A Study To Assess The Knowledge Regarding Drug Dosage Calculation In Children Among Staff Nurses And Student Nurses In Narayana Medical College Hospital, Nellore

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Abstract:
Background: Administration of medication in proper amount is the important nurses responsibility. The ability to perform drug calculation is imperative to patient safety. Drug doses for infant and young children are usually smaller than those given to adult. However there is universally accepted method for calculating a pediatric dose as a fraction of an adult dose. Objective: To assess the level of knowledge on paediatric drug calculation among staff nurses and student nurses in Narayana medical college and hospital. Materials and Methods: Descriptive cross sectional design and convenient sampling technique was followed which included 30 samples were used. Data was collected using structured questionnaire. Data analysis was done with SPSS. Results: Shows that with regard to level of knowledge of drug dosage calculation in children among staff nurses 7(46.7%) had inadequate knowledge, 8(53.3%) had moderately adequate knowledge. Among nursing students 8(53.3%) had inadequate knowledge, 6(40%) had moderately adequate knowledge and 1(6.7%) had adequate knowledge. Conclusions: In the present study concluded that comparing the level of knowledge between staff nurses and nursing students, Nursing students having adequate level of knowledge than staff nurses regarding drug dosage calculation.

Key words: drug calculation, paediatric, body surface area.

INTRODUCTION:
Drug therapy forms one of the important component of care of sick child. Administration of medication in proper amount is the important nurses responsibility. The ability to perform drug calculation is imperative to patient safety. Drug doses for infant and young children are usually smaller than those given to adult. However there is universally accepted method for calculating a pediatric dose as a fraction of an adult dose. Pediatric dose therefore as commonly on weight of child. BSA correlates closely with physiological function such as cardiac output oxygen consumption and caloric requirement over a wide range of age and weight for both sex. There are many methods for calculating the pediatric drug dosages.

Medications are classified in many ways example: according to their clinical composition, clinical actions or their therapeutic effects on the body system.

Sublingual administration: Some medications are placed under the tongue to dissolve for the easy and early absorption. The medication given by sublingual route should not be swallowed. Because the therapeutic effect will not be achieved.

Buccal administration: It involves placing the solid medication in the mouth against the mucus membrane of the cheek until the medication dissolves. Patients are instructed not to chew or swallow the medication not to drink any liquid with it.
Parentral route: Injecting a medication in body tissues and blood vessels.

Subcutaneous: injection into tissue just below dermis of skin. Intramuscular: Injection into muscle. Intravenous: Injection into vein.

Intradermal: Injection to a dermis just under the epidermis.


Oral route: it is the easiest and most commonly used method of administering medication. Medication are given by mouth and swallowed with fluids. Some medication are administered into body cavities.

Epidural: Medication in the epidural space via a catheter. Intrathecal: administered through a catheter that is placed into subarachnoid space or into one of ventricles of brain. Intraarterial: administration of medication directly into arteries. Topical administration: the medication when applied mucous membrane generally have local effects. Systemic effects occurs only when the clients skin is thin and the medication concentration is high as well as is contact with the skin is prolonged.

Inhalation route: medication can be administered through nasal passage oral passage or tubes that are placed into the mouth of the patient to the trachea.

Intraocular route: administering of medication to the contact lens into the patients eyes. Pilocarpine medication used for glaucoma.

Most drugs in children are dosed according to body weight or body surface area. Care must be taken to properly convert to body weight from pounds to kilograms before calculating dose based on body weight. Dose are often expressed as mg per kg per day or mg per kg per dose.

Young rule: young rule supplies to children over to years of age and is only an approximation due to consideration variation in body weight and children of same age.

Child dose = age in years * adult dose / age + 12

Freud's rule: freud's rule is mainly applicable for children under one year age.

Child dose = age [month] * adult dose / 150

Clarks rule: Applies to young children and uses weight of children in pound rather than child age.

Child dose = Weight in pound * adult dose / 150

Body surface area: This method depends on first determining the child body surface in square meter.

Child surface = square area of child meter square + normal adult dose 1.7 meter square

Intravenous medication calculation:

Drops/minute = ml of solution * drops / ml [drip rate factor] / hours to administer * 60

Example:

Calculate the dose of ceftriaxone in MLS for meningitis for 5 year old iven iv once daily and the drug comes predicted in a concentration of 40 mg /dl.

Calculating percentage and volume:

Desired strength/Available strength * Total amount of desired solution = X [Amount of un diluted drug needed to make solution ]

Example:

You need too make 100 ml of a 20% solution using 80% solution must you adda to the sterile water to yield a final volume of 100 ml of a 20% solution.

Calculating parenteral drug dose:

Prescribe dose/dose available*quantity [Unit of unknown quantity to be given measures]

Fluid calculating for burns:

Parkland formula:

9% for each arm.
14% for each leg.
18% for front.
18% for back.

Fluid requirement = Body surface area burnt (%)*Weight in kg * 4 ml

Give half of total requirement in first 8 hours. Then give second half over next 16 hours.

For calculating fluid resuscitation requirement is based on body surface area burn.

Total requirement for first 24 hours:

2000 ml / m2 body surface area
Nurses must administer 90-95 % drugs daily in a safe and efficient manner. The nurses should administer drugs in with nursing standards of practice and organizational policy. The safe storage and maintenance of an adequate supply of drugs are other responsibilities of nurses. Even though nurses are skilled personnel medication errors, especially in emergency setting.

So after searching and analyzing many studies I found that there is a great need to assess the nurses knowledge regarding drugs and calculation of doses in pediatric setting.

OBJECTIVES OF THE STUDY:
- To assess the level of knowledge regarding drug dosage calculation among staff nurses.
- To assess the level of knowledge regarding drug dosage calculation among nursing students.
- To compare the level of knowledge regarding drug dosage calculation in children with their selected socio demographic variables.
- To find out the association between the level of knowledge regarding drug dosage calculation in children among staff nurses with their selected socio demographic variables.
- To find out the association between the level of knowledge regarding drug dosage calculation in children among nursing students with their selected socio demographic variables.

MATERIALS AND METHODS:
Sampling and data collection: Descriptive cross sectional design, used to assess the level of knowledge regarding pediatric drug dosage calculation among staff nurses and student nurses in Narayana medical college hospital. Non-probability convenient sampling was used. Staff nurses and student nurses who were eligible, can understand regional language, who were available during data collection and voluntarily willing to participate in the study. Who are sick, who are on leave were excluded. Prior Permission was obtained from ethical clearance committee Participants signed an informed consent and were told they could withdraw from the study at any time for any reason.

DESCRIPTION OF TOOL
PART I:
- Deals with demographic variables include age, gender, educational qualification, source of information, attended any CNE programme.

PART II:
- It deals with structured questionnaire to convey the knowledge regarding pediatric drug dosage calculation among staff nurses and student nurses. It consists of 30 multiple choice question. Each question gives success answer as 1 score. If not answering gives 0 score.

Score Interpretation: The score was interpreted as follows:
- Inadequate knowledge: 0-10
- Moderately adequate: 11-20
- Adequate knowledge: 21-30

Data analysis: Data was analysed by using descriptive and inferential statistics. Frequency, percentage, Item analysis, mean, standard deviation and chi-square test were done.

Results: The results shows that frequency and percentage distribution with regard to age 13(86.67%) staff nurses are 22-25 years and 2(13.33%) are 26-28 years, gender of 4(26.67%) staff nurses are males and 11(73.33%) are females, educational qualification 2(13.33%) studied GNM and 13(86.67%) studied BSc (N), duration of experience 5(33.33%) have<1 year experience, 7(46.66%) have 1-3 years experience, 2(13.33%) have 4-6 years experience and 1(6.67%) have 6 years experience, source of information 5 (33.33%) gained from text books, 1(6.67%) from journals 3(20%) from mass media and 6(40%) from All the above and attended CNE 4 (26.67%) are attended and 11 (73.33%) are not attended.

Results Shows that frequency and percentage distribution with regard to age 3(20%) nursing students are 20 years, 9 (60%) are 21 years and 3(20%) are 22 years, educational qualification all 15(100%) BSc (N), year of course 3(20%) students are studying 1st year and 12(80%) are studying 3rd year, source of information 1(6.67%) gained from Text books, 4(26.66%) from journals and 2(13.33%) from curriculum, 4(26.67%) from mass media and 4(26.66%) from all the above and attending any
CNE programme 2(13.33%) are attended and 13(86.67%) are not attended.

Percentage distribution of level of knowledge between staff nurses and nursing students

Table-1: comparison of mean and standard deviation of knowledge scores between staff nurses and nursing students.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff nurses</td>
<td>14.933</td>
<td>3.406</td>
</tr>
<tr>
<td>Nursing student</td>
<td>13.933</td>
<td>3.773</td>
</tr>
</tbody>
</table>

For staff nurses there was no significant association between age, educational qualification and attending CNE programme, gender, working experience and source of information and for nursing students there was no significant association between age, educational qualification year of course, source of information and attending CNE programme.

DISCUSSION:
The discussion of the present study was based on the findings obtained from the descriptive and inferential statistical analysis of collected data. It is presented in the view of the objectives of the study. The study related to level of knowledge regarding drug dosage calculation in children among staff nurses had 7(46.7%) inadequate knowledge, 8(53.3%) had moderate knowledge and for nursing students 8(53.3%) had inadequate knowledge, 6(40%) had moderately adequate knowledge and 1(6.7%) had adequate knowledge.

For staff nurses results Shows that with regard to association of level of knowledge regarding drug dosage calculation in children among staff nurses and selected demographic variables the calculated value is less than the table value at P=0.05.so statistically there is no significant association between level of knowledge among staff nurses and selected demographic variables. And for student nurses association of level of knowledge regarding drug dosage calculation in children among nursing students with their selected socio demographic variables. The calculated value is less than the table value.so statistically there is no significant association between the level of knowledge among nursing students with their selected sociodemographic variables.

CONCLUSION:
In the present study concluded that comparing the level of knowledge between staff nurses and nursing students, Nursing students having adequate level of knowledge than staff nurses regarding drug dosage calculation.

RECOMMENDATIONS:
- A similar study can be replicated on a large sample to generalize the findings.
- An experimental study can be conducted to assess the effectiveness of teaching programme drug dosage calculation in children.
- Similar study can be done on different hospital settings.
- A comparative study can be undertaken to compare the knowledge of staff nurses and nursing students about drug dosage calculation in children.

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REFERENCES


