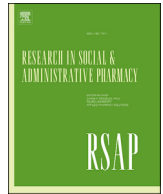




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Practice makes perfect: A systematic review of the expertise development of pharmacist and nurse independent prescribers in the United Kingdom

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ABSTRACT

Background: Prescribing is a complex and error-prone task that demands expertise. McLellan et al.'s theory of expertise development model ("the model"), developed to assess medical literature on prescribing by medical students, proposes that in order to develop, individuals should deliberately engage their knowledge, skills and attitudes within a social context. Its applicability to independent prescribers (IP) is unknown.

Aim: A systematic review was conducted to explore whether the model is applicable to non-medical independent prescribing and to assess the factors underpinning expertise development reported in the literature.

Method: Six electronic databases (EMBASE, Medline, AMED, CINAHL, IPA and PsychInfo) were searched for articles published between 2006 and 2016, reporting empirical data on pharmacist and nurse IPs education or practice. Data were extracted using themes from the model and analysed using framework analysis.

Results: Thirty-four studies met the inclusion criteria. Knowledge, pre-registration education, experience, support and confidence were some of the intrinsic and extrinsic factors influencing IPs. Difficulty in transferring theory to practice was attributed to lack of basic pharmacology and bioscience content in pre-registration nursing rather than the prescribing programme. Students saw interventions using virtual learning or learning in practice as more useful with long-term benefits e.g. students were able to use their skills in history taking following the virtual learning intervention 6-months after the programme. All studies demonstrated how engaging knowledge and skills affected individuals' attitude by, for example, increasing professional dignity. IPs were able to develop their expertise when integrating their competencies in a workplace context with support from colleagues and adherence to guidelines.

Conclusion: This is the first study to synthesize data systematically on expertise development from studies on IPs using the model. The model showed the need for stronger foundations in scientific knowledge amongst some IPs, where continuous workplace practice can improve skills and strengthen attitudes. This could facilitate a smoother transfer of learnt theory to practice, in order for IPs to be experts within their fields and not merely adequately competent.

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1. Introduction

Prescribing is a complex process which involves a thorough understanding of clinical pharmacology and diseases, the ability to make judgements on the risks and benefits of treatment, intuition and attention to detail, within a dynamic and unpredictable environment.^{1–3}

Prescribing by healthcare professionals who are not doctors is referred to as non-medical prescribing. Non-medical prescribers

(NMPs) include nurses, pharmacists, optometrists and allied healthcare professionals (physiotherapists, podiatrists, dieticians and diagnostic or therapeutic radiographers).⁴ To date, only allied healthcare professionals in the United Kingdom (UK) are given the authority to prescribe. Pharmacists and nurses outside of the UK, such as the USA, Canada, New Zealand, Australia, Sweden, Finland, Netherlands and Spain are also given the authority to prescribe, but with imposed legal restrictions.⁵ The UK and Ireland have the most extensive prescribing rights, in comparison to North America, the Antipodes and Western European countries.⁶ In order to prescribe in the UK, non-medical healthcare professionals are required to successfully complete the post-graduate non-medical prescribing programme. Non-medical prescribing is categorised into independent and supplementary prescribing. IPs are responsible for the clinical assessment of diagnosed or undiagnosed patients, prescribing autonomously for any condition within their clinical competence.⁷ Supplementary NMPs are responsible for the continued care of patients who have already been diagnosed by a medical or dentist IP. This care is delivered under an agreed Clinical Management Plan (CMP) between the supplementary NMP, the medical or dentist IP and patient.⁸

In 2006, independent prescribing rights were given to pharmacists and nurses in the UK who successfully completed the independent prescribing programme. Independent prescribing allows the prescribing of “any medicine for any medical condition within their competence”, including any controlled drug except diamorphine, cocaine and dipipanone for the treatment of addiction.^{9,10}

The independent prescribing programme is a part-time course that consists of at least 26 days of taught curricula and a minimum of 90-h or 12 days of learning in practice. Learning in practices takes place under the direct or indirect supervision of a Designated Medical Practitioner (DMP). DMPs are registered medical practitioners with at least 3 years of recent clinical experience in the field the prescribing student wishes to train in. They provide a role in training prescribing students to meet their learning objectives and assess the students to ensure they are competent in prescribing.¹¹

Independent prescribing programmes take on a multi-faceted mixed method approach to teaching students how to prescribe. A significant part of developing the knowledge, judgement and skills of students is based on assessing their competencies. A competency framework for all prescribers originally developed by the National Prescribing Centre and updated by the Royal Pharmaceutical Society lists competencies that underpin all prescriber's responsibility towards prescribing.^{12,13} DMPs often use this framework to assess students' competence.

In medical literature, assessing competencies has been described as an insufficient measure of professional aptitude because it breaks a complex skill into individual exercises to be assessed.^{14–16} Given the complexity of prescribing, individual competencies should be merged into the context of professional practice to define excellence rather than adequacy. Van Merriënboer and Kirschner argue that complex learning must be addressed holistically by not only combining what is learnt into an integrated knowledge base, but by facilitating the transfer of knowledge into real-life tasks.¹⁴ This is often seen when students complain of a disconnected set of modules and an unclear view of how what is taught relates to their future professions. In addition, students learning to prescribe are not legally able to prescribe and may not be provided with the affordances to practice their prescribing skills under close supervision.

Newly registered independent NMPs are deemed competent by their educators upon completion of the independent prescribing programme. Independent NMPs also have experience in their own domains of practice prior to registration as prescribers, but have

little experience in the process of diagnosing and prescribing post-registration. McLellan et al. argues that true competence in prescribing demands expertise, regardless of the simplicity of the task at hand.¹⁵ Expertise in this context is not defined by what or who the expert is, but by the process and development of expertise in practice. According to Ericsson, this process involves the ability to keep up to date with evidence based practice, to continuously evolve and transition into the field of practice and to adapt to uncertainty.¹⁷ Adapting to uncertainty during practice involves engaging more cognitive, effortful processes where the prescriber is able to control their own performance within the context of the environment.^{15,18} In addition, Bereiter & Scardamalia argue that the outcome of learning should be directed towards achieving expertise.¹⁹ This gives the definition of expertise fluidity and an appreciation for the complexity of the process of expertise development.

In order to mirror the complexity of prescribing, McLellan et al. proposed a theoretical model using theories of expertise development and instructional design theory for complex skills.¹⁵ These theories illustrate that for learners to develop, they should deliberately engaged their knowledge, skills and attitudes within a social context. Self-regulation in the model refers to the learner reflecting on their knowledge, skills and attitudes in an integrated manner, in order to adapt to the demands of the environment and successfully complete a task. Learners reflecting on their knowledge requires that they regulate how much cognitive engagement is required of the task in order to successfully execute it, or seek help when required. This model reflects the main cognitive and social elements that come to play during the process of learning and practicing as a prescriber. McLellan et al. developed this model and utilised it by examining if empirical evidence for prescribing in medical literature acknowledge the different components of the model. To our knowledge, this is the only model to specifically mention prescribing.¹⁵

Studies have reported concerns on the diagnostic, physical examination skills and pharmacological knowledge of pharmacist and nurse IPs.^{20–24} To date, there have been no attempts to synthesize data systematically from studies on pharmacist and nurse IPs expertise development using this theoretical model. This model can help view expertise using a multi-dimensional lens and assess how pharmacist and nurse IPs (learners or prescribers) expertise is reported in the literature. Given that this model had been used to examine evidence in medical literature, the author chose to examine the evidence of NMPs with extensive prescribing rights similar to medical doctors. Based on this, literature on pharmacist and nurse IPs in the UK was examined. The aims of this study are to explore whether this model is applicable to literature on pharmacist and nurse IPs in the UK and to assess how their expertise development is reported in the literature.

2. Literature search method

2.1. Search strategy

The following electronic databases were searched: EMBASE, MEDLINE, AMED, CINAHL, International Pharmaceutical Abstracts and PsychInfo, all from 2006 to 2016. Search terms included non-medical prescribe*/non medical prescribe*, independent prescribe*, nurs* independent prescrib*, pharmac* independent prescribe*, education, curriculum, courses, training, clinical competen*, competen*, diagnos*, assess*. An expert librarian was consulted to assist in identifying keywords and appropriate databases to ensure a robust search strategy. The same search strategy was used for each database. When all database searches were conducted, duplicate citations were identified and excluded.

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