



Nursing students' perspectives of the cause of medication errors



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SUMMARY

Background: Medication errors complicate up to half of inpatient stays and some have very serious consequences. To our knowledge, this is the first qualitative study of Iranian nursing students' perspectives of medication errors.

Objectives: To describe nursing students' perspectives of the causes of medication errors.

Design: Four focus groups were held with 24 nursing students from 4 different academic semesters in the nursing school in Tehran, between November 2011 and November 2012. Using a qualitative descriptive design, themes and subthemes were identified by content analysis.

Results: Two main themes emerged from the data: "under-developed caring skills in medication management" and "unfinished learning of safe medication management", which was subdivided into "drifting between being worried and being careful", and "contextualising pharmacology education". All respondents felt that their education programmes were leaving them vulnerable to "drug errors" and cited incidents where patient safety had been jeopardised.

Conclusion: Nursing curricula need to increase investment in medicines management. If nursing students are to become competent, skilful and safe practitioners, their learning will require extensive support from their academic institutions and clinical mentors.

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Introduction

Medication errors are defined as any preventable event related to healthcare products, professional practice, and procedures including prescribing, order communication, compounding, dispensing, distribution, administration, education, and monitoring that may lead to patient harm (NCC MERP, 2005).

Avoiding medication errors is a vital component of patient safety (Kaushal et al., 2010). The true incidence of errors in preparation and administration of medicines is unknown: 54.4% of 983 US nurses surveyed indicated that not all drug errors were reported, due to fear of managers and peers (Mayo and Duncan, 2004). Estimates of errors of varying clinical importance, range from 24% to 94% of doses administered (Hoefel et al., 2008) and 52 (IQR 8–227) per 100 admissions (Lewis et al., 2009).

Nurse Education and Medication Errors

Nurses are the professionals closest to patients, and are the final link in the medication administration chain (Sulosaari et al., 2012).

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As the product of nurses' shared values and beliefs, medication safety can be taught, developed and internalised in undergraduate nursing programmes (Butterworth et al., 2011) to transform safety culture (Reid and Catchpole, 2011; Vaismoradi et al., 2011).

There is limited evidence that healthcare educators explicitly incorporate medication safety into professional education programmes (Attree et al., 2008). Thus, nursing students may receive relatively little education in error management techniques (Page and McKinney, 2007).

Much of the evidence emanates from developed countries, leaving the understanding of and solutions for unsafe medication for developing countries under-researched (Carpenter et al., 2010; Jha et al., 2010). Current literature on medication errors focuses on registered nurses, while nursing students' contribution to medication management remains unreported (Valdez et al., 2012).

Aims

The aim of this study was to describe nursing students' perspectives of medication errors.

Methods

Study Design

A qualitative descriptive design using a content analysis was used to generate information about the complexities of perspectives and

behaviours. The value of qualitative description lies not only in the knowledge generated, but also as a vehicle for practice change (Sandelowski, 2010).

Settings and Participants

Focus groups were conducted with twenty-four nursing students from a nursing faculty in an urban area of Iran. Participants were chosen by purposeful sampling, to include 2nd (5 students), 3rd (14 students), and 4th (5 students) year students, to capture a range of perspectives (Coyné, 1997), based on length of theoretical and clinical learning experiences of causes of medication errors. Students with the highest grades in the research component of the course were invited to consider the study's aim and participate in focus groups on the basis that they would be best placed to critique the curriculum and analyse medication safety issues.

In the first year of the bachelor's degree nursing programme in Iran, students are taught basic nursing skills related to medication administration such as preparation, administration, and documentation in low fidelity skills' laboratories prior to clinical placements. Review of the institution's curriculum documentation shows no distinct, separate time allocated to patient safety and the safety principles of medication administration. Fifty one teaching contact hours are allocated to pharmacology in 4 years. Therefore, nursing students often graduate without meaningful or practical knowledge of patient safety (Vaismoradi et al., 2011).

Data Collection

Four focus groups, each with six students, were conducted. Focus groups capitalise on communication between research participants to generate data. This method is particularly useful for exploring knowledge and experiences and examining not only what people think, but also how and why they think that way (Webb and Kevern, 2001). Focus groups explore participants' experiences in an interactive format (Lambert and Loiselle, 2008). The heterogeneous composition of each group, in terms of academic semester, assisted exploration of diverse perspectives.

Focus groups, each lasting an hour, were held in Farsi. The first author, as moderator, explained the aim of the study, encouraged discussion, facilitated interactions among members, interjected probes, and summarised without interfering through note taking. A colleague managed the audio-tape recording, took notes, observed interpersonal interactions and encouraged quiet members to participate (McLafferty, 2004). The major explorative questions were:

- From your knowledge and experience in clinical practice, what are the causes of medication errors?
- How does your nurse education programme prepare students to administer and manage medication safely?

Probing follow up questions were asked to improve the richness of the data. Questions progressed from general to specific as topics were explored to generate detail and examples (Tong et al., 2007). Interviews were transcribed verbatim and iterative data collection and analysis proceeded concurrently. Once themes were identified and data saturation was achieved, no further focus groups were convened. Group dynamics were incorporated into the findings by presenting all nursing students' perspectives under each subtheme and theme (Webb and Kevern, 2001) (Appendix Table 1).

Ethical Considerations

The Research Council affiliated to Tehran University of Medical Sciences approved the research. The first author informed participants of the study's purposes and methods by oral invitation in the college in an open meeting. There was no coercion, and it was emphasised

that participation was entirely voluntary and that students could refuse to participate or withdraw from the study at any time. Participants were reassured that their responses would be treated in confidence and their identities would not be revealed. Participants provided informed written consent.

Data Analysis

Transcripts were read through several times to obtain the sense of the whole, then subjected to content analysis (Hsieh and Shannon, 2005). Content analysis as a qualitative descriptive approach offered a practical approach for understanding perspectives with minimum artifice (Sandelowski, 2010). Drawing on Graneheim and Lundman (2004), data were analysed iteratively:

- The text was divided into words, sentences or paragraphs, related to each other through their content and context as units of meaning;
- Units of meaning were condensed, with core meanings preserved;
- Condensed units were abstracted and labelled with codes (an example of text coding is provided in Appendix Table 1);
- Codes were sorted into sub-themes based on comparisons of their similarities and differences;
- Finally, themes as the expression of the latent content of the text were identified for each focus group before convening the next group.

Rigour

Member checking was undertaken by two student participants from each focus group. Each focus group transcript and data analysis report were read, to ascertain whether the researcher was representing the students' perspectives. The authors reflected on the study's findings and reached a consensus. The plausibility of the findings confirmed that the analyses and interpretations were justifiable (Lincoln and Guba, 1985).

Results

All students approached agreed to participate, and no students were turned away. All respondents were female with mean age 22.3 years, standard deviation 1.3 years. Two main themes emerged during data analysis: "under-developed caring skills in medication management", and "unfinished learning of safe medication management". The latter comprised two subthemes: "drifting between being worried and being careful", and "contextualising pharmacology education" (Fig. 1).

Under-developed Caring Skills in Medication Management

All students agreed that in their pharmacology and medical-surgical courses, lecturers provided theoretical information about medicines. The pathology and pharmacology of each disease were introduced, and the main drugs and their indications were named. However, the practical aspects of medication management and reasons for caution when administering the drugs were not discussed in detail or only briefly explained at the end of classroom sessions.

"Students mostly learn little about practical aspects of medication, and too long before their clinical placements." (S1Y4)

As taught, pharmacology was abstract, full of new names that were difficult to pronounce, and focused on theoretical pharmacodynamics and pharmacokinetics. Pharmacology was taught during the first year nursing programme, which was entirely college-based, therefore students needed refreshing and further practical education to be prepared for safe medication practice during their clinical placements in years 2 to 4 of the programme.

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