

Evidence-based practice and evidence-informed practice competencies in undergraduate pre-registration nursing curricula: a document analysis at a University in England

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Abstract

Background

In response to the heightened emphasis on incorporating the best available evidence into healthcare decision-making, healthcare training institutions have been actively incorporating Evidence-Based Practice (EBP), and/or Evidence-Informed Practice (EIP) competencies into undergraduate healthcare curricula. However, there is a gap in the scientific knowledge about the actual contents, as well as the extent of integration of EBP and EIP in undergraduate pre-registration nursing programmes.

Method

A document analysis utilising Rohwer et al.'s (2014) framework was conducted to review and analyse the content of EBP and EIP competencies in the 2018/2019 curriculum of the undergraduate pre-registration nursing programme of a University located in England, United Kingdom.

Results

Competencies relevant to EBP were included in four nursing modules. However, EIP competencies were not included in the curriculum.

Conclusion

There is an urgent need for a more structured and holistic way of teaching and assessing EBP competencies through the integration of the principles of EIP, in order to enhance the effective application of evidence into clinical nursing practice.

Keywords

Competencies, Document analysis, Evidence-informed practice, Evidence-based practice, Undergraduate pre-registration nursing

1.1. Introduction

In response to the heightened emphasis on incorporating the best available evidence into healthcare decision-making, health and social care curriculums have been actively integrating, especially, evidence-based practice, into undergraduate pre-registration curricula (Sin & Bliquez, 2017). A Curriculum is defined as a “planned educational experience” (Thomas et al., 2015, p. 1). Kelly et al. (2009) further described a curriculum as the entirety of the experiences of students that occur during the educational process. A curricula may integrate the intended interaction of students with teaching materials, instructional contents, as well as methods for assessing the achievement of educational objectives.

Today, the incorporation of evidence-based practice, and sometimes evidence-informed practice (for example Ciliska, 2012) education in undergraduate nursing curricula have been sturdily recommended in Australia (Waters et al., 2009), the United States (American Association of colleges of nursing, 2002), Canada (Ciliska, 2012), Africa (Centre for Evidence-Based Health Care, 2019), and Europe (Zabalegui et al., 2006). In the United Kingdom, competencies in implementing evidence-based practice is obligatory in nursing degree programmes (Brooke et al., 2015). Evidence-based practice is defined as the “conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett et al., 1996, p. 76). Evidence-informed practice, on the other hand, is defined as an approach to patient care where

“Practitioners are encouraged to be knowledgeable about findings coming from all types of studies and to use them in an integrative manner, taking into consideration

clinical experience and judgment, clients' preferences and values, and context of the interventions" (Nevo & Slovin-Nevo, 2011, p. 18)

Nurses are required to inform healthcare decisions with the best available evidence (NMC UK, 2018). Thus, by the time nursing students graduate, they are expected to be confident in applying evidence into practice (Olsen et al., 2014). However, a number of studies (including André et al., 2016; and Brown et al., 2010) have revealed low levels of knowledge regarding the application of evidence into practice among undergraduate pre-registration healthcare students. For example, André et al. (2016) conducted a pilot study of undergraduate pre-registration nursing students in Norway, with the aim of examining changes in evidence-based practice knowledge and skills following participation in a clinical research project. Participants in the study reported low levels of knowledge regarding evidence-based practice. Nonetheless, there is some evidence (such as Illic, 2009; Flores-Mateo, 2007) to suggest that significant improvements in knowledge and skills regarding evidence-based practice can be achieved if the concept is integrated into undergraduate healthcare education, including nursing.

Generally, to encourage effective and consistent clinical application of evidence among healthcare professionals, training in evidence-based practice (Dawes et al., 2005) and/or evidence-informed practice (Nevo & Slovin-Nevo, 2011) must be incorporated early in the nursing curricula, preferably, in undergraduate pre-registration education (Bozzolan et al, 2014). This is because, the undergraduate pre-registration level of education is the first step in preparing students for their professional roles after graduation. Consequently, it is imperative to conduct a document analysis of undergraduate pre-registration teaching modules in order to explore the extent to which evidence-based practice and evidence-informed practice

are integrated in the undergraduate curricula. The present study focussed on analysing modules used in teaching the undergraduate pre-registration nursing students enrolled in the 2018/2019 academic year, at a University located in the North of England.

For the purpose of this study, a 'module' refers to a unit, segment, chapter, or topic of instruction. The modular method of teaching is an approach to course design that provides learners and teachers with an outline to show clear and realistic learning objectives (Sejpal, 2013). Thus, the modular method of teaching is flexible and allows learners to have control over their learning. The elements that make up an instructional module include the module's aims and objectives, instructional content, learning activities, teaching strategies, and methods of assessment (including formative and summative evaluation methods). A module may also include a list of additional resources for students to explore in order to enhance their knowledge of concepts, as well as a description of how feedbacks could be provided to students regarding their learning and achievements of module aims and objectives.

1.2. Defining document and document analysis

Documents are materials in which ideas or facts have been logged. Suzanne Briet defined document as "any concrete or symbolic indication, preserved or recorded, for reconstructing or for proving a phenomenon, whether physical or mental" (Briet, 1951, p. 7). Documents serve several purposes: first, documents provide information on the background and context of study participants. Second, data contained in documents can provide ideas to researchers regarding, for example, additional questions to be asked and situations to be observed as part of the research. Third, documents may be used to track change and development in an organization or study participants. In

situations where several versions of a specific document are available, the researcher can identify changes by comparing the various versions of the documents. Fourth, document analysis can be used as a means to corroborate or verify findings from other research work. In cases where findings of document analysis contradict rather than confirm the research evidence, the researcher is expected to conduct additional investigations. This is because, the credibility (trustworthiness) of a research is improved when there is convergence of data from different sources in research. Several forms of documents may be used for methodical evaluation. Examples of these documents include diaries, journals, advertisement agendas, curricula, event programs, and letters and memoranda (Bowen, 2009)

Document analysis has been defined by Bowen (2009) as a qualitative research method that entails a systematic interpretation of documents (both electronic and printed materials) in order to give voice and meaning around an assessed phenomenon. In document analysis, data are obtained from documents without questioning individuals through questionnaires, interviews, or observations. It involves examining and interpreting data to gain understanding, improve empirical knowledge, and to elicit meaning (Corbin & Strauss, 2008). The analytic process in document analysis involves “finding, selecting, appraising (making sense of), and synthesising data contained in documents” (Bowen, 2009, p. 28). Document analysis produces data, which are then organised into themes, major themes, and categories, particularly through content analysis (Labuschagne, 2003).

1.3. Objective

To analyse and describe the content and extent of integration of evidence-informed practice and evidence-based practice competencies in the current undergraduate pre-registration nursing modules.

1.4. Methods

A systematic, transparent, and rigorous method utilising Rohwer et al.'s (2014) document analysis framework was applied to set out the scope and parameters of the current document analysis. An Ethical approval was obtained from the Teesside University school of health and social care research ethics committee (study Number: 011/18). The steps outlined below give a description of the processes followed to conduct the document analysis.

1.4.1. Defining evidence-based practice and evidence-informed practice competencies

A thorough literature review was conducted with the aim of assessing the current literature on evidence-based practice and evidence-informed practice teaching and learning, and to identify studies that have reported on key competencies of evidence-based practice and evidence-informed practice. For the purposes of this study, 'competency' is defined as a combination of attributes such as knowledge, attitudes, understanding, and behaviour that enables an individual to perform effectively in the healthcare setting and enhance high quality patient care (Melnyk et al., 2014). Databases searched included MEDLINE, CINAHL and PsycINFO. The search, conducted in March 2019, identified evidence-based practice competencies developed for students (Albarqouni et al., 2018; Rohwer et al., 2014; Stevens, 2005) and for practicing registered nurses and advanced practice nurses (Melnyk et al.,

2014). Nevertheless, the search revealed no evidence of studies on evidence-informed practice competencies.

1.4.1.1. Evidence-based practice competencies

Based on the results of the literature search, and specifically on Albarqouni et al.'s (2018), Rohwer et al.'s (2014), and Stevens's (2005) frameworks on core competencies in evidence-based practice for undergraduate healthcare students, a set of key evidence-based practice competencies were developed for this study. The competencies were grouped under the five main steps of evidence-based practice, which are "Ask", "Acquire", "Appraise and Interpret", "Apply", and "Evaluate" (Sackett et al., 1996). Table 1.1 presents the evidence-based practice key competencies for undergraduate students that were developed for this study.

1.4.1.2. Evidence-informed practice competencies

The key competencies for evidence-informed practice were developed based on McSherry's (2007) evidence-informed practice model (Figure 1.1). The evidence-informed practice model, as developed by McSherry is a systems-based model comprising of an input (for example, roles and responsibilities of the health practitioner) throughput (i.e. research awareness, application of knowledge, informed decision-making, evaluation) and an output, which is an empowered professional who is a critical thinker and doer (McSherry, 2007). Although the evidence-informed practice model consists of six elements and two factors, in the current study, the undergraduate evidence-informed practice competencies (Figure 1.2) were developed based on the six elements of the model. The rationale for this is that the 'elements' are the main processes the healthcare student/practitioner goes through to apply evidence into clinical practice. The 'factors' are the conditions that contribute to enhancing the

effective and consistent implementation of evidence-informed practice. In other words, the 'factors' are the conditions that support the healthcare student/practitioner to perform his/her roles efficiently. These include staff selection, in-service training, as well as coaching and mentoring. These conditions are more to do with managerial and leadership roles and responsibilities, and as such, do not require the healthcare student/practitioner to gain competence in.

1.4.2. Obtaining module guides and understanding the structure of the undergraduate nursing curriculum

The next step of the analysis process was to obtain a list of all the modules that were undertaken in the 2018/2019 academic year by undergraduate pre-registration nursing students. All relevant module guides and learning materials containing details of module aims, learning outcomes, and assessment criteria were collected. Each module required a full-day (9am to 4pm) of contact for a minimum of 8 weeks. The methods of instruction that were used to teach the modules include lectures, clinical and computer laboratory sessions, workshops, and seminars. A thorough review of all the modules was conducted to get an understanding of what was covered within each year of study, and to determine the modules to include in the final analysis. For a module to be included in the final document analysis, it must be shown to actively develop students' skills in all or some of the key competencies in evidence-based practice and/or evidence-informed practice. This must be explicit in the module aims and/or learning outcomes

The undergraduate pre-registration nursing programme is taken on full-time basis for a duration of three years, and has four fields: adult, child, mental health, and learning disability. Although there were some field specific modules, a review of those modules revealed some similarities in the contents. Therefore, the current study focused on

reviewing only the adult nursing modules in order to avoid instances of duplicate data collection and extraction. The modules taken at each year of the adult nursing programme were collected and reviewed. A total of 11 (first year: 4; second year: 4; third year: 3) module guides were obtained for review. Each of the module guides was reviewed based on the module aims and learning outcomes in order to determine the modules to include in the final analysis.

1.4.3. Data extraction

At the end of the initial screening of the modules, four modules (namely, the role of the nurse in improving health and well-being, an introduction to decision-making in adult nursing, the role of the nurse in promoting evidence-based health and service improvement, and developing the nursing contribution to continuous improvement in health and social care practice) were included in the final analysis.

A standardized data extraction form was developed to aid in extracting data from the included modules. This was to ensure consistency in the data extracted across all the modules. Learning outcomes stated in the module guides and learning materials, which related to the predetermined evidence-based practice/evidence-informed practice competencies were assessed. Specifically, statements beginning with the phrase: “*By the end of this module students should be able to*” and/or “*By the end of this session students should be able to*” were used as units of analysis. The data extraction form included information such as module name, year of study, module aims and learning outcomes relevant to evidence-based practice and/or evidence-informed practice, teaching strategy, and method of assessment.

Findings from the initial review of the modules revealed no specific stand-alone module on evidence-based practice and/or evidence-informed practice. However, it was observed that the competencies of especially, evidence-based practice were integrated in all the included modules. Hence, information on learning outcomes of specific teaching sessions that were geared towards improving students' evidence-based practice and/or evidence-informed practice competencies were collected. These pieces of information were necessary in order to determine the approaches to teaching evidence-based practice/evidence-informed practice, and the extent to which the concepts are integrated in the undergraduate nursing curriculum. In order to minimise errors and reduce potential biases, data extraction was conducted by two independent authors (EAK and JBS). Disagreements were resolved by consensus-based discussion or in consultation with the third and/or fourth author.

1.4.4. Data analysis and synthesis

Data analysis was conducted by two independent authors (EAK and JBS). The learning outcomes for the modules as well as the teaching sessions were treated as the 'unit of analysis'. The unit of analysis is the major entity that frames what is being analysed in a study (Trochim, 2006). The Bloom's taxonomy framework was used as a guide in the analysis process. Bloom's taxonomy is a hierarchical framework for judging achievement in education, in which each stage is dependent on the one below (Persuad, 2018). The framework consists of six stages, with the bottom three stages ('Remembering', 'understanding', 'applying') being more basic as compared to the higher stages ('analysing', 'evaluating', and 'creating') (Anderson et al., 2001). Remembering, depicted in Bloom's taxonomy as the first stage of learning, causes the

learner to develop skills and competencies that are vital to accomplishing the remaining stages of the pedagogical process.

In this study, the categorisations in Bloom's taxonomy were used to determine whether the modules' contents were appropriate in causing learners to progress through the stages of learning, and whether the learning outcomes for the overall module, and for each session were achievable. In addition, the authors determined whether the strategies used in assessing students were suitable in accomplishing each stage of the Bloom's taxonomy. To achieve this, the verbs contained in the learning outcomes were matched to the key levels of thinking stated for each stage of the Bloom's taxonomy. In situations where a learning outcome contained multiple verbs, the verb that represents the highest level of thinking was used in making decisions. According to Bloom's taxonomy (1956), in any learning setting, it is crucial for learners to begin from the lower level, which requires less cognitive functioning (level of thinking) and move up the ladder. The higher level, however, requires a greater level of cognitive functioning (level of thinking) that can be achieved after the lower levels have been mastered (Persuad, 2018). Table 1.2 presents the Bloom's taxonomy (Anderson et al., 2001) with an illustration of the key levels of thinking, which was used as a guide in the analysis process.

Illustrated below are examples of how learning outcomes were classified in relation to the Bloom's taxonomy levels of thinking:

Example 1: "Identify the role of the nurse within Service improvement and EBP"

Example 2: "Begin to understand the potential barriers and facilitators to implementing evidence-based practice"

From the above examples, the first learning outcome (example 1) was judged as being relevant to evidence-based practice and associated to the 'Remembering' level of thinking, since it contains the verb 'identify'. The second learning outcome (example 2), which is also relevant to evidence-based practice was associated with the 'understanding' level of thinking, because it contains the verb 'understand'. Table 1.3 presents the synthesised results of evidence-based practice and evidence-informed practice competencies, showing the competencies, learning outcomes, the teaching sessions/content covered, the module name, and the year of study in which the competency is addressed, as well as the corresponding stage of Bloom's taxonomy.

1.5. Discussion and recommendation

This document analysis has revealed the degree to which evidence-based practice and evidence-informed practice are integrated in the undergraduate pre-registration nursing curriculum of a University located in England, United Kingdom. Overall, the findings of this study revealed that within the study's setting, the undergraduate pre-registration nursing programme strive to prepare students with the required knowledge, skills, and competencies essential to evidence-based practice, with no mention of the term 'evidence-informed practice'. In all the assessed modules, however, essential competencies in evidence-based practice were not offered as a separate independent (stand-alone) module but were rather integrated into the programme units. Consequently, it was observed that competencies relevant to evidence-based practice were integrated in an unplanned manner across the curriculum, and the students' ability to effectively implement evidence-based practice was not assessed. Thus, even though students were trained in the principles and competencies of evidence-based practice, the method of assessment was not geared

towards evaluating their knowledge, attitudes, and skills in applying evidence-based practice.

Researchers, including Hung et al. (2019) and Melnyk & Fineout-Overholt (2014) have sturdily recommended the provision of evidence-based practice training as a well-structured, stand-alone course across all years of study. Besides, Agarwal et al. (2008) have reported findings indicating that ineffective education in the principles and competencies of evidence-based practice is a barrier to the successful implementation of the concept among healthcare professionals. This notwithstanding, Hung et al. (2015) and Malik et al. (2015) have reported findings that correspond to that of the current study. Hung et al. and Malik et al. indicated in their respective studies that nursing students were inadequately prepared to implement evidence-based practice, and stated the lack of stand-alone, interactive, clinically-oriented courses on the concept as a key contributory factor.

A significant finding from the current study indicate that the term 'evidence-based practice' was introduced to students in the first year of study. This finding is commendable, as researchers including Melnyk & Fineout-Overholt (2011) and Callister et al. (2005) have recommended that students are introduced to the concept of evidence-based practice early in their training. Callister and colleagues found that undergraduate healthcare students introduced to the concept of evidence-based practice from the first year of study exhibited better understanding and increased motivation towards applying evidence-based practice in their clinical decision-making. Malik et al. (2015) have, however, reported findings that are dissimilar to the results of the current study. Malik et al. (2015) sought to determine the content of evidence-based practice competencies in the curricula of undergraduate pre-registration

nursing. The authors reported that the competencies relevant to evidence-based practice were mostly introduced in the second year of study.

Oh et al. (2010) appear to support the introduction of evidence-based practice competencies later in undergraduate healthcare education. Contrary to the recommendations stated above, Oh and colleagues have argued that undergraduate healthcare students may encounter challenges in developing understanding of evidence-based practice when it is introduced early in their education. Similarly, Yousefi-Nooraie et al. (2007) have reported findings signifying that step three of the evidence-based practice model (i.e. critical appraisal of studies) would be best taught in advanced-level evidence-based practice education (the postgraduate level) due to its complexity.

The focus of Oh et al. (2010) and Yousefi-Nooraie et al.'s (2007) argument seems to be based on the research component of evidence-based practice. As was the case in the current study, the integration of advanced-level research methodology contents such as statistical calculations and analysis in the undergraduate curricula, will certainly require a higher level of cognitive functioning, and as such, would be best taught later in undergraduate healthcare education or at the postgraduate level. However, the effective implementation of evidence-based practice is not dependent on technical knowledge and understanding of advanced-level research methodology. In the first year of education, undergraduate healthcare educators must aim at preparing students in the principles of evidence-based practice, including the definitions and an overview of the steps of evidence-based practice, as well as the barriers and facilitators to implementing the concept. The goal of entry-level evidence-based practice education must be to create awareness of the concept among students.

Findings from the current study reveal that the clinical application of evidence-based practice was not covered in the curriculum. The teaching materials reviewed in this study did not provide any information as to how students could apply evidence into clinical practice. The findings reveal that evidence-based practice competencies were mainly taught theoretically, through lectures, seminars, and computer laboratory sessions where students practiced literature searching skills. The incorporation of computer laboratory sessions has been recommended by Dawes et al. (2005), as it enables students to receive guidance during the searching and retrieval of scientific evidence. Moreover, research findings from Yousefi-Nooraie et al. (2017) and Coomarasamy and Khan (2004) have indicated that lectures and seminars may contribute to an improvement in students' knowledge, attitudes, and understanding of evidence-based practice. However, the use of lectures and seminars as teaching strategies in evidence-based practice education does little in enhancing students' ability to effectively apply evidence into clinical practice, which is the ultimate goal of evidence-based practice education. Brown et al. (2010) found that clinically-oriented evidence-based practice courses (compared with theoretically-oriented courses) improved students' confidence in applying evidence-based practice.

In clinically-integrated evidence-based practice education, Coomarasamy and Khan (2004) recommend that, where resources and facilities are available, evidence-based practice training must be carried out in real time clinical settings, where students will have the opportunity to experience, at first hand, the actual processes involved in the application of evidence into clinical practice. Nevertheless, in situations where it is impossible to teach evidence-based practice in the clinical setting, classroom teaching sessions on evidence-based practice need to be based on patient case scenarios and vignettes. This may be done using interactive teaching strategies such as workshops

and journal clubs, where the evidence-based practice competencies are explained using real and current clinical problems to demonstrate how the concept could be implemented in the clinical setting.

The lack of adoption of evidence-based practice among healthcare professionals has mainly been associated with the lack of access to 'research evidence' within the clinical setting (Panhale & Bellare, 2015), and where accessible, the difficulties involved in transforming the 'research evidence' into clinical practice (Melnyk et al., 2010). Healthcare professionals may not always have access to the research evidence in the clinical setting, which may be due to unavailability of computers and internet to conduct a literature search. Hence, in the absence of the research evidence, Greenhalgh et al. (2014) highly recommend integrating other forms of evidence into clinical decision-making. These forms of evidence include the healthcare professionals' own expertise, knowledge and clinical experience; patient preferences, values and needs; as well as the clinical context, culture and circumstances. Teaching and learning of evidence-based practice must, therefore, aim at preparing students to provide person-centred healthcare, through the integration of the various forms of evidence into clinical decision-making. In person-centred healthcare, the 'patient' is the focus of care and not the 'research evidence'. To this, the term 'evidence-informed practice' have mostly been used to refer to the integration of the various forms of evidence into clinical decision-making (Nevo & Slovin-Nevo, 2011).

Evidence-informed practice is gradually gaining popularity as the best approach to applying evidence into clinical practice (Kumah et al., 2019; Ciliska, 2012; Nevo & Slovin-Nevo, 2011). It is rather disturbing that with the increasing popularity of evidence-informed practice, there was no mention of this concept in any of the curricula assessed. As argued by McSherry (2007), the evidence-informed practice

model incorporates the steps (competencies) of evidence-based practice, contained in the 'evidence-informed practice cycle' of the model (Figure 1.1). Thus, evidence-based practice is a subset of evidence-informed practice. As such, to achieve effective application of evidence into clinical practice among future professionals, both evidence-based practice and evidence-informed practice must be integrated into the undergraduate healthcare curricula. This is because, whilst evidence-based practice offers a step-wise approach to applying evidence into clinical practice and emphasises on the research evidence, the evidence-informed practice model provides a comprehensive, cyclical, and interdependent process to applying evidence into clinical practice. Evidence-informed practice emphasises the provision of person-centred care, where the patient is the focus of care and not the research evidence.

1.6. Conclusion

This document analysis has highlighted the urgent need to review the undergraduate pre-registration nursing curricula to include, in a systematic and organised manner, appropriate competencies essential to both evidence-informed practice and evidence-based practice. This will ensure the effective and consistent application of evidence into clinical practice among future nurses, which is a mandatory standard of healthcare practice.

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