

Fourth year nursing students' perceptions of their educational preparation in medication management: An interpretative phenomenological study



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ABSTRACT

Background: Medication safety is an integral aspect of patient safety. Nurses, as advocates of patient safety, actively consider medication safety in the course of their daily work. Hence, it is important to consider the educational preparation of nursing students in medication management, as future caregivers. There are inherent links between nurses' undergraduate educational preparation in medication management and patient safety.

Objective: This research study identifies fourth-year nursing students' perceptions of their educational preparation in medication management.

Design: An interpretative phenomenological methodological approach underpinned this research study.

Setting: This study was conducted at a University in the West of Ireland.

Participants: Participants were final year students of three undergraduate nursing programmes, Bachelor of Science in Nursing (General), Bachelor of Science in Nursing (Intellectual Disability) and Bachelor of Science in Nursing (Mental Health).

Methods: Fourteen semi-structured, face-to-face interviews were conducted with students on a one-to-one basis. Data were analysed using thematic content analysis.

Results: The voices and interpretations of the participants in this study were fundamental to understanding nursing students' perceptions of their preparation in medication management and provided the foundation for this research. These perceptions were captured in the format of four themes: developing an understanding, embedding knowledge in practice, engaging in practice and accepting professional responsibility.

Conclusions: Findings point to the important role of the university and the clinical placement settings in nursing students' medication management education and the need for further collaboration and development across both settings. Teaching and learning strategies which promote the integration of theory and practice throughout the four years of the undergraduate degree programme should be encouraged, such as technology enhanced learning and simulation.

1. Introduction

Medication safety is an integral aspect of patient safety (World Health Organisation, 2017). At a global level, the design and development of specific programmes aimed at improving medication safety have been prioritised (Donaldson et al., 2017). It is timely to explore current educational trends in undergraduate nurse education relating to medication management and safety. Medication management encompasses all the activities involved in meeting the needs of a person prescribed medication (Hemingway et al., 2011) and involves a multidisciplinary approach by doctors, pharmacists, nurses and patients (Adhikari et al., 2014). The complexity of medication management and its intricate relationship with patient safety means that nurses must be

educated to a high standard (Rohde and Domm, 2018). This is particularly important as the international patient profile continues to evolve and nurses provide care for an older population and for people with chronic conditions and complex health histories which require complex medication management (Gill et al., 2019).

2. Background

Internationally the delivery, organisation, and structure of pharmacology education in nursing curricula vary considerably. Common approaches include dedicated modules in pharmacology or an integrated approach where pharmacology content is interwoven with other modules (Fleming et al., 2014; Dilles et al., 2011). It is well

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established that there are inherent links between undergraduate educational preparation of nursing students and the aptitudes of registered nurses (Sulosaari et al., 2012). In Ireland, the education of registered nurses encompasses a four-year degree programme, delivered in partnership between universities and healthcare providers (Nursing and Midwifery Board of Ireland, 2016a, b). An Irish study by Fleming et al. (2014), suggested inconsistencies in undergraduate nurse medication management education. This finding is not unique to Ireland, as international literature highlights unpreparedness and inadequate knowledge among nurses for the delivery of safe medication care and raises questions regarding the adequacy of existing models of education (Fleming et al., 2014; Dilles et al., 2011; Meechan et al., 2011).

The aim of this study was to explore and identify nursing students' perceptions of their educational preparation in medication management during their time with the university and their time on clinical placements with the healthcare provider, over the four years of the undergraduate nursing degree programme. Student's learning experiences in both settings are powerful in shaping their attitudes to learning, practice and professional development (Papathanasiou et al., 2014; Henderson et al., 2012). Current research in this area leans towards quantitative research methods, particularly focusing on fragmented aspects of competence such as medication calculations/maths skills. The literature predominantly focuses on learning in the university setting, to the exclusion of the learning that occurs on clinical placement with the healthcare provider, disregarding the educational synergies of students' experiences in both environments. Hence, the qualitative data presented in this study, with a broader focus on perceptions of learning in both educational settings, provides novel data that will inform future international nursing curricula, which have medication safety and patient safety at their core.

3. Methods

3.1. Design

An interpretative phenomenological methodological approach underpinned this study. The goal of interpretative phenomenology is that the researcher and the participants cogenrate an understanding of the phenomenon being studied, taking into account the 'fore-structures of understanding' of the researcher and of the participants. The 'fore-structures of understanding' is the concept that all humans come to a situation with pre-understandings of phenomena based on their own social and cultural experiences. The 'fore-structures of understanding' involve fore-having (coming to a situation with familiarity), fore-sight (the researchers' sociocultural background) and fore-conception (anticipation of what might be found in an investigation) (Brinkmann et al., 2014).

This study aimed to understand nursing students' perceptions within their social and cultural context, acknowledging that the students had varied backgrounds, ages and life experiences, each bringing their own unique perspectives or 'fore-structures of understanding' to the phenomenon in question. Interpretative phenomenology also advocates that researchers reflect on their own past experiences, preconceptions and biases before engaging with participants so that they can more clearly access the 'fore-structures of understanding' held by the study participants (Tuohy et al., 2013).

In this study, the researchers had past nursing experiences of medication management. They also had awareness or 'fore-conception' of what might be found during this study due to their involvement in undergraduate teaching. Therefore, an interpretative phenomenological approach, with its co-creation of understanding and acknowledgement of the subjectivity of the researcher and participant, was deemed the appropriate methodology choice in order to meet the research aim.

Table 1

Interview guide.

Introduction to the interview
As recommended by Doody and Noonan (2013), at the commencement of the interview the following information was discussed with participants:
<ul style="list-style-type: none"> • The nature and format of the interview was discussed. • It was highlighted that there were no right or wrong answers. • Participants were reassured that they could take their time in thinking and answering questions. • Participants were encouraged to ask questions as they arose. • The approximate length of the interview was discussed.
Guide introduction to interview
I invited you here today to talk about your perceptions of your educational preparation in medication management. Your educational preparation involves learning during your time with the university and learning during your time with the healthcare provider (approved clinical placement sites). I want to emphasise that there are no right or wrong answers and what is important here is your perceptions. Take your time thinking and answering, there is no rush. My role is to facilitate the interview and I do have some questions that I would like you to consider. Additional feel free to ask questions yourself if they arise. Remember we can turn off the recorder at any stage and terminate the interview if you so wish. Are you okay to start? Is it okay to turn on the audio recorder?
Questions about the students' perceptions of their educational preparation during their time at university.
<ul style="list-style-type: none"> • How do you feel your undergraduate education prepared you for this role? • What aspects do you feel supported you? • Are there aspects you feel hindered you? • Is there anything else you would like to add or ask? • Based on the participants' responses, probing questions were used to elicit a deeper understanding of their responses, if appropriate.
Questions about the students' perceptions of their educational preparation during their time on clinical practice.
<ul style="list-style-type: none"> • From your experience to date, what do you consider medication management activities to be? • In your role as a nursing student, have you been involved in such activities? • You will be commencing your internship soon — how do you feel about your upcoming medication management role? • Is there anything else you would like to add or ask? • Based on the participants' responses, probing questions were used to elicit a deeper understanding of their responses, if appropriate.

3.2. Setting, sample and data collection

This study was conducted at a university in the west of Ireland. Participants were final/fourth-year students of the undergraduate Bachelor of Science in Nursing (General), Bachelor of Science in Nursing (Intellectual Disability) and Bachelor of Science in Nursing (Mental Health) programmes. Once ethical approval was granted, a letter was sent to the Head of the Nursing and Midwifery Department requesting access to the fourth year nursing student cohort. This was granted and students were contacted through programme distribution email addresses, via a gatekeeper in the department. Participants were selected using non-probability, purposeful sampling and initial contact was via email. Fourteen semi-structured, one-to-one, face-to-face interviews were conducted by one of the researchers. Semi-structured interview format was used to allow the researcher and the participant to engage in dialogue and to allow the researcher to modify questions in light of responses and to probe interesting and important areas as they arose. An interview guide (Table 1) was developed in an attempt to cover similar topics, but it did not dictate the natural course of each individual interview (Newell and Burnard, 2011), thereby allowing the interview to flow more freely and naturally. To assist with data collection and analysis, the research used a reflective diary to make note of non-verbal communication at the end of each interview. Participants were given a choice of settings for the interview in order to provide a comfortable, informal, relaxed environment with minimal distractions and a small, private interview room in the university was provided for its convenience and privacy. Each interview was audio-recorded with the participants' permission and interview duration ranged from 40 to

60 min.

3.3. Ethics

Ethical approval was granted by the research ethics committee at the university. Participants were free to make an independent and informed choice to participate or withdraw without coercion. Written information sheets were provided to participants along with the researchers contact details should an individual wish to discuss the study further. Written consent was obtained from those who agreed to partake. The ethical considerations of beneficence, respect for persons and justice were upheld throughout the process. At the start of the interview students were reassured of anonymity and confidentiality, helping to build trust (Doody and Noonan, 2013). Participants were reminded that they could end the interview or withdraw from the study at any stage.

3.4. Data analysis

The aim of data analysis in phenomenological studies is to produce a detailed and systematic recording of themes and ideas that arise during the interview stage and to link similar themes together under a practical comprehensive category system. In doing this, the researcher aims to preserve the uniqueness of each lived experience of the phenomena, while allowing an understanding of the topic itself (Parahoo, 2014). In interpretative phenomenology, the aim of analysis goes further than the categorisation of recurrent themes. It aims to understand the content and complexity of those themes rather than just list and measure their frequency. This can only be achieved through the researcher having a sustained, engaged relationship with the interview transcripts and through a process of interpretation. In this study, there was a phenomenological requirement to give a voice to the nursing students and an interpretative requirement to contextualise and make sense of those voices. The participant is trying to make sense of their personal and social world and the researcher is trying to make sense of the participant trying to make sense of their personal and social world, so it is a double hermeneutic or interpretation. Thematic data analysis was guided by Newell and Burnard's (2011) six-stage framework for thematic content analysis. To assist with developing a deep understanding and interpretation of the data interviews were transcribed by the researcher.

4. Findings

Four themes emerged which reflected students' journeys from initially developing an understanding, to embedding knowledge in practice, to engaging in practice and finally to accepting professional responsibility (Fig. 1).

4.1. Theme 1: Developing an understanding

Students incrementally develop competency and professionalism as they progress through their educational experience (Arveklev et al., 2018). In this study, it was evident that students were developing their understanding of medication management. This is explored under the subthemes 'the meaning of medication management' and 'wider issues in medication management'.

4.1.1. The meaning of medication management

Across interviews on an individual level, participants' initial responses regarding the meaning of medication management were limited and focused on administration of oral medication, to the exclusion of other routes of medication administration. This focus was driven by the fact that oral medication administration is common in clinical practice and participants had experienced this. None the less, concerns were expressed regarding limited experience in medication administration and feeling overwhelmed. The sense of being overwhelmed

arose mainly due to the number of different medications and inconsistent use of pharmaceutical language by staff e.g. generic and trade medication names.

"I mean when I look into that drug trolley it's like looking into a bunch of thistles; I don't know what's what" P10.

4.1.2. Wider issues in medication management

Across all interviews, participants were developing an understanding to include the wider issues of medication management. Concepts raised by participants included the changing role of the nurse, the role of the multidisciplinary team, patient education and patient safety. Awareness of the links between medication safety and patient safety were highlighted, and participants spoke about their fear of making mistakes that could endanger patients.

"You're really nervous you know because these are big mistakes, these are important things...people can die...you are now legally responsible for this, so it's very scary" P2.

4.2. Theme 2: Embedding knowledge in practice

This theme captured how participants developed their knowledge and related it to their practice under the following subthemes, the 'pharmacology module', 'clinical placement' and 'technology-enhanced information sources'.

4.2.1. The pharmacology module

An essential element in developing a strong knowledge base, was the structured learning that occurred in the university, particularly the pharmacology module. Participants expressed positive and negative views regarding the delivery, content, assessment strategies and timing of the module. This diversity was linked to two issues, the participants' preferred learning style and participants' views regarding the balance between biological and nursing sciences in the module. Although there were mixed views regarding the pharmacology module, all participants valued their learning experiences in the clinical skills laboratories, considering them a safe learning environment and a conduit for linking knowledge and practice.

"It is a good way to learn because for people in a big lecture hall with two or three hundred other students and you're just kind of going oh my god I'm like a lost sheep in here but in the labs you're more inclined to get involved because it's so small, so informal, you're in a comfort zone" P5.

4.2.2. Clinical placement

The importance of clinical placement to participants was evident and they considered it essential in embedding their knowledge. The need to link theory and practice in a 'real world' setting was emphasised. Although learning occurs in both the university and the clinical placement setting, participants recounted the importance of their clinical placement with higher regard than the theoretical component delivered at the university.

"There's only so much you can learn here in class, I think it's just doing it [medication management] in the hospital that you get used to it and it all comes together" P8.

4.2.3. Technology enhanced information sources

Within the clinical placement setting, participants spoke about the use of information sources as a means of assisting them in their quest to embed knowledge in practice. Participants expressed a preference for technology-enhanced information sources, and not the traditional 'hardcopy' sources. Participants considered the technology-enhanced information sources, particularly medication management programmes or applications (apps), as more reliable, regularly updated, more available and easily accessible. It is noteworthy, that participants did not express any concerns as to the provenance of technology-enhanced information sources and whether they were actually reliable or not. One participant talked about smartphone apps, referring to the Food

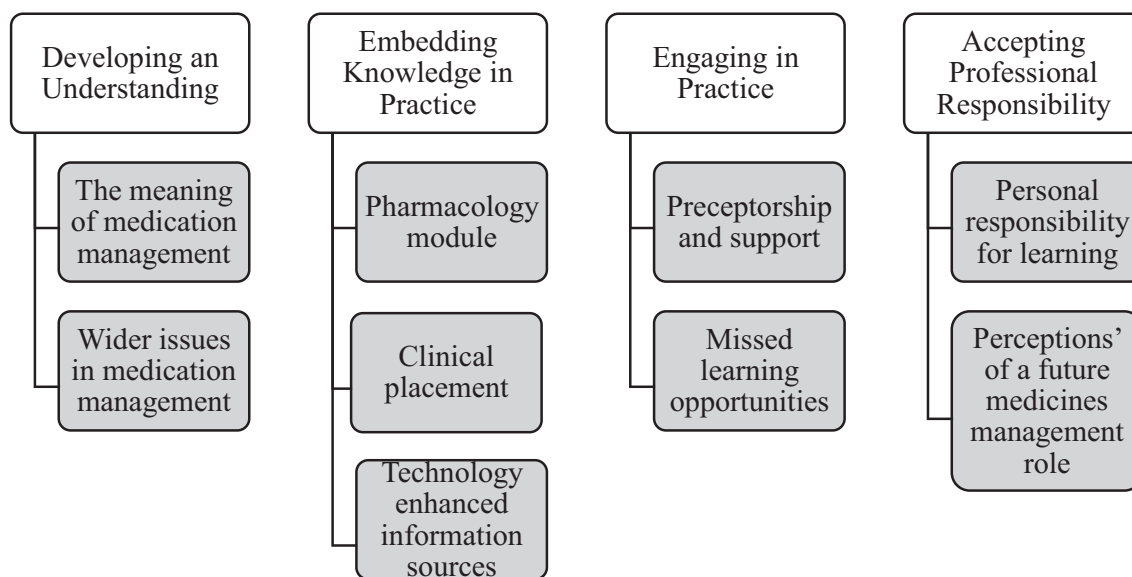


Fig. 1. Fourth year nursing students' perceptions of their educational preparation in medication management — themes and subthemes.

and Drug Administration (FDA), a United States based agency within the U.S. Department of Health and Human Services. However, no reference was made to local agencies such as the Irish Health Products Regulatory Authority or even the European Medication Agency, which would be appropriate to the participants' clinical context.

“Well, they're not updated as much [books], whereas the apps every few weeks it will tell you it's time to update. Then it gives you alerts to drugs that have been discontinued or alerts to drugs that are dangerous and it give you reasons why the FDA who has approved them, are taking them off or putting them on” P4.

Participants expressed concerns as to whether using technology in the clinical environment was permissible. They expressed the view that accessing medication management apps needed to be covert, to avoid being mistakenly accused of engaging in personal matters, such as texting friends. However, participants witnessed other clinical staff covertly using technology-enhanced information sources on smartphones and therefore felt it was acceptable to mirror their actions.

“I know you're not supposed to have phones on the ward either, sometimes it comes in handy, you would see some of the nurses and doctors taking out their phones and going to the apps like” P4.

4.3. Theme 3: Engaging in practice

This theme captured participants' perceptions and experiences of engaging in practice through ‘preceptorship and support’ and ‘missed learning opportunities’.

4.3.1. Preceptorship and support

Preceptorship and support were identified as key elements in the participants' preparation in medication management. Participants felt that a culture of positive preceptorship, which was conducive to learning, was evident on some clinical placements and this was usually instigated by the person in charge.

“the staff is obviously a huge thing, the Clinical Nurse Manager, the very first day before anyone sat down to the report, she brought us all into her office, asked us all our first names, introduced us to the rest of the staff, you are just comfortable straight away, she was really involved with the CPC [clinical placement coordinator] about making sure we had the same preceptor and just people who are willing to teach” P9.

Participants referred to multiple sources of support such as the multidisciplinary team members, nurses, nurse managers and patients. Participants also referred to peer support, with over half identifying the

positive support they gained from other nursing students.

“It's great to have another person on the same level so you can kind of bounce off each other, it makes you feel better to have someone else there. I would have always asked another student first, if I didn't know something” P5.

Additionally, patients were recognised as a support, participants spoke positively about listening to patients' experiences and how that assisted them in their quest for knowledge and understanding.

“Patients who had the knowledge on their condition themselves, especially things like diabetes and insulin, you'd find the patient's themselves with type two would tell you more, they could tell you more than the nurse, you'd learn lots from the patients too” P9.

4.3.2. Missed learning opportunities

Participants identified the availability of learning opportunities as an issue that affected their ability to engage in practice. Missed learning opportunities were described as a perceived lack of learning opportunities related to environmental factors e.g. logistics and timing, or the attitude of the preceptor.

“It's up to us to be like ‘oh I'll do the drug round’ and you could be in the middle of that drug round and a bell will go off and it's the student that there're going to send off to answer the bell, and then you're gone and the drug round is over and you've missed it, missed everything” P10.

Learning frameworks, e.g. competency assessment portfolios and clinical skills books, that encouraged students to identify and engage in learning opportunities were perceived as unsupportive due to a perceived lack of feedback. All participants had a common perceived need, for validation of written work and guidance of learning in medication management through greater supervision and feedback.

“Even if we had some kind of checking up on how you're getting on with it or are you having any chance to do it, because it's very much self-directed learning” P3.

4.4. Theme 4: Accepting professional responsibility

Participants acknowledged their learning journey and professional obligation to take responsibility for their own learning and their future medication management role.

4.4.1. Personal responsibility for learning

All participants were aware of their personal responsibility for learning and expressed positive views regarding responsibility,

motivation, and initiative. Participants indicated they had regularly engaged in self-directed learning and it was evident that they were already taking responsibility for their own learning.

"You're an adult learner and it's very important that you take responsibility. As a registered nurse, you are constantly learning as well, so you have to take responsibility and develop the knowledge you have, you need to develop yourself" P4.

4.4.2. Perceptions of a future medication management role

Participants expressed mixed emotions regarding their anticipated role in medication management, ranging from being excited about it to being fearful. Participants were not entirely sure, what was expected of them and this created confusion and led to participants questioning themselves and comparing their clinical knowledge and abilities with other fourth-year nursing students.

"All your classmates have done stuff and you're like oh my god, they have done that and I haven't done that, I must be terrible" P2.

Ultimately, wanting to be an accepted member of the clinical team, having a sense of belonging and making a contribution were highlighted.

"It's something as a final year student, you want to be able to do things on the ward, to be part of the team, being able to do the drug round and to do it right and be confident about it, you're not in first year anymore, things are expected of us now" P1.

5. Discussion

Study participants were 'developing their understanding' of medication management, however, the predominant focus was the administration of oral medications, to the exclusion of other aspects. Administration is just one facet of the complex responsibilities of medication management and interpretation of this finding would suggest that participants were progressing through a learning trajectory, developing their knowledge, attitude and skills. Similar to other research findings, participating in routine skills like medication administration, mirroring the attributes of the professional nursing team and generally just trying to cope with the realities of clinical practice were priorities for the participants (Parker et al., 2014, Henderson et al., 2012, Deasy et al., 2011). As nursing is a practice-based profession, teaching and learning strategies that promote integration and narrow the theory-practice gap are favourable. In this study, students valued learning in the clinical skills laboratories, and so, the use of simulation as an approach to addressing the need for a broader student focus on medication management, beyond medication administration is recommended, as simulation pedagogy enhances the opportunity for students to develop broad attributes which are essential to optimal and safe patient care such as clinical judgement and decision making skills (Bryant et al., 2020).

Participants indicated that their experiential learning on clinical placement was irreplaceable and valued this learning more than learning at the university. While the literature suggests scope to further develop and improve clinical placement environments for students (O'Brien et al., 2014; Kristofferzon et al., 2013; Henderson et al., 2012), our findings reveal that despite the challenges, students consider immersion in clinical placement fundamental to embedding knowledge in practice. There is emerging evidence in the literature that substitution of simulation-based education in place of clinical placement hours is occurring (Byrant 2020, Roberts et al., 2019) as sourcing clinical placements in the current climate can be challenging, in part due to limited supervisory capacity. While simulation pedagogy is considered a valuable teaching modality (Jarvill et al., 2018), it is also important that decision makers and those responsible for curriculum design acknowledge nursing students' perceptions regarding the significance of real-life clinical practice placements to their learning.

In this era of technological developments, it is not surprising that widespread use of electronic devices and technology-enhanced

information sources in the clinical environment is reported (Willemse et al., 2019; Killam and Heerschap, 2013). In this study, participants reported a move away from traditional information sources, towards technology-enhanced information sources. Participants reported accessing technology sources covertly on smartphones as they perceived this action as impermissible in the clinical environment, despite having observed nurses and other members of the multi-disciplinary team engaging in similar actions. In addition, participants did not express concern about the provenance of technology-enhanced information sources e.g. medicine applications on smartphones. While guidance for nursing students around the use of technology is available (Nursing and Midwifery Board of Ireland, 2016a, b, Morley, 2014), interpretation of our findings suggests that nursing curricula need to evolve, to ensure more guidance for students on the appropriate use of such resources, and guidance on assessing the trustworthiness, authenticity, and credibility of online sources of information. Further development and review of policies, procedures and guidelines in the clinical environment on the role and use of technology-enhanced learning devices are needed, to ensure that students are supported in openly using reputable sources of online evidence and information. There is a need for a more permissible culture supporting the use of technology in practice and the provision of technological devices in clinical practice, e.g. tablet devices with pre-programmed evidence-based information sources such as medication management eLearning programmes and relevant trustworthy apps would be constructive.

While engaging in practice, participants reported a positive culture of preceptorship and felt supported in their learning by members of the multidisciplinary team. Findings suggest peer support with medication management is important to nursing students, and echoes the broader literature around peer support among nursing students (Carey et al., 2018). It is also noteworthy, that participants felt supported in their education by listening to patients' stories. While this source of learning is recognised in the literature (Cheng and Towle, 2017, Terrien and Fraser Hale, 2014), it is recommended that further research is warranted regarding the potential role of patients as educators and how they could facilitate learning in undergraduate nurse education.

In attempting to engage in practice, participants also spoke about missed learning opportunities and about their experiences of engaging with teaching and learning strategies on clinical placement such as written competency assessment portfolios and clinical skills book. They expressed the need for more guided learning through supervision and feedback for these strategies to be meaningful. Our study concurs with the literature (Killam and Heerschap, 2013), that regardless of the teaching and learning strategy employed, structured educational initiatives need to be effectively utilised and are redundant without feedback.

Virtues such as motivation and initiative precede competence and findings of this study correlate with the literature (Papathanasiou et al., 2014; Khomeiran et al., 2006) as it was evident that participants were taking professional responsibility for their future medication management role. Positive views about responsibility, motivation, initiative, self-directed learning and life-long learning were expressed. However, mixed emotions about their upcoming role were also expressed, participants questioned themselves and compared their abilities with other students. This finding suggests that participants needed feedback about their progress and aligns with current research findings, that students need reassurance and knowledge of future role expectations (Houghton, 2014). The final year of undergraduate nursing programmes provides an opportunity to address student uncertainty and concern around future medication management roles, through various pedagogy including guided reflection, simulation and recognition and consolidation of prior learning. Nurses, skilled and competent in medication management at the point of registration, will contribute greatly to the patient safety agenda for the benefit of all.

6. Limitations of study

The small sample size in this study is acceptable for an interpretative phenomenological study, however, the views and perceptions of those interviewed cannot claim to be representative of all nursing students. Participants were from one educational setting, thus limiting the study further, albeit three programmes were represented — Bachelor of Science in Nursing (General), Bachelor of Science in Nursing (Intellectual Disability) and Bachelor of Science in Nursing (Mental Health) which provided a broader perspective on the phenomenon in question. Findings from this study provide a snapshot in time and to provide more representative views the study population would need to be expanded to include a larger sample size from more than one educational institute. In addition, the perspectives from lecturers, preceptors and other nursing staff would offer a broader viewpoint.

7. Conclusion

Participants in this study were developing their knowledge about medication management and attempting to embed that knowledge through engagement and full immersion in real-life clinical practice, while at the same time acknowledging and taking professional responsibility for their own learning trajectory as nursing students. Our recommendations emanate from interpretations of the participant's voices. This co-created qualitative data points towards the need for a collaborative, developmental approach to medication management education across the university and clinical placement settings. A pedagogical approach focused on the integration of theory and practice, using for example, simulation and technology and spiralling across the four years of students' undergraduate education is required. The ultimate goal is to ensure that the gap between academia and practice is bridged and upon graduation students feel adequately prepared for practice and possess the requisite knowledge, skills and behaviours to practice safely, effectively and competently.

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Ethical approval

Yes

CRedit authorship contribution statement

Mairead Moloney:Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing, Visualization.**Liz Kingston:**Methodology, Writing - review & editing, Visualization, Supervision.**Owen Doody:**Methodology, Writing - review & editing, Visualization, Supervision.

Declaration of competing interest

None declared.

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