area(p= 0.0001), physical contact towards cytotoxic drugs exposure (p= 0.002) and training attended on safe handling of cytotoxic drugs(p= 0.017). The present study was supported by Habiba Azza Ibrahim Abd Elkader, Eldin Yaldez K.Zein, Ibrahim Enas Mohamed (2018) conducted a descriptive study on knowledge and practice regarding safe handling of hazardous drugs among 52 nurses at Damanhour Oncology Institute, Egypt. Among the

variables like educational qualification, working experience, place of working in hospital, training program and source of information, the study showed that qualification (p=0.001) and previous training program (p=0.04) was associated with the knowledge of nurses regarding safe handling of hazardous drugs.¹⁰

CONCLUSION

Out of 100 staff nurses, majority i.e. 56 (56%) had moderate knowledge, 38 (38%) had adequate knowledge and 6 (6%) had inadequate knowledge. Chi square analysis showed that there was significant association of knowledge with selected demographic variables i.e. working area, physical contact towards cytotoxic drugs exposure and training attended on safe handling of cytotoxic drugs. Thus, after the data collection, the investigator provided an information booklet on safe handling of cytotoxic drugs to the staff nurses for the purpose of strengthening their knowledge.

REFERENCES

1. National Institute for Occupational Safety and Health (NIOSH) 2004. Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings. Centers of Disease Control and Prevention. Workplace Safety and Health. 2004- 165.
2. Health and Safety Executive. Safe Handling of Cytotoxic Drugs in Workplace. Available at <https://www.hse.gov.uk/safe-use>
3. Asefa Selamawit, Aga Fekadu, Demie Takele Gezahegn (2021). Drug Healthcare and Patient Safety. Knowledge and Practices on the Safe Handling of Cytotoxic Drugs Among Oncology Nurses Working at Tertiary Teaching Hospitals in Addis Ababa, Ethiopia. 2021; 13: 71-80.
4. Canadian Occupational Safety. Workers Exposed to Chemotherapy Drugs at Increased Risk for Cancer, Organ Damage and Reproductive Issues.
5. Indian Council of Medical Research (ICMR). Cytotoxic Drugs Annual Report. 2019.
6. Annals of Work Exposure and Health. Estimating National- Level Exposure to Antineoplastic agents in the workplace: CAREX Canada Findings and Future Research Needs.
7. Hosseini El, EA Ghanem and DA Gamal (2019) Health Hazards, Occupational Safety Measures and Knowledge Assessment Among Nurses Exposed to Chemotherapy Drugs. Egyptian Journal of Occupational Medicine, 2019; 43: 361- 377.
8. Devi Sarita, Sharma Preksha, Kaur Shaminder, Banipal Raja P.S (2019). Knowledge and Attitude Regarding Safe Handling of Chemotherapeutic Drugs Among Nurses: A Cross Sectional Survey. International Journal of Current Research. Vol 11, pp. 6380-6386.
9. Zayed HA, Saied SM, Sallamy RM and Wala MS(2019) . Knowledge, Attitudes and Practices of Safe Handling of Cytotoxic Drugs among Oncology Nurses in Tanta University Hospitals. Egyptian Journal of Occupational Medicine, 2019; 43(1): 75-92.
10. Habiba Azza Ibrahim Abd Elkader, Eldin Yaldez K. Zein, Ibrahim Enas Mohamed (2018). Knowledge and Practices Regarding Handling of Hazardous Drugs: Developing Procedure Manual for Safe Handling of Hazardous Drugs, Damanhour University. IQSR Journal of Nursing and Health Science (IQSR-JNHS), March- April 2018, PP 01- 11.