

# Knowledge of Pediatric Medication among Nursing Students

Nikhil Deepak Tasgaonkar<sup>1</sup>, Priyanka P Pandhare<sup>2</sup>

<sup>1</sup>Clinical Instructor, Bharati Vidyapeeth (Deemed to be University) College of Nursing, Sangli, India

<sup>2</sup>Lecturer, Dr. J.J. Mugdum, Institute of Nursing Education, Jaisingpur, India

**Abstract:** A descriptive study was conducted to assess the knowledge of selected paediatric medication among nursing students in selected Nursing Colleges of Kolhapur city. Quantitative approach was considered to carry out with Non-probability convenient sampling technique on 100 Nursing students studying in Kolhapur City. The findings revealed that majority of Nursing students 66% had an average knowledge, 7% were having poor knowledge, 26% were having good knowledge and only 1% Nursing student had excellent knowledge regarding selected paediatric medications. The mean knowledge score of Nursing students regarding selected paediatric medications was found to be Average with score of 9.08 out of 20 which means there is need to enhance knowledge regarding selected paediatric medications.

**Keywords:** Assess, Knowledge, Selected Paediatric medications, Nursing students

## 1. Introduction

Paediatric Client have challenging role in receiving nursing care for the age which requires developmental appropriate care and diligence in assessment of patient and parental concerns<sup>[1]</sup>. The professional practice of nursing within the paediatric environment can be both rewarding and challenging. Paediatric Care activities are complicated and require a constant vigilance in providing quality care to the patient. The nursing students get constricted time to upgrade their knowledge and skills with current advancement in technology. This results in possible gap in the integration of knowledge into practice, whereby they are expected by physicians that Nursing personnel to be rationalists, gain knowledge and collaborate. The literature showing the theory-practice gap in nursing is one of the major challenges, which includes the discrepancy between teaching of theory and clinical practice, when theory should be integrated into practice to reduce the gap in between. Many initiatives have been taken to bridge theory-practice gap; the changes in education are redefining the role of the nurse teachers<sup>[2]</sup>.

Children and adults respond to drugs differently. There are important difference in the absorption, distribution, metabolism and excretion. Children's body systems are less developed, their gastrointestinal transit time varies and their body composition changes with development. The limited scope of current research in pharmacokinetics and the effects on the developing child creates the need for more studies on drug therapy and the paediatric client.<sup>[3]</sup> Education of Pharmacology in nursing has become increasingly important as nurses' roles in administering, prescribing and educating patients about their medications have grown. Some authors have expressed concern at the lack of science teaching in nurse education, and others have suggested that there is a theory-practice gap in this area of the curriculum.<sup>[4]</sup> Various formula involving age, weight and body surface area (BSA) as the basis for calculations have been devised to determine children's drug dosage from a standard adult dose. Because the administration of medication is a nursing responsibility,

nurses need to have not only knowledge of drug action and patient responses, but also some resources for estimating safe dosages for children.<sup>[5]</sup>

Children and adults respond to drugs differently. There are important difference in the absorption, distribution, metabolism and excretion. Children's body systems are less developed, their gastrointestinal transit time varies and their body composition changes with development. The limited scope of current research in pharmacokinetics and the effects on the developing child creates the need for more studies on drug therapy and the paediatric client.<sup>[6]</sup>

## 2. Literature Survey

Administering medications to children is a serious responsibility the need for accuracy in preparing and giving medications to children is even greater than with adult patients. Since the paediatric dose is often relatively small in comparison with the adult dose, a slight mistake in the amount of a drug administered represents a greater proportional error like administration of wrong drug, dose, and route to the children. Medication administration errors can threaten patient's outcomes and is a dimension of patient safety directly linked to nursing care. Children are particularly vulnerable to medication errors because of their unique physiology and developmental needs. Nursing personnel should be aware rights of drug administration. Although most medications are supplied by drug companies in a convenient form or strength for standard adult dose, children's dosage are often computed as fractions of the adult dose.<sup>[7]</sup>

Nurses must have an understanding of the safe dosage of medications they administer to children as well as the expected action, possible side effects and signs of toxicity. It is important that the nurses know to estimate safe dosages and fluid calculation as well as how these are prepaid in order to prevent drug errors and complications such as fluid overload, hypervolemia, right ventricular failure, pulmonary edema and prevent fluid and electrolyte imbalance.<sup>[5]</sup>

A survey study was conducted to determine whether there is sufficient variation in enteral drug administration practices among children at university of Iowa in Iowa city. A total of 317 nursing personnel responded. Results of the survey confirmed that the primary responsibility for administering enteral medications resides with the nurse. It also documented that many elements in the administration of enteral medications vary significantly among nurses, although nursing personal expressed confidence in the efficacy of their individual drug administration techniques. Further quantitative evaluations of the efficacy of practices of enteral drug administration must be performed before meaningful standardization of drug administration techniques can be accomplished.<sup>[8]</sup>

An Experimental study in Chicago was conducted to assess the knowledge on paediatric emergency medication among nurses in the paediatric intensive care unit at university of Illinois. They have selected 21 nurses for the study by using a simple random sampling technique. Data was collected by using a questionnaire. Result of the study showed that there was significant difference between the mean pretest score (69.5%) and the mean posttest score (87.3%). This study concluded that there was improve in nurses knowledge regarding the use of emergency medication in paediatric intensive care unit .The study recommended that an educational programme developed co-operatively improved specific measures of paediatric intensive care unit nurses knowledge of emergency drugs.<sup>[9]</sup>

A retrospective study conducted in a paediatric emergency department at the children's hospital of Philadelphia result showed that nurses were involved in 39% of reported errors, the nurse and emergency physician were jointly involved in 36% errors. The most common errors were an incorrect dose of medication (35%) or incorrect medication given (30%) and fluid overload (35%). The study concluded that the incorrect recording of patient weight leading to an incorrect medication dose and failure to note the drug allergy are common cause of medication errors. Incorrect drugs and intravenous fluids are given because of similar names and packaging in the paediatric emergency department.<sup>[10]</sup>

Over the past several years, paediatric groups have partnered to improve general understanding, reporting, process improvement methodologies, and quality of paediatric inpatient care. These collaborations have created a robust program of projects, benchmarking efforts, and research. This chapter discusses general findings about safety in paediatric medications. Student nurse are the future Nursing care givers and having a knowledge regarding calculations, emergency medications and its complication is need to enhance respect in providing care, So this led the investigators to select the study.

### 3. Methods / Approach

**Research Approach:** Quantitative evaluative survey approach was used to assess the knowledge regarding selected paediatric medication.

**Research Design:** Descriptive survey research design was used in the present study.

#### Variables:

**Dependent variables:** Dependent variable in this study was knowledge regarding selected paediatric medication.

**Socio-demographic variables:** Socio demographic variables used in the study were age, gender and educational class.

**Research Settings:** The study was conducted in D.Y Patil, College of Nursing, Kolhapur and Savitribai Phule, College of Nursing, Kolhapur.

**Sample:** 100 Nursing students were included.

**Sampling Technique:** Non-probability convenient sampling technique was found appropriate to select the samples.

#### Sampling Criteria

##### Inclusion criteria

Nursing Students who were;

- Studying in 3<sup>rd</sup> year GNM, 4<sup>th</sup> year B.Sc. (N) and PB B.Sc. (N)
- Present during data collection

##### Exclusive Criteria

Nursing students who were not willing to participate in the study were excluded.

#### Operational Definitions of Study:

- 1) **Assess:** In this study, it refers to knowledge regarding paediatric medications among Nursing students as measured by structured knowledge questionnaires.
- 2) **Knowledge:** In this study, it refers to awareness and amount of information or understanding of right response regarding action, calculations, administration, dosage, Precautions of the selected paediatric medication measured by structured knowledge questionnaires.
- 3) **Selected Paediatric medication:-**In this study, it refers to drugs like Surfactant, PCM Suppository, Methylprednisolone, Vitamin K, Cefotaxime, Amikacin, Gentamycin and Pediatric Calculations of drug dosage.
- 4) **Nursing Students:** In this study it refers to, the students who are studying in 4<sup>th</sup> year B.sc Nursing, 3<sup>rd</sup> year GNM & PB. B.Sc. Nursing courses.

#### Description and development of the Tool

**Section 1:** It comprises of 3 items seeking information on Socio-demographic variables.

**Section 2:** It consists of structured questionnaires on knowledge regarding selected paediatric medications among the Nursing Students at selected Nursing colleges with 20 questionnaires of multiple choice questions. A response of "correct answer" is allotted a score of 1 and response of incorrect answer is 0. The total marks obtained were categorized as knowledge score of 0-5as poor, 6-10 as Average knowledge score, 11-15 as Good knowledge score and 16-20 as excellent knowledge score.

**Data collection procedure:** Prior permission was obtained from the concerned authority, for maximum co-operation,

the investigators introduced themselves to the respondents and willingness of the participants was assured the anonymity and confidentiality of information provided by them. The researchers themselves collected data from the subjects through knowledge questionnaire

#### Plan for data analysis:

Data was analyzed by following steps using Frequency and percentage distribution and tabulating the level of knowledge.

## 4. Results / Discussion

The data were processed and on the basis of the objectives formulated for the study.

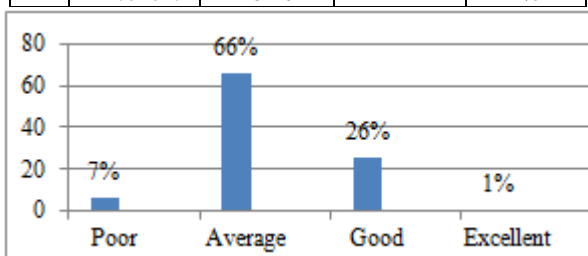
**Table 1:** Frequency and percentage distribution of socio demographic variables, n= 100

Sr. no	Socio Demographic variables	(f)	(%)
1.	<b>Age in year</b>		
	a) 19-22 years	68	68
	b) 23-26 years	10	10
	c) 27-30 years	14	14
2.	<b>Gender</b>		
	a) Male	30	30
	b) Female	70	70
3.	<b>Educational Class</b>		
	a) G.N.M.	24	24
	b) B.Sc.(N)	59	59
	c) PB.BSc. (N)	17	17

The data in table 1 indicates that the majority of Nursing students belongs to age group 19-22 year i.e 68 (68%) and minimum of 8 Nursing student (8%) belongs to above 30 years. Majority of Nursing students were females with 70 (70%) and 30 (30%) were male. Simultaneously majority with 59 frequencies (59%) of Nursing student were from B.Sc (N) and lowest with 17% each of Nursing students were from PB.Bsc. (N).

**Table 2:** Distribution of Knowledge score among Nursing students, n=100

Sr.no	Inference	Knowledge Score	Frequency (f)	Percentage (%)
1	Poor	0-5	7	7%
2	Average	6-10	66	66%
3	Good	11-15	26	26%
4	Excellent	16-20	1	1%



**Figure 1:** Bar diagram depicting the samples based on knowledge regarding selected Paediatric medications.

The table 2 and fig no 1 reveals that majority of Nursing students had an Average knowledge with 66(66%), 7(7%) were having poor knowledge and 26(26%) having good

knowledge and only 1(1%) Nursing student had an excellent knowledge regarding selected pediatric medications which showed lack of Knowledge regarding pediatric medication among Nursing students.

## 5. Conclusion

The majority of Nursing students belongs to age group 19-22 year i.e. 68 (68%) and minimum of 8 Nursing student (8%) belongs to above 30 years. Majority of Nursing students were females with 70 (70%) and 30 (30%) were male. Simultaneously majority with 59 frequencies (59%) of Nursing student were from B.Sc. (N) and lowest with 17% each of Nursing students were from PB.Bsc. (N). The knowledge score was 9.08 which indicates that Nursing Students had average knowledge regarding Paediatric Medications, which is to be improved.

As unawareness was seen in Nursing Students regarding the paediatric medications, the paediatric calculations is the major reason for medication error. The average knowledge also indicates future predictions about the malpractice during administration of medications which is of complication.

## 6. Future Scope

- 1) An explorative study can be conducted on knowledge of Nurses regarding pediatric medications.
- 2) A similar study needs to be conducted in other Nursing Colleges in order to generalization.
- 3) A similar study can be done on a large sample for the generalization.
- 4) A similar study can be done on Nursing teachers as well.

## 7. Limitations

The study is limited to,

- 100 Nursing students.
- Selected Nursing colleges of Kolhapur city.
- Assessing knowledge regarding selected paediatric medications.

## References

- [1] B. A. Montagnino and A. M. Ehier, "The experiences of pediatric nurses caring for children in a persistent vegetative state," *Pediatric Critical Care Medicine*, vol. 8, no. 5, pp. 440-446, 2007. Viewed at Google Scholar
- [2] L. M. Goodfellow, "Can a journal club bridge the gap between research and practice?" *Nurse Educator*, vol. 29, no. 3, pp. 107-110, 2004.
- [3] Niederhauser V.P; "Prescribing for children: Issues in Pediatric Pharmacology"; *Nurse Practitioner*; 1997 March;22(3); 16-18,23,26-28.
- [4] Rachel L. et al, Nurses' perceptions of their pharmacology educational needs, *Wiley Reviewer Resources Centre*, 2004, <https://doi.org/10.1046/j.1365-2648.2003.02922>
- [5] Wong L.D, Hockenberry J.M; "Nursing care of infants and children"; 7<sup>th</sup> edition ; Mosby ; Philadelphia; 2003 ; 1149-1150,1172,1179,1185.

- [6] Niederhauser V.P; “Prescribing for children:Issues in pediatric Pharmacology”; Nurse Practitioner; 1997 March;22(3); 16-18,23,26-28.
- [7] Marlow R.D ,Redding A.B; “Text Book of Paediatric Nursing”; 6<sup>th</sup> edition; W.B Saunders company; Philadelphia; 2003; 800, 1149-1150,1172,1185.
- [8] Leff R.D, Roberts R.J, “Enteral drug administration practices: Report of a preliminary survey”; Paediatrics Journal; 1988 April; 81(4); 549-551.
- [9] Kraus D.M, StifterJ ;“Program to improve nurses knowledge of paediatric emergency medications”; AM Journal;1991 April; 81(4); 97-101.
- [10] Selbst S.M, Fein J.A, “Medication and intravenous fluid errors in a paediatric emergency Department” Paediatric Emergency care Journal; 1999 Feb; 15(1); 1-4Burns N, Grove SK. Understanding Nursing Research, 5<sup>th</sup> Edition New Delhi: Elsevier publication 2007.

### Author Profile



**Mr. Nikhil D Tasgaonkar**, Clinical Instructor, Bharati Vidyapeeth (Deemed to be University) College of Nursing, Sangli



**Ms. Priyanka P Pandhare**, Lecturer, Dr. J.J. Mugdum, Institute of Nursing Education, Jaisingpur