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Chandra MM

Nursing Scholar,
Department of Nursing,
Himalayan University,
Itanagar, Arunachal Pradesh,
India

Dr. Sujatha Vijaykumar

Professor, Department of
Nursing, Himalayan
University, Itanagar,
Arunachal Pradesh, India

Evaluating staff knowledge on pediatric parenteral drug administration: A call for enhanced training programs

Chandra MM and Sujatha Vijaykumar

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Abstract

Aim: To assess the knowledge regarding pediatric parenteral drug administration among the staff nurses of Karnataka Institute of Medical Sciences (KIMS), Hubballi, Karnataka.

Methods: The study employed a descriptive design with a sample of 400 registered nurses. The objective was to assess the knowledge of nurses regarding the administration of parenteral medication. A descriptive approach was used to objectively measure the outcomes. The dependent variable was the nurses' knowledge of pediatric parenteral drug administration, and the independent variables were the demographic characteristics of the staff nurses (e.g., age, gender, education level, years of experience, department, etc.).

Results: The findings revealed that among the 400 staff nurses, 91.5% had moderate knowledge, 7% had inadequate knowledge, and 1.5% had adequate knowledge regarding pediatric parenteral drug administration. Knowledge was significantly associated with factors such as age, gender, religion, qualification, experience, and previous training.

Keywords: Assess, knowledge, pediatric parenteral drug administration, nurses, pediatric wards

Introduction

Pediatric parenteral drug administration involves the delivery of medications directly into a child's bloodstream through injections or infusions, a practice that requires precision, accuracy, and thorough understanding due to the unique vulnerabilities of pediatric patients. The complexities of pediatric pharmacology, including age-related variations in drug metabolism, absorption, and dosage calculations, pose significant challenges to healthcare professionals. Even minor errors in drug administration can lead to serious, sometimes life-threatening consequences, making it imperative for nurses to possess a high level of competency in this area.

Nurses, being the primary caregivers responsible for administering medications, must have comprehensive knowledge and skills related to pediatric parenteral drug administration. Inadequate knowledge or improper techniques can lead to adverse drug reactions, medication errors, and poor patient outcomes, particularly in children, where such errors can have magnified effects. Therefore, it becomes crucial for nursing education to continually enhance nurses' knowledge and competency in this domain.

Pediatric parenteral drug administration is a critical aspect of pediatric healthcare, requiring specialized knowledge and skills to ensure the safe and effective delivery of medications. Children, due to their distinct physiological characteristics, are more vulnerable to medication errors, which can lead to severe consequences. As frontline caregivers, nurses play a vital role in administering parenteral drugs in pediatric wards, making their knowledge and competency in this area essential for patient safety. Despite the importance of this task, various studies have shown that gaps in knowledge and understanding of pediatric drug administration are common among healthcare professionals, especially in resource-limited settings.

In India, healthcare institutions like the Karnataka Institute of Medical Sciences (KIMS), Hubballi, are responsible for providing high-quality pediatric care, and the proficiency of nursing staff in administering pediatric parenteral medications is pivotal. However, limited research has been conducted to assess the knowledge levels of nurses in this domain,

Corresponding Author:

Chandra MM

Nursing Scholar,
Department of Nursing,
Himalayan University,
Itanagar, Arunachal Pradesh,
India

particularly in public healthcare settings. Understanding the current knowledge base among nurses is essential to identifying areas of improvement and developing targeted training programs.

This study aims to assess the knowledge of staff nurses regarding pediatric parenteral drug administration at KIMS, Hubballi, Karnataka. By identifying knowledge gaps and their association with demographic factors, the study seeks to contribute to the enhancement of nursing education and training, ultimately improving the quality of pediatric care in the region.

Aim

To assess the knowledge of staff nurses regarding pediatric parenteral drug administration at KIMS, Hubballi, Karnataka.

The objectives of the study were

1. To assess the knowledge of nurses regarding pediatric

parenteral drug administration.

2. To find out an association between pre-test knowledge score and selected socio- demographic variables.

Methodology

The study utilized a non-experimental, descriptive research design to assess the knowledge of staff nurses regarding pediatric parenteral drug administration. A total of 400 registered nurses working in the Pediatric Intensive Care Unit (PICU), Neonatal Intensive Care Unit (NICU), and pediatric wards of Karnataka Institute of Medical Sciences (KIMS), Hubballi, Karnataka, were selected through non-probability purposive sampling. Data were collected using a structured knowledge questionnaire consisting of 50 items covering various domains of pediatric parenteral drug administration. The tool was divided into two sections: demographic data and knowledge assessment. The association between knowledge levels and demographic characteristics was examined using chi-square tests.

Table 1: Frequency and Percentage distribution of nurses according to their socio demographic data, n=400

Sl. No	Demographic variables	Frequency (f)	Percentage (%)
1.	Age groups		
	21 - 30 years	233	58.25
	31 - 40 years	134	33.50
	41 - 50 years	33	8.25
2.	Gender		
	Male	229	57.25
	Female	171	42.75
3.	Religion		
	Hindu	162	40.50
	Christian	110	27.50
	Muslim	128	32.00
	Marital status		
	Single	268	67.00
	Married	132	33.00
	Professional qualification		
	G.N.M.	109	27.25
	Basic B. Sc.(N)	185	46.25
	PB. B. Sc. (N)	94	23.50
	MSc(N)	12	3.00
6.	Area of working		
	PICU	105	26.25
	NICU	145	36.25
	General ward/ Deluxe ward	121	30.25
	O. T/ OPD	29	7.25
7.	Years of experience		
	1-5yrs	311	77.75
	>=6yrs	89	22.25
8.	Designation of the staff		
	Staff nurse	373	93.25
	Ward in charge	27	6.75
9.	Have you had any training in parenteral paediatric drug administration		
	Yes	108	27.00
	No	292	73.00

Results

The study assessed the knowledge of staff nurses regarding pediatric parenteral drug administration. The findings revealed that 91.5% (366 nurses) had moderate knowledge, 7% (28 nurses) had inadequate knowledge, and only 1.5% (6 nurses) demonstrated adequate knowledge. Significant associations were observed between knowledge levels and

demographic variables, including age ($\chi^2 = 20.0100$, $p = 0.0001$), gender ($\chi^2 = 10.0320$, $p = 0.0070$), religion ($\chi^2 = 26.5560$, $p = 0.0001$), professional qualifications ($\chi^2 = 24.2990$, $p = 0.0001$), years of experience ($\chi^2 = 7.8720$, $p = 0.0200$), and training ($\chi^2 = 5.9780$, $p = 0.0500$). However, no significant associations were found between knowledge levels and marital status, area of work, or designation.

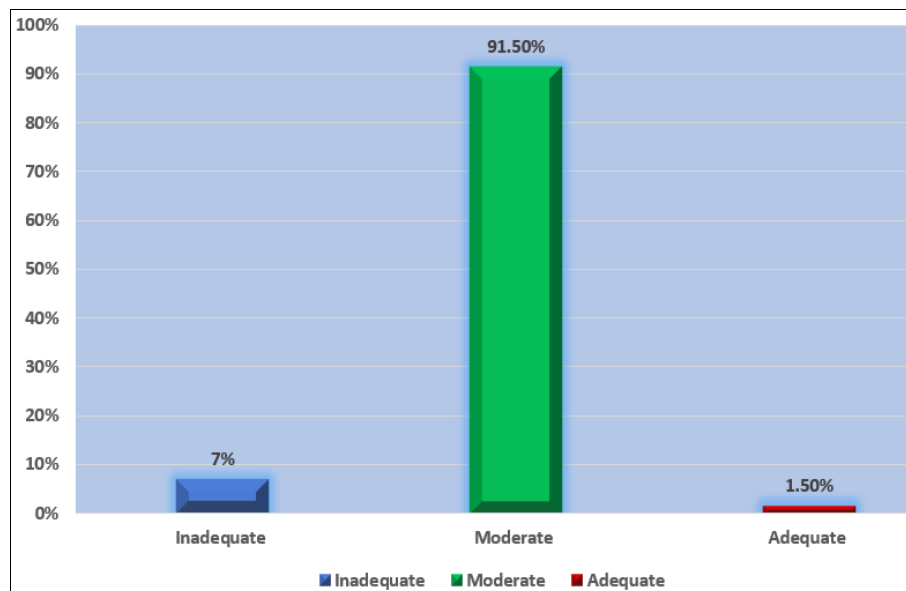


Fig 1: Percentage distribution of level of knowledge regarding paediatric parenteral drug administration among staff nurses

This distribution highlights the need for targeted educational interventions to improve knowledge levels among staff nurses, particularly to increase the proportion of those with adequate knowledge.

Conclusion

The study highlights that the majority of staff nurses at Karnataka Institute of Medical Sciences (KIMS), Hubballi, possess moderate knowledge regarding pediatric parenteral drug administration, with a small proportion demonstrating inadequate or adequate knowledge. Significant associations were found between knowledge levels and key demographic factors such as age, gender, religion, professional qualifications, years of experience, and training, indicating the influence of these variables on nurses' understanding of pediatric drug administration. The findings underscore the need for targeted educational interventions and continuous training programs to enhance knowledge levels, particularly among nurses with inadequate knowledge, to improve patient safety and care outcomes in pediatric settings.

Conflict of Interest

Not available.

Financial Support

Not available.

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