



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research  
Vol. 10, Issue, 05(A), pp. 32215-32218, May, 2019

**International Journal of  
Recent Scientific  
Research**

DOI: 10.24327/IJRSR

## Research Article

# AN EXPLORATORY STUDY TO ASSESS THE KNOWLEDGE AND PRACTICE REGARDING ADMINISTRATION OF DRUGS AMONG STAFF NURSES WORKING IN PEDIATRIC WARDS

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DOI: <http://dx.doi.org/10.24327/ijrsr.2019.1005.3422>

### ARTICLE INFO

#### Article History:

Received 06<sup>th</sup> February, 2019  
Received in revised form 14<sup>th</sup>  
March, 2019  
Accepted 23<sup>rd</sup> April, 2019  
Published online 28<sup>th</sup> May, 2019

#### Key Words:

Knowledge and practices regarding  
administration of drugs

### ABSTRACT

An evaluative study was conducted on “An exploratory study to assess the level of knowledge and practices regarding administration of drugs among the staff nurses working in pediatric wards of selected hospitals with a view to develop a health education module.

**Background:** Medication use in hospitals is a complex process because medication administration errors (MAE) contribute directly to patient morbidity and mortality. Nurses have an important role in a safe administration of drugs. Therefore, it is crucial for nurses to have sufficient knowledge and practice of administration of drugs, possible side effects and necessary cares.

#### Objectives of the study:

- ✓ To assess the level of knowledge of the staff nurses regarding administration of drugs.
- ✓ To assess the level of practice of the staff nurses regarding administration of drugs.
- ✓ To correlate the knowledge of the staff nurses with the practices regarding administration of drugs.
- ✓ To associate the knowledge and practice of the staff nurses regarding administration of drugs with the selected demographic variables.

**Methodology:** The conceptual framework used in the study is Pender’s Health Promotional Model. The research design adopted for the present study was descriptive design. The study was conducted in selected paediatric hospitals of Bangalore. Non probability convenient sampling technique was used. The sample comprise of 50 staff nurses. Self structured questionnaire were used to collect data.

**Major Findings of the Study:** The finding of the study revealed that 48 (96%) respondents has adequate level of knowledge on administration of drugs and 2 (4%) has moderate knowledge level. And none has inadequate knowledge level regarding administration of drugs. The data subjected for correlation coefficient (r) reveals there exist significant relationship between knowledge and practice levels of respondents on administration of drugs ( $r = +0.78^*$ ,  $r > 0.05$  and  $< 1$ ) is present. Out of the ten demographic variables statistical significant association was found with knowledge level among age, years of experience as a nurse, years of experience as a pediatric nurse, professional qualification and religion on administration of drugs. Among the selected demographic variables under the study, the statistical associations are found with the practice level among four variables namely years of experience as a nurse, years of experience as a pediatric nurse, professional qualification and religion on administration of drugs.

**Interpretation and Conclusion:** The result indicates that the overall mean knowledge and practice scores of the staff nurses on administration of drugs were found to be 84.14 percent with SD 7.86 percent and 78.6 percent with SD 10.09 percent respectively. So there is a need to impart the knowledge and practice on administration of drugs.

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## INTRODUCTION

Healthy Children are the greatest resource and pride of a nation. The National Policy for children (1947) says that, “A Nation’s children are its asset; their nature and solicitude are our responsibility.”<sup>1</sup> Investment in child development is an investment in the future of the nation. We must safeguard their health right from the beginning.<sup>1</sup> Children undergo critical stages of illnesses like respiratory infections, cardio-thoracic surgery and neurological infection etc and from them to be restored to life and health. The caregivers in the emergency

services and intensive care units should be knowledgeable and competent in order to administer emergency drugs in the process of the revival of these children.<sup>2</sup>

Medication refers to a drug or other chemical compound that is administered into the body and which affects the body in a beneficial way, typically by relieving symptoms, or acting to remove or reduce cause of illness. There are lots of chemicals and drugs in existence, but not all of them are medications.<sup>3</sup> Pediatric nurses have challenging role in providing nursing care for the age range from infant till toddler, which requires

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developmental appropriate care and diligence in assessment of patient and parental concerns. The professional practice of nursing within the pediatric environment can be both rewarding and challenging. Pediatric nurses' activities are complicated and require constant vigilance in providing quality care to the patient. The nurses get limited 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 parents and physicians to be rationalists, knowledgeable, and collaborative on daily basis.<sup>4</sup> Nurses should be aware of ten rights of drug administration that is 'Right patient, Right drug, Right dose, Right route, Right time and the right of the parents and child to know, right documentation, right to refuse medication, right assessment, and right evaluation'. 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>5</sup>

Medication use in hospitals is a complex process and depends on successful interaction among health care professionals functioning at different areas errors may occur at any stage of prescribing, documenting, dispensing, preparation, or administration.<sup>6</sup> In 2007, National Patient Safety Agency (NPSA) statistics shows that 59.3% of medication errors occur during the administration stage.<sup>7</sup> Medication administration errors are defined as any deviation from the physician's medication order as written on patient's treatment chart during medication administration to patient.<sup>8</sup> The plan for administering a medication begins with identifying the patient, the drug, the dose, the route, and the time.<sup>9</sup> In 1995, the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) classified administration errors in to wrong drug, wrong route, wrong dose, wrong patient, wrong timing of drug administration, contra-indicated drug, wrong site, wrong dosage form, wrong infusion rate and expired medication. Such errors may occur intentionally or unintentionally.<sup>10</sup>

During calendar years 2006-2007, MEDMARX database shows nearly 2.5 percent of pediatric medication errors led to patient harm. The most common types of harmful pediatric medication errors were: improper dose/quantity (37.5 percent), omission error (19.9 percent), unauthorized/wrong drug (13.7 percent), and prescribing error (9.4 percent), followed by wrong administration technique, wrong time, drug prepared incorrectly, wrong dosage form, and wrong route. Medication errors involving pediatric patients were most often caused by: performance deficit (43.0 percent), knowledge deficit (29.9 percent), procedure/protocol not followed (20.7 percent), and miscommunication (16.8 percent), followed by calculation error, computer entry error, inadequate or lack of monitoring, improper use of pumps, and documentation errors.<sup>11</sup> The MEDMARX Data Report reveals that approximately 32.4 percent of pediatric errors in the operating room involve an improper dose/quantity compared with 14.6 percent in the adult population and 15.4 percent in the geriatric population. A recent study indicates that children are particularly at risk for chemotherapy medication errors.<sup>11</sup>

Indian Academy of pediatrics conducted a study 2008 in teaching hospital to identify and analyze medication errors in pediatric practice in Choithram Hospital and Research Centre,

Indore, India. The study shows that total number of errors detected was 457/1286 (35.5%) with 76.6% in NICU, 41.7% in PICU, 19.7% in pediatric ward and 3.1% in labor room admissions. Of 457 errors identified in 1286 children, medication errors were 313(68.5%), those related to treatment procedures were 62(13.6%). Physiological factors accounted for 125(27.3%) of errors, carelessness 98(21.4%) and lack of training for 48(10.5%). Morbidity was nil in 375(82%), mild in 49(10.7%), moderate in 22(4.8%) and severe in 11(2.4%) errors. The incidence of errors in ICU [NICU and PICU] 62.7% was significantly higher than incidence of non-intensive area i.e., pediatric and labor ward 11.8%. Types of errors included errors related to medication 68.5%, treatment procedure 13.6% and clerical procedure 17.9%.<sup>12</sup>

All data were recorded in a data collection form and then compared with the actual drugs and dosages prescribed for the patients. Of the 857 drug administration's observed, 100 doses had errors, and this gave an error rate of 11.7%. If wrong time administration errors were excluded, the error rate reduced to 7.8%. The most common types of drug administration errors were incorrect time of administration (28.8%), followed by incorrect drug preparation (26%), omission errors (16.3%) and incorrect dose (11.5%). None of the errors observed were considered as potentially life threatening, although 40.4% could possibly cause patient harm. Drug administration errors are as common in pediatric wards in Malaysia as in other countries. Double-checking should be conducted, as this could reduce drug administration errors by about 20%, but collaborative efforts between all healthcare professionals are essential. Interventions to reduce the risk of dose calculation errors are therefore urgently needed.<sup>13</sup>

An observational research study conducted in New Zealand concludes that, poor knowledge of nurses about medicines, dose calculations, and route of administration were the key elements contributing for medication administration errors. The other contributing factors for Medication Administration Error were identified as frequent distractions from work, peak work load, and inadequate communication between health care professionals. An observational multinational study conducted in 27 countries of five continents by Valentin A *et al* suggest that, increased work load, stress, and fatigue are the contributing factors for medication administration errors. In addition to the above, poor hand writing in prescriptions, drugs with similar packing are the system errors leading to medication administration errors.<sup>14</sup>

Therefore medication errors may compromise patient confidence in the health-care system. Worldwide intensive research was conducted to find the types, categories, contributing factors, and cost implications of medication administration errors in various health care settings however very little research was conducted in this area in India. Thus the investigator realized this need and wanted to conduct the study on knowledge and practice of pediatric nurses in administration of drugs and to know whether it is responsible for medication administration errors in selected hospitals. More over a program of systematic assistance could improve the quality of nurses in drug administration, so there is a need for formulation of a health education module.<sup>15</sup> The study was carried out with the following objectives

- To assess the level of knowledge of the staff nurses regarding administration of drugs.
- To assess the level of practice of the staff nurses regarding administration of drugs.
- To correlate the knowledge of the staff nurses with the practices regarding administration of drugs.
- To associate the knowledge and practice of the staff nurses regarding administration of drugs with the selected demographic variables.

**MATERIALS AND METHODS**

A non experimental descriptive study design was adopted to identify the knowledge and practice of registered nurses in pediatric units of selected hospitals. This study was conducted in the selected pediatric hospitals. The target population includes the staff nurses working in pediatric wards of the selected hospitals. A non probability convenient sampling was used to select 50 staff nurses. A self structured questionnaire was used to assess the knowledge and practice of the pediatric staff nurses regarding medication administration. It consisted of two parts, Part A: Demographic data of the paediatric staff nurses. Part B: 25 questions to assess knowledge of staff nurses regarding techniques of administration of medication and 10 questions to assess the practice of the staff nurses regarding administration of medication. Each correct answer carried 1 mark and wrong answer carried 0 marks in knowledge assessment questionnaire. The practice assessment was done using a 3 point rating scale that carried inference such as never (1 mark), sometimes (2 marks) and always (3 marks). The knowledge score were categorized as 0-8 (inadequate knowledge), 9-16 (moderate knowledge) and 17-25 (adequate knowledge) The practice scores were categorized as 10-16 (poor practice), 17-24 (fair practice) and 25-30 (good practice). The content validity was obtained from six experts of pediatric nursing and three pediatricians and one statistician. The Karl Pearson co-efficient correlation was used to find the reliability of the tool. The result showed that the coefficient correlation (r) value was 0.953. Therefore the tool was considered to be highly reliable to conduct the study.

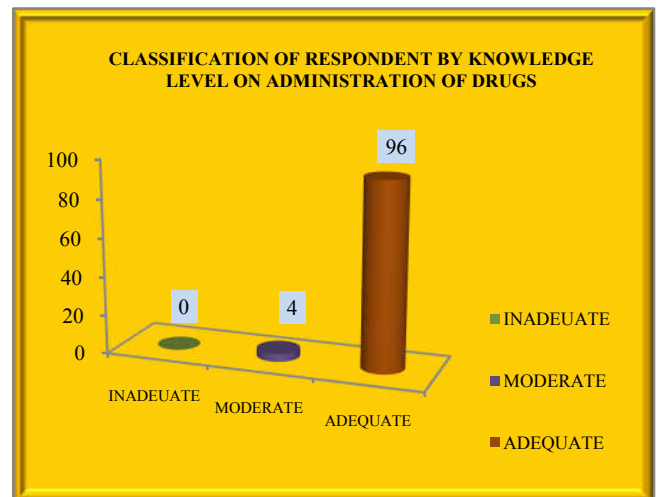
The main study was conducted in the selected hospitals. Permission was obtained from The Director and Nursing Superintendents. On the first day the investigator was introduced by the Nursing Superintendent. The investigator approached the study subjects, explained to them the purpose of the study and obtained the consent after assuring the subjects about the confidentiality of the data. Data were collected from five to six staff nurses in a day using the self structured questionnaire. The average time taken to fill each questionnaire was 25-30 minutes. The data was collected from 50 samples that were found to fit into the criteria. Ethical clearance was obtained from the institutional ethical committee.

**RESULTS AND DISCUSSION**

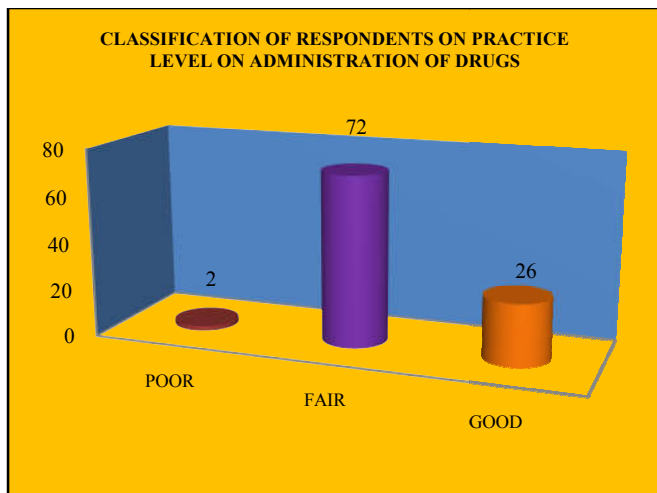
The data was analyzed using the descriptive and inferential statistics. Descriptive analysis in the form of frequency, percentage, mean and standard deviation was used to analyze the demographic data, knowledge and practices of the staff nurses regarding administration of drugs. The data was represented in the form of tables and graphs wherever

applicable. Inferential statistics such as chi – square test was used to find the association between the knowledge and practice with the selected demographic variables.

Among 50 staff nurses there is 6 (12%) were between 20 – 30 years, 27 (54%) were between 31 – 40 years and 17 (34%) were above 40 years of age. Regarding the gender of the staff nurses majority 45 (90%) found to be females and 5 (10%) were found to be males. With regard to income 48 (96%) were having the income of Rs.15, 000 and above and least 2 (4%) were found to be from Rs.10, 001 – 15,000. And none of the respondents were with below Rs. 10, 000 as income. Regarding experience 2 (4%) had experience as a nurse between 6 months– 2 years, followed by 4 (8%) had experience between 2 – 6 years, 20 (40%) had experience between 6 – 10 years and 24 (48%) had experience above 10 years. It is also evident that 3 (6%) of the samples had experience as a pediatric nurse between 6 months – 2 years, followed by 3 (6%) had experience between 2 – 6 years, 20 (40%) had experience between 6 – 10 years and 24 (48%) had experience above 10 years. Majority of the staff nurses 39 (78%) were married and 11 (22%) were single. It is also inferred that, majority of the staff nurses 38 (76%) got graduated from RGUHS, 5 (10%) were from board of examination and 7 (14%) were from other universities in India. And none of the respondents were from any foreign universities. With regard to the professional qualification, 5 (10%) were GNM nurses, 40 (80%) were B.Sc nurses, and 5 (10%) were post B.sc nurses. And none of the respondents were M.Sc nurses. It is also seen that, among the staff nurses, majority of the staff nurses 42 (84%) had permanent employment and 8 (16%) had not permanent employment (on contract basis). There was 42 (84%) staff nurses belong to Hindu religion, 3 (6%) belongs to Muslim and 5 (10%) belongs to Christianity. And none of the respondents were from other religion.



The finding of the study revealed that 48 (96%) respondents has adequate level of knowledge on administration of drugs and 2 (4%) has moderate knowledge level. And none has inadequate knowledge level regarding administration of drugs. It was also observed that the overall mean knowledge of the respondents on administration of drugs is found to be 84.14% with SD 7.86%. Further the highest mean knowledge is found in the medication (85.2%) than the techniques of administration of drugs (83.075).



With regard to the practice of paediatric nurses regarding drug administration 13 (26%) respondents has good level of practice on administration of drugs, followed by 36 (72%) has fair practice and only 1 (2%) respondent has poor practice. It can be inferred that the practice level regarding administration of drugs is just good for 26% of the respondents.

The correlation between knowledge and practice of respondents on administration of drugs was assessed. It was found to be 84.14 percent (%) with SD 7.86 percent (%) in knowledge and 78.6 percent (%) with SD 10.09 percent (%) in practice. The data subjected for correlation coefficient (r) reveals there exist significant relationship between knowledge and practice levels of respondents on administration of drugs ( $r = +0.78^*$ ,  $r > 0.05$  and  $< 1$ ).

With regard to the association of knowledge and selected demographic variable three variables namely age in years, years of experience as a nurse and years of experience as a paediatric nurse are found to be significantly associated with knowledge level of respondents on administration of drugs at 5% level ( $P < 0.05$ ). With regard to the association of practice and selected demographic variable two variables namely years of experience as a nurse, years of experience as a paediatric nurse and professional qualification are found to be significantly associated with practice level of respondents on administration of drugs at 5% level ( $P < 0.05$ ).

This study was supported to assess the knowledge and practice gaps between the paediatric nurses at tertiary care hospitals. A total of 40 paediatric nurses were sampled, among the participating nurses, majority (87.5%) were between 20 and 30 years of age. The greater part (85%) was females, and males were 15%. Most of them (72.5%) were single/never married. 55% had diploma in general nursing, 35% had a diploma in nursing as well as in midwifery, and only 10% had BS degree in nursing. Of the participating nurses, only 55% had their 12-year intermediate, 27.5% did 10 years matriculation, and only 17.5% attained graduate degree in their secular education. Overall, 97.5% were working as full time paediatric nurses and only 2.5% part time. Mean years of experience was 2.6 as paediatric nurse and 2.9 as a nurse. 77.5% of the nurses had experience of only 6 months to 2 years of working as paediatric nurse and 57.5% as nurse. It was concluded that the gaps between knowledge and practice, as perceived by the participants, were categorized into five major categories: (1) medication (34%), (2) skills (28.3%), (3) knowledge (13.36%),

(4) handling of code blue and intubations (12.6%), and (5) operating medical devices (11.58%).

## CONCLUSION

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 pediatric client.<sup>16</sup>

## Bibliographic References

1. Lucille F. Whalley, Donna L.wong. Essentials of pediatric nursing. 2<sup>nd</sup> edition. Toronto: CV Mosby Company; 1985. Page No: 876-9.
2. Behram Richard E, Robert M. Khegmann. Nelson's Textbook of pediatrics. 14<sup>th</sup> edition. Philadelphia: W B. Saunders Company; 1992. Page No: 252-8.
3. Nanjunde Gowda S.N. Basic Principles and Practice of Nursing. 2<sup>nd</sup> Edition. Bangalore: J.N. Publications. Page No: 315-357.
4. Rozina Roshan Essani, Tazeen Saeed Ali. Knowledge and Practice Gaps among Pediatric Nurses at a Tertiary Care Hospital Karachi Pakistan. 24 February 2011.
5. Marlow R.D, Redding A.B. Text Book of Paediatric Nursing. 6<sup>th</sup> edition. Philadelphia; W.B Saunders Company: 2003. Page No: 284-285, 287-290, 800, 1149-1150, 1172, 1185.
6. Ball W J, Bindler C R. Pediatric Nursing: Caring For Children. 4<sup>th</sup> edition. India; Pearson Education Inc: 2009. Page No: 16.
7. <http://psrs.arc.nasa.gov/>
8. Raja Lope RJ, Boo NY, Rohana J, Cheah FC. A quality assurance study on the administration of medication by nurses in neonatal intensive care unit. Singapore Med J. 2009 Jan; 50(1). Page No: 68-72.
9. Morgan N, Luo X, Fortner C, Frush K. Opportunities For Performance Improvement In Relation To Medication Administration During Pediatric Stabilization. Quality Safety Health Care. 2006. Vol: 15. Page No: 179-183.
10. Karen M and Maralyn F. Medication Administration Errors: Understanding the Issues. 2006 May; 23. Page No: 33-41.
11. Hicks RW, Cousins DD, Williams RL. Selected medication-error data from USP's MEDMARX program for 2002. Am J Health Syst Pharm. 2004 May 15;61:993-1000.
12. Parihar M, Passi GR. Medical errors in pediatric practice. Indian Pediatr. 2008 Jul; 45(7). Page No: 586-9.
13. Conroy, et.al. Interventions to Reduce Dosing Errors in Children: A Systematic Review of the Literature. Drug Safety. Volume 30. Number 12, 2007. Page No: 1111-1125.
14. Kumar K.S, Venkateswarlu K, Ramesh A. A Study of medication administration errors in a tertiary care hospital. Indian Journal of Pharmacy Practice. Volume 4. Issue 2. Apr - Jun, 2011. Page No: 37-42.
15. Prevention of medication errors in the paediatric inpatient setting. American Academy of Paediatrics. Committee on Drugs and Committee on Hospital Care. Paediatrics. 1998 Aug; 102. Page No: 428-30.
16. Niederhauser V. P. Prescribing for children: Issues in pediatric Pharmacology. Nurse Practitioner. 1997 March; Volume 22(3). Page No: 16-18, 23, 26-28.