

Knowledge Regarding Administration of Inotropic Drugs Among Nurses Working in Selected Hospitals, Kathmandu

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019; representing 32% of all global deaths. An Inotrope is a medium that adjusts the power or efforts of muscle constrictions. Inotropic drugs help in improving cardiac output, easing respiratory congestion and improving the quality of cardiac muscle contraction and tissue perfusion.

Method/ Material: A descriptive cross-sectional design was adopted for the study. Non probability purposive sampling technique was used to select the 113 nurses. Descriptive statistics like mean, median, frequency and standard deviation for calculating frequency and percentage and inferential statistics such as chi square test or fisher exact was used to determine the association between knowledge and selected variables.

Result: The majority 65.5% of the participants had inadequate level of knowledge followed by more than one third 34.5% had moderate knowledge and none 0% of the participants had adequate knowledge regarding administration of inotropic drugs. There is association between level of knowledge regarding administration of inotropic drugs and selected socio demographic variables among participants in the study. After the analysis through chi-square test or fisher exact test, level of knowledge regarding administration of inotropic drugs was found to be significantly associated with educational qualification ($p=0.028$) and working unit ($p=0.035$)

Conclusion: Nurses have inadequate knowledge about administration of inotropic drugs. Therefore, concerned authorities of hospital and intervention makers should be focused to train or educate nurses on administration of inotropic drugs which will ultimately leads to delivery of quality health services.

Keywords: Knowledge, Administration of Inotropic drugs, Nurse

INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over three quarters of CVD deaths take place in low-

and middle-income countries. Out of the 17 million premature deaths (under the age of 70) due to non-communicable diseases in 2019, 38% were caused by CVDs. For those conditions inotropic drugs play a vital role in rehabilitating the cardiovascular disease patients. Inotropic state is most commonly used in reference to various drugs that affect

the strength of contraction of heart muscle. Cardio Vascular Disease is the leading cause of death globally last 20 years. Over three quarters of CVDs death take place in low- and middle-income countries. [1]

The term inotrope state is most usually utilized about different medications that influence the power of shrinking of the heart muscle. An inotrope is a medium that adjusts the power or efforts of muscle constrictions. Both positive and negative type of inotropic drugs is utilized in the administration of different cardiovascular conditions. Many patients are admitted to hospital that is undergoing inotropes support. Nursing staffs provide care, patient safety and increase recognized as essential in the practice of intensive care medicine. So, they should aware of guidelines for providing safety for the patient & must have adequate knowledge about its uses & administration. Hence, the investigators have conducted the study to survey the nursing staffs' knowledge level on utilization of inotrope. [2]

Positive inotropes strengthen the heart's contractions, so it can pump more blood with fewer heartbeats. Negative inotrope weakens the heart's contraction and slow the heart rate. These medicines are used to treat hypertension, chronic heart failure, arrhythmias, and angina. It includes inotropes include negative inotrope beta-blockers, calcium channel blockers, and antiarrhythmic medicines and they all work in different ways. [3]

Individual registries, observational studies, and trials with patients in shock provide insight into the current standard of care. For example, in patients with cardiogenic shock, vasopressors and inotropes were administered in 94%, where dobutamine (49%) and 2 levosimendan (24%) were the most commonly used inotropes. Common inotropes used in ICU are Dopamine, Dobutamine, Adrenaline, Noradrenaline, Isoprenaline and Milirinone. [4]

The nurse is in a unique position regarding drugs therapy because when drugs are administered the body begins a sequence of

processes designed to handle the new chemicals. Understanding how drugs act on the body to cause changes and applying that knowledge in the clinical setting are important aspects of nursing practice. [5] The administration of positive inotropes needs frequent assessment of blood pressure, pulse and pulmonary wedge pressure to evaluate the side effect (arrhythmias, myocardial ischemia) these side effect increased length of hospital stay, cost, disability, and may lead to death. The nurses play an important role in administration of medication and prevent this effect. [6]

A critical care nurse is a vital part of the health care providers, the process of medication administration is considered as one core nursing action that spend about 40% of their time in the hospital for administering medications Also, there are many reasons for medication administration errors done by a nurse, which are inadequate training, lack of knowledge regarding inotropic medications. [7] The majority of study samples 36(72%) had fair knowledge; whereas 8(16%) samples had good knowledge & 6(12%) had poor knowledge regarding the use of inotropes from the study in Odisha , India (1). A similar study conducted in Nellore, concluded that majority of ICU staff nurses had inadequate knowledge on. inotropic drug calculation. [8] The nurses 21% had satisfactory knowledge, whereas, 79% had unsatisfactory level of knowledge. Also, very few 11% had satisfactory practice score. [9] According to the latest WHO data published in 2020 Coronary Heart Disease Deaths in Nepal reached to 12.26% of total deaths. [10]

Objectives

- To assess the knowledge regarding administration of inotropic drugs among the nurses working in selected hospital Kathmandu.

-To find out the association between levels of knowledge administration of inotropic drugs among the nurses and selected socio demographic variables.

MATERIALS & METHODS

A descriptive cross-sectional study was conducted among 113 nurses who working in ICU, Emergency, and General ward, at selected hospital Kathmandu, Nepal. The objective of the study was to identify the knowledge regarding administration of inotropic drugs among the nurses. Non probability purposive sampling technique was used. An informed consent was obtained from the respondents who were willing to participate. Structured questionnaire was developed to collect the data on socio-demographics variables, knowledge regarding administration of inotropic drugs among nurses.

The questionnaire was constructed in English language. It was two sections; - Section I: This section consists of self-made questionnaires regarding socio-demographic information of respondents consisting of age, educational qualification, years of work experience, working department, years of ICU work experience and training program. Section II: The second part of the questionnaire was developed by the researcher after reviewing the recent related

literature to the knowledge regarding administration of inotropic drugs. [11]

STATISTICAL ANALYSIS

The collected data was checked reviewed and organized for its accuracy, consistency and completeness. The data was entered, cleaned and analyzed through Statistical Package for Social Sciences (SPSS) version 25. Data analysis was done by using descriptive statistics. Descriptive statistics such as percentage, mean, range will be used and the Chi-square test or fisher exact test was used to find out the association between level of knowledge regarding administration of inotropic drugs and socio-demographic characteristics of the nurses. For all statistically chi- square a p- value less than 0.05 was taken to indicate a significant difference.

Ethics Clearance: - Confidentiality was maintained by not disclosing their information from research setting. Written informed consent was taken from each respondent.

RESULT

Analysis And Interpretation Of Data

Table.1 Socio Demographic Variables of the participants n=113

Variables	Number	Percentage
Age group (in years)		
20-25	70	61.9
25-30	30	26.5
>30	13	11.6
25.29±4.748(Mean±SD)		
Ethnicity		
Brahmin	12	10.6
Chhetri	29	25.7
Dalit	2	1.8
Janjati	70	61.9
Marital Status		
Married	41	36.3
Unmarried	72	63.7
Educational Qualification		
PCL in Nursing	74	65.5
Bachelor in Nursing	37	32.7
Master in Nursing	2	1.8
Sources of information	Number	Percentage
Book	80	70.8
Television	5	4.4
Social Media	10	8.9
Research Paper	6	5.3
Peer Group	12	10.6

Table 1 Illustrate that: Majority 61.9 % of the participants were fell under the age group 25-30 years. The mean age and standard deviation of the participants was 25.29±4.748years old. Similarly, more than half 63.7% of the participants were unmarried. Majority 65.5% of the participants had an educational qualification of PCL in nursing whereas; least 1.8% of participants of the participants had completed Master in Nursing. Most 92.0% of the participants had an experience of less than or equals to 5 years. Majority 63.7% of the participants were working in inpatient ward whereas least number10.6% of participants other ward i.e., operation theater and post-operative ward. Furthermore, almost all 95.6% of the participants had a job description of staff nurse. Majority 70.8% of the participants reported book as the source of information about inotropic drugs whereas, least 5.3% of the

participants had mentioned research paper as their source of information about inotropic drugs.

Table 2 Level of Knowledge about Administration of Inotropic Drugs among Participants n =113

Level of knowledge (score)	Number	Percentage
Inadequate (<17)	74	65.5
Moderate (17-26)	39	34.5
Adequate (>26)	0	0.0
Total	113	100

Table 2 illustrates level of knowledge about administration of inotropic drugs among nurses in the study. It was found that majority 65.5% of the participants had inadequate level of knowledge and more than one third 34.5% of the participants had moderate knowledge about administration of inotropic drugs and none 0% of the participants found to have adequate level of knowledge regarding administration of inotropic drugs in this study.

Table 3: Association of Level of Knowledge about Administration of Inotropic Drugs with Socio-Demographic Characteristics of the participants

Variables	Level of knowledge		Chi Square/ Fisher exact value	p value
	Inadequate n (%)	Moderate n (%)		
Age group (in years)			0.985	0.646
20-25	44 (62.9)	26 (37.1)		
25-30	20 (66.7)	10 (33.3)		
>30	10 (76.9)	3 (23.1)		
Ethnicity			1.525	0.672
Brahmin	7 (58.3)	5 (41.7)		
Chhetri	21 (72.4)	8 (27.6)		
Dalit	1 (50.0)	1 (50.0)		
Janjati	45 (64.3)	25 (35.7)		
Marital Status			2.918	0.103
Married	31 (75.6)	10 (24.4)		
Unmarried	43 (59.7)	29 (40.3)		
Educational Qualification			6.389	0.028**
PCL in Nursing	43 (58.1)	31 (41.9)		
Bachelor in Nursing	30 (81.1)	7 (18.9)		
Master in Nursing	1 (50.0)	1 (50.0)		
Work Experience			0.006	1.00
≤5 years	68 (65.4)	36 (34.6)		
>5 years	6 (66.7)	3 (33.3)		
Work Unit			8.455	0.035**
Emergency Ward	11 (73.3)	4 (26.7)		
Inpatient Ward	45 (62.5)	27 (37.5)		
ICU Ward	13 (92.9)	1 (7.1)		
Others	5 (41.7)	7 (58.3)		
Job Designation			0.488	0.658
Staff Nurse	70 (64.8)	38 (35.2)		
Ward In-charge	4 (80.0)	1 (20.0)		
Attended training program related ICU			0.795	0.426
Yes	33 (70.2)	14 (29.8)		
No	41 (62.1)	25 (37.9)		

Table 3 shows the association between level of knowledge about administration of inotropic drugs and selected socio demographic variables among participants in the study. After the analysis through chi-square test or fisher exact test, level of knowledge about administration of inotropic drugs was found to be significantly associated with educational qualification ($p=0.028$) and working unit ($p=0.035$)

DISCUSSION

Current study findings revealed that all of the participants had heard about inotropic drugs. In this study, majority 65.5% of the nurses had inadequate level of knowledge regarding administration of inotropic drugs while, none 0% of the participants had good knowledge regarding administration of inotropic drugs. In line with this finding, a previous study conducted by Fernandes in India found that none of nurses 0% had an adequate knowledge regarding administration of inotropic drugs during pretest.^[5] In comparison to current result, higher figures was observed in the study of Egypt that 79% of nurses had an unsatisfactory or inadequate level of knowledge about administration of inotropic medications and its administration.^[9] In another similar study was conducted to assess the knowledge regarding administration of inotropic drugs conducted in Indore, Semi structured questionnaire was used to collect data where the knowledge score level under sub heading i.e., poor, average, good, where, 50% had poor knowledge, 43.34% had average knowledge and 6.66% had good knowledge level among the nurse.^[12] In the equivalent study to assess nurses' knowledge and attitude regarding positive inotropes administration in critical care unit was conducted in Africa. A descriptive cross-sectional hospital base study carried out at Omdurman military hospital among 100 nurse staffs of critical care unit general level of knowledge about positive inotropes administration was found poor in 57%, acceptable in 25% and good in only 18%.

From the findings, it is recommended to provide educational programs and upgrading courses according to nurses' needs improves their knowledge related to administration of inotropic drugs.^[11]

Furthermore, this study revealed that educational qualification $P=0.028$ and work unit $P=0.035$ were significantly associated with level of knowledge about inotropic drugs. In the Similar, a Study conducted in Egypt also observed association between education ($p<0.001$) and Knowledge regarding administration of inotropic drug among nurses.^[6] In contrast the current study findings revealed that critical care nurses have no significant correlations were existed between years of experience, area of work and their level of knowledge and practice regarding selected inotropic medications.^[13]

In this study shows that majority 61.9% of the participants were aged between 20-25 years and least 11.6% were aged more than 30 years. Majority 65.5% of the participants had educational qualification of PCL in nursing 65.5%, more than one third 32.7% participants had bachelor in nursing and least 1.8% of participants had master in nursing. More than half 58.4% participants reported that they did not receive any training related to ICU. In similar study shows that 80.7% of studied nurses' age was from 20 to less than 30 with mean age 26.13 ± 3.35 . As regard the level of education, the technical institute was the highest percent with 63.9% followed by diploma 21.3%. Also, 37.7% of studied nurses had from 3 to less than 6 years of experience. The majority of studied nurses (90%) didn't attend courses regarding inotropic medications ago.^[12]

CONCLUSION

The conclusion drawn based on findings of the study suggest that Majority 65.5% of the nurses had poor knowledge about administration of inotropic drugs where more than one third 34.5% nurses had moderate knowledge and none 0% of the nurses had good knowledge about

administration of inotropic drugs. Educational qualification and work unit were statistically significant with level of knowledge about administration of inotropic drugs, however, age group, ethnicity, marital status, work experience, job designation, and attended any training on ICU were not found significantly associated with level of knowledge about administration of inotropic drugs among nurses.

Declaration by Authors

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