



Original Article:

Knowledge of Pharmacology of Analgesics among Nurses in a Tertiary Centre

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Abstract: Objectives: To evaluate the knowledge of nurses about the analgesics they administer in our hospital.

Methodology: A total of 102 nurses completed the questionnaire which included 20 multiple choice questions based on the dosage forms, mechanism of action, route of administration, adverse effects of the commonly administered analgesics, the nurses' educational qualifications and their working experience. Frequency, percentage, mean, Kruskal Wallis test and Mann Whitneys test were used to analyse data. Answers were given a score out of 20(100%). **Results:** The sample comprised of 17(16.6%) senior staff nurses, 38(37%) junior staff nurses and 47(46%) student nurses. Of the staff, 10.8 % were BSc and MSc nurses, 43.1 were GNM staff. The mean knowledge score of BSc & MSc staff was 12.18, GNM staff was 11.7 and of student nurses was 13.38. None of the groups scored more than 15, suggesting their knowledge was inadequate. There was a correlation between knowledge and experience in the staff nurses. **Conclusion:** The result of this study suggests that the knowledge of pharmacology of analgesics among nurses is inadequate, and thus supports the need for supplementary pharmacology education for nurses in clinical settings, focusing on common drugs they administer and help prevent medical errors.

Key Words: Knowledge of Pharmacology; Nurses; Analgesics; Questionnaire study; Tertiary centre

Introduction:

Medication administration is a complex multistep process that includes prescribing, dispensing, administering drugs and monitoring patient response. Errors can occur at any stage. Although many errors arise at the prescribing stage, some can occur due to pharmacists, nurses, or other staff. Administration of medicines by nurses is not solely a mechanistic task to be performed in strict compliance with the written prescription of a medical practitioner.(1) The

appropriateness of a medication requires the basic knowledge of actions, interactions, side effects, dose, route and approved use of the drug being administered.(2) Medication errors are a serious threat to patient safety in all settings.

The 5 R's of administration of drugs (right patient, right drug, right dose, right route and right time) are principles that nurses are taught as part of their education. Nurses may not always adhere to the 5 R's. They may also lack the knowledge about the pharmacology of the medication, which may lead to medication errors.(3) It is a well-known fact that no drug is entirely safe and therefore, nurses who administer medications need to have a thorough and broad knowledge of the drugs and its mode of administration in the effective treatment of patients.(4)

Nurses need to maintain the adequacy of their knowledge in clinical pharmacology and therapeutics in order to prevent errors that involve medications with complex pharmacokinetic and pharmacodynamic properties.(5)

Research has documented the widespread use of analgesics by nursing staff, although less is known about the knowledge that nurses actually have about these drugs. The frequency of analgesic drug errors in hospitals is nearly 3 per 1,000 prescriptions.(6) It has been found that knowledge has been lacking in the fields of dosing of analgesics, the pharmacological and non-pharmacological treatment of pain, and the assessment of pain in patients.(7)

Our study investigated the knowledge of nurses about the pharmacology of various analgesics prescribed in our hospital.

Methodology

Study design: Prospective questionnaire based study

Place of study: The study was conducted at Father Muller medical college of Nursing, Kankanady, Mangalore

Duration of study: The study was conducted over a period of one month

Study population: All registered nurses working in various wards in Father Muller medical hospital and students belonging to GNM, BSc Nursing and PCBSc, who were actively involved in administering medications in the hospital were included in the study. A total of 102 nurses including staff and students took part in the study.

Method of Collection of Data: Following approval from the institutional ethics committee, questionnaires were given to the nurses coming under the inclusion criteria. The questionnaires included multiple choice questions on the basic knowledge of various common analgesics prescribed (Diclofenac, Butorphanol, Morphine and Tramadol).

The questions included were based on the dosage forms, mechanism of action, route of administration, adverse effects and the nurses' educational qualifications, and their working experience in the field of nursing.(8)

The participants were asked to answer the questionnaire in front of the researcher, so that the study was done under supervision. A few of the questions asked are given in Table 1.

Analgesic	Question
Butrum	What does it contain
	Which group of analgesics does it belong to
Morphine	Dose of acute toxicity
	Can it be administered in a patient with bronchial asthma
Voveran	What does it contain
	Which group of analgesics does it belong to
Tramazac	What does it contain
	What is the most common side effect

Their answers were given a score out of 20 (100%). A score of 15 and above was considered adequate knowledge, 10-15 inadequate and < 10 was considered poor knowledge.

Statistics: Data was evaluated using frequency, percentage, Mann Whitney's test and Kruskal Wallis test.

Results

The response rate was 100%. The sample comprised of a total of 102 participants, of which 17(16.6%) were senior staff nurses, 38(37%) were junior staff nurses and 47(46%) were student nurses. (Table 2)

Designation	Number	Percentage (%)
Senior staff nurses	17	16.6
Junior staff nurses	38	37
Student nurses	47	46
Total	102	100

Of the staff, 10.8 % were BSc and MSc nurses, 43.1% were GNM staff. (Figure 1)

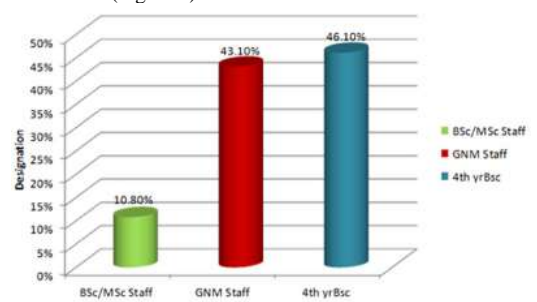


Figure 1: Designation of the Nurses

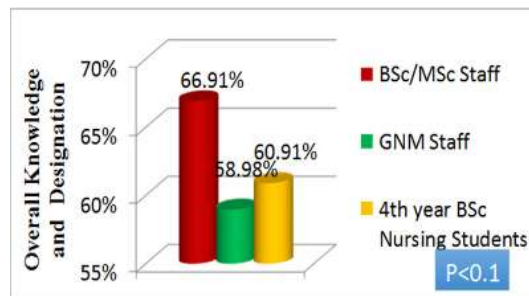


Figure 2: Overall Knowledge and Designation

The mean knowledge score of BSc & MSc staff was 12.18, GNM staff was 11.7 and of student nurses was 13.38. None of the groups scored more than 15, suggesting their knowledge was inadequate. The scores also showed that there was a significant difference in knowledge based on their designation. (BSc /MSc staff 60.91%, GNM staff 58.98% and final year BSc nursing students 66.91%, $p < 0.13$) (Figure 2)

Of the staff nurses, 5.9% had a working experience of less than one year, 11.8 % had 1-3 years, 9.8% had 3-5 years, 9.8% had 5-10 years and 12.7% had more than 10 years working experience. There was a correlation between knowledge and experience in the staff nurses. ($p < 0.13$). (Figure 3)

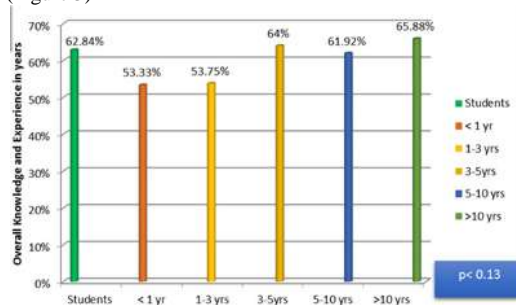


Figure 3: Overall Knowledge with Experience in Years

Discussion

Medication administration is a daily basic activity in nursing practice and nurses need to have sufficient knowledge, attitude and competency to perform these tasks. 10 to 18% of all reported hospital injuries have been said to be caused due to medication errors and nurses can be involved in the occurrence of these errors.(9)

Our study assessed the knowledge of the pharmacology of analgesics among 102 nurses. Of them, 10.8% were MSc and BSc staff nurses, 43.1% were GNM staff and 46.1% were final year BSc Nursing students.

The staff had a median experience of 5 years post registration.

None of the nurses answered all the questions correctly. The highest score obtained was 14.

Our study showed that the knowledge of pharmacology was related to the experience of the staff in the field of nursing. The BSc and MSc nurses had a better knowledge level than the GNM nurses, suggesting a correlation of knowledge with the level of education.

A similar study done by Ndosi and Newell in a sample of 42 nurses showed that knowledge on pharmacology of commonly administered drugs was more in nurses with higher experience and education level.(10)

A study done by Leesa Niekrek and Frances Martin in Tasmania among 2768 nurses revealed that they had very low knowledge in the use of analgesics.(11)

The final scores of all groups of nurses was inadequate suggesting that they do not have sufficient pharmacological

knowledge of the commonly prescribed analgesics in our hospital.

There is a need for additional pharmacology education for nurses in order to increase the currency of their knowledge in the field and to prevent medication errors.

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