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New Zealand newly graduated nurses medication management: Results of a survey

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ABSTRACT

Background: Nurses play a crucial role in medication management in in-patient settings where their knowledge and skills can detect adverse drug effects and prevent errors. Yet newly graduated nurses are new to practice and have little experience.
Objectives: This exploratory study sought to understand how these new nurses applied their pharmacology knowledge to medication management.
Method: A survey was distributed to all registered nurses working in one large urban New Zealand hospital who had graduated within the previous 24 months.
Findings: Over 70% of nurses who participated in this study indicated strength in applying some principles; resources, formulation, correct dosage, why the drug was given, monitoring and when a drug was not given safely. Two pharmacological principles; understanding the mechanism of action of drugs and drug clearance were applied less well. Whilst previous studies have reported nurses have a lack of pharmacology knowledge, this study does not support this, but rather identifies strengths and areas for improvement.
Conclusion: Recommendations from this study are that orientations for new nurses include commonly used drugs in that setting, extra education for new drugs and continuing education to support new graduates to continue to consolidate their knowledge and skills.

Introduction

Nurses play a critical role in the medication management of patients, from the initial administration of medication through to the evaluation of its effects. Knowledge of medication and its effects are essential for nurses to enable them to perform this role and to better prepare them to detect and evaluate adverse drug effects and adverse drug events (Castledine, 2006). The ability to apply pharmacology knowledge to the skill of medication management is learned within clinical practice, but as novices and beginners, newly graduated nurses are still developing this ability (Benner et al., 2008). Newly graduated nurses are adapting to new roles as registered nurses (RNs) and clinical situations where they are expected to apply their knowledge to practice, yet they may not always do so with confidence. The authors could not identify any studies that directly examined new graduates' application of pharmacology knowledge to medication management and therefore undertook this exploratory study, using a mixed methods survey tool, with New Zealand newly graduated nurses.

Background

Safe medication management is a fundamental goal for all health care professionals and consumers. In the last decade or more research into medication safety has increased as adverse drug events related to medication errors have resulted in increased morbidity, associated costs, and have had a major impact on patients' 'quality of life' (Choo et al., 2010; Johnson et al., 2011). Castledine (2006) proposed that nurses have a key role in medication management as they are best positioned to support and question health care professionals in their prescribing and monitoring of drugs. However, some authors argue that a lack of knowledge and understanding of pharmacology, lack of motivation, and a poor attitude in terms of their responsibility in drug administration, are a barrier for safe medication administration by nurses (Dilles et al., 2011).

Although nurses routinely administer medications research shows that they do not always have sufficient knowledge to perform this role (Meechan et al., 2011). Competence in medication

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administration requires that nurses are able to assess the appropriateness of the medication and have a good understanding of the actions, interactions, potential adverse reactions, usual dose, route and basic pharmacokinetic principles of the drug and its expected response (Choo et al., 2010). To be competent in drug administration, nurses must be able to integrate these medication management principles in their clinical practice (Leufer and Holdforth, 2011).

Nurses have a central role in reducing medication errors and in monitoring the prescription decisions of doctors (Castledine, 2006). A recent New Zealand study investigating the activities of non-prescribing senior nurses and their influence on the prescribing habits of doctors, found that there are many ways "nurses can potentially influence the prescribing decisions of doctors in both the primary and secondary care settings" (Jutel and Menkes, 2010).

Both Castledine (2006) and Jutel and Menkes (2010) consider pharmacology education, even for non-prescribing nurses, essential to reduce medication errors and the possible negative consequences that can ensue. However, for effective medication administration and management nurses need sound knowledge of clinical pharmacology and therapeutics (Manias et al., 2004). Furthermore, safe and appropriate medication management requires clinical judgement and ongoing monitoring.

Pre-registration education for medication management

During the last twenty years of nursing education, both in New Zealand and elsewhere, there has been considerable development to prepare RNs for current and future roles in medication management. With expanded roles that include diagnosis and prescribing new challenges have emerged for educationalists to review the underlying holistic philosophy of nursing with its emphasis on 'caring', rather than 'curing', and to include specific training and education in pharmacology (Morrison-Griffiths et al., 2002).

Literature suggests that many nurses lack not only knowledge in pharmacology, but also bioscience in general (Banning, 2003; Larcombe, 2003; Sodha et al., 2002). Some studies have indicated that although integrated curricula enhanced the "epistemological basis of holism in nursing" (Morrison-Griffiths et al., 2002), the development of a core pharmacology module in pre-registration programmes would raise the profile of pharmacology, and provide nurses with the sound knowledge base needed for safe and effective medication management (Larcombe, 2003). It has also been suggested that nurses are not well prepared as they lacked pharmacology knowledge (Manias and Bullock, 2002b). Previous research into pharmacology education in pre-registration nursing curricula has suggested that preparation may be inadequate for the realities of practice (Latter et al., 2000). In addition, some studies (Banning, 2003; King, 2004; Manias and Bullock, 2002b) have shown nursing programmes are varied and divided in their stance of how much pharmacology should go into pre-registration nursing education. A lack of time devoted to the teaching of pharmacology and therapeutics in pre-registration curricula has been criticised in many studies (Bullock and Manias, 2002; Manias and Bullock, 2002b; Morrison-Griffiths et al., 2002). Too little (or insufficient) emphasis in pharmacology and bioscience in the pre-registration level, has led to the suggestion that nurses are not well prepared for their responsibilities in administering drugs, and may be linked to difficulties applying pharmacology knowledge to practice (Cleary-Holford and Leufer, 2013; King, 2004; Manias and Bullock, 2002b)

The clinical setting is thought to play a part in nurses' lack of medication management due to contributing to the theory-practice gap through a lack of integration and reinforcement of pharmacology knowledge. A study by Lin et al. (2013) suggests that nurses are more likely to learn the effects of medications through experiential learning, giving the impression that much pharmacology learning occurs in the clinical setting. Honey and Lim (2008) support this view, but argue that integration of pharmacology in the clinical setting contributes to knowledge consolidation and application in pre-registration students. However, integration and application of pharmacology knowledge in the clinical setting for pre-registration nursing students was inhibited in clinical areas where RNs were not supportive.

Pharmacology principles

To enable nurses to perform their medication management functions safely and effectively Manias and Bullock (2002b) proposed that nurses have a comprehensive understanding of the scientific principles underpinning medications, as well as the ability to contextualise medication management to the complex and changing needs of patients. These authors considered that inadequate knowledge of pharmacology at the pre-registration level may influence RNs' perceptions of their roles in the teaching, mentoring, and supervision of nursing students. According to Manias and Bullock (2002b) deficiencies in pharmacology knowledge may be a reason for RNs to be reluctant to adopt a teaching role with more junior nurses.

The focus and depth of pharmacology knowledge needed for nurses is not well articulated in the literature. However, there were specific aspects of pharmacology knowledge and skills that were identified as key contributors to nurses' knowledge of safe medication administration and management. A study by Meechan et al. (2011) found that students who were exposed to increased teaching of common drugs and pharmacokinetics performed highly compared to students with limited exposure. King (2004) suggests that experienced nurses require pharmacology knowledge to enhance their skills and confidence in providing patient education. A more recent study by Lim (2012) supports this view and found that a good understanding of pharmacology principles, which includes understanding the mechanism/s of actions of the drug, its pharmacokinetic profiles and clearance and dosage considerations increased nurses' confidence in medication assessment, patient education and clinical decision making. Chooet et al. (2010) were also of the view that nurses require pharmacological knowledge to understand a drug's mechanism of action and its pharmacokinetic properties to be competent in medication management. The pharmacology principles indicated above were utilised in the formation of the survey tool used in the study described under Methods below.

Nursing in new zealand

In New Zealand pre-registration nursing education involves a three year degree programme of both theory and practice offered by a tertiary education provider (technical institute or university) that culminates in a national State Examination. Nursing Council of New Zealand (2007) sets the standards for nursing education and nursing education providers, and stipulates through guidelines the hours and competencies that pre-registration nurses must meet. In addition, regular auditing of Schools of Nursing takes place to ensure standards are maintained. While Nursing Council of New Zealand (2012) provides guidelines for curricula the organisation and details of each programme from any of the 17 schools of nursing nationally vary.

Nursing Council competencies for registered nurses relate to medication management. For example, the domain of 'Management of nursing care', has an indicator of achieving the competency of: "Administers interventions, treatments and medications, (for