Evidence-informed practice versus evidence-based practice educational interventions for improving knowledge, attitudes, understanding and behaviour towards the application of evidence into practice: a comprehensive systematic review of undergraduate health and social care students

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Background

Health and social care practitioners are expected to apply research evidence into practice in order to improve patient care outcomes. Several authors, such as Kelly et al (2015), Smith & Rennie (2014), Straus et al (2011), Scott & McSherry (2009), Tickel-Degnen & Bedell (2003), and Sackett et al (1996) have argued that scientific evidence must be used to guide healthcare practice and that it helps practitioners to deliver best care for service users and families. Standards of healthcare practice recognize evidence-based practice as a significant and integral element for effective healthcare delivery (Melnyk & Newhouse, 2014). Sackett et al (1996, p.71) defined evidence-based practice as the “conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients”.

Over the past two decades, healthcare practitioners have used the term “evidence-based practice” more frequently, and in recent times, the term “evidence-informed practice” is used instead, or as well. Following the movement for evidence-based medicine (Sackett et al 1997; 2000), the awareness of evidence-based practice became a necessity in the healthcare profession (Gambrill, 2006, 2007; Gibbs, 2003; McNeil, 2006; McCracken & Marsh, 2007; Gray, Plath & Webb, 2009). The concept has since gained recognition by healthcare regulatory agencies (e.g. International Council of Nurses (ICN, 2012), Nursing and Midwifery Council, United Kingdom (NMC, 2015), General Medical Council (GMC, 2013), and the Health and Care Professions Council (HCPC, 2012)) as the gold standard for providing compassionate and safe healthcare (Gray, Plath & Webb, 2009). Glacken & Chaney (2004) observed that internationally, governments have incorporated evidence-based practice with the improvement of initiatives to expand the delivery of healthcare. It is necessary for the provision of healthcare to be based on the best available evidence rather than on tradition. Jones and Santaguida (2005) emphasized that the policies of the United Kingdom’s National Health Service (NHS) distinctly recognize the need for policy and practice to be evidence-based. According to Nevo & Slovin-Nevo (2011), the actions of health and social care practitioners must, as a matter of both ethical and professional responsibility, be guided carefully by the best empirical data relevant to their fields. It is often said that such focus improves efficiency, accountability and effectiveness, promotes transparency, supports cooperation and knowledge sharing among professionals and service users, and produces better intervention outcomes (Shlonsky & Stern, 2007).
Despite the growing awareness of evidence-based practice, it remains ineffectively implemented in healthcare practice. Several researchers (for example, Nevo & Slovin-Nevo, 2011; Epstein, 2009; Rubin, 2007; Norcross, Beutler & Levant, 2006; Wolpert et al, 2006; Pawson et al, 2003; McSherry, Simmons & Abbott, 2002) have suggested reasons for the ineffective implementation of evidence-based practice. Rubin (2007) conducted a review to identify the disadvantages of evidence-based practice in the literature. He concluded that the disadvantages of evidence-based practice include the following. Firstly, evidence-based practice is too mechanistic and not clear enough. Secondly, it disregards the errors of research and makes exaggerated statements about the research findings. Thirdly, the lack of resource limitations (including training, time and supervision) makes evidence-based practice difficult to implement. Finally, the research findings are outdated by the time they are published due to the nature of the scientific process. Additionally, Glasziou (2005) confirmed that the values and preferences of patients are often not considered in evidence-based practice, particularly, in deliberations with their healthcare providers.

Proponents of evidence-based practice contend that these limitations could be managed within the context of application of evidence-based practice by ways of adaptations and modifications. Melnyk et al (2012), and Melnyk & Newhouse (2014) have proposed an interpretative, encompassing opinion of evidence that includes clinical evidence and qualitative research, randomized controlled trials and equally empirical studies. Contrary to these opinions, however, Nevo & Slovin-Nevo (2011) emphasised that there are even more fundamental problems with evidence-based practice, which are impossible to manage by just modifying the hierarchy of evidence. The difficulties with evidence-based practice resulted from apparent misconceptions about the potential relation between evidence and practice, and therefore, could not simply be revised by such adjustments and modifications (Rubin, 2007; Nevo & Slovin-Nevo, 2011).

Critics (including Nevo & Slovin-Nevo, 2011; McSherry, 2007; and McSherry, Simmon & Abbot, 2002) have argued that activities and decision-making in a typical clinical setting does not occur in a prescriptive stepwise or linear manner. However, they suggest that this occurs in an integrated approach with the application of evidence-based practice being a complex process comprising of several systems and elements. This is mainly because the complexity of health and healthcare delivery makes it impossible for healthcare practitioners to make patient care decisions by merely following a series of steps. Decision-making in the clinical setting cannot occur in isolation but in the form of a complex system, with an input (for example, roles and responsibilities of the health practitioner) throughput (examples include, research awareness, application of knowledge, informed decision-making, evaluation) and an output, an empowered professional who is a critical thinker and doer (McSherry, 2007).

The difficulties with the implementation of evidence-based practice resulted in the emergence of the evidence-informed practice concept. Advocates of evidence-informed practice (Nevo & Slovin-Nevo, 2011; Rubin, 2007; McSherry, Simmons & Pearce 2002) have
argued that the term “evidence-informed” should be used instead of the term “evidence-based”. Nevertheless, McSherry (2007) stated that evidence-informed practice is an integration of the processes of evidence-based practice. Based on a whole systems approach, McSherry (2007) developed an evidence-informed practice model to facilitate the effective implementation of evidence into practice. According to McSherry (2007), the significance of the evidence-informed practice model is to consolidate the status of evidence-based practice and its associated models. Evidence-informed practice, unlike evidence-based practice, recognizes healthcare practitioners as critical thinkers who would provide an all-encompassing patient-centered treatment. Evidence-informed practice is the assimilation of professional judgment and research evidence regarding efficiency of interventions (McSherry, Simmons & Pearce 2002). It gives a comprehensive and rational basis for decision-making in patient care.

The benefits of including evidence-informed practice and/or evidence-based practice teaching in undergraduate health and social care curricula have been emphasized by researchers including, Menyk (2017), Bennett, Hoffman & Arkins (2011), Long et al (2011), Myles & Loughlin (2011), Salls et al (2009), Glasziou (2005), McSherry, Simmons & Abbott (2002), Frenk et al (2010), and Dawes et al (2005). Nurses and allied health professionals are significant members of the multi-disciplinary team, who act together with doctors to deliver safe person-centered healthcare. As stated by the Association of Schools of Allied Health Professions (ASAHP), Allied health practitioners involve about 60% of healthcare professionals, and they deliver services including the identification, prevention and evaluation of diseases; rehabilitation and health systems management, and dietary and nutrition services (ASAHP, 2016). A review of the literature reveals overabundance of research examining evidence-based practice interventions and the effects of such interventions. Examples include Young et al (2015), Ilic & Maloney (2014), Fritsche et al (2002), Coomarasamy, Taylor & Khan (2003), Maggio et al (2013), and Wong et al (2013). However, few studies have examined the effectiveness of evidence-informed practice educational interventions. Almost et al, (2013) developed an online evidence-informed practice educational intervention for nurses working in correctional facilities and evaluated the acceptability and feasibility of the intervention.

The purpose of this systematic review is to compare which of the two concepts facilitates the application of evidence into practice based on available findings from studies that examine the effectiveness of evidence-informed practice and/or evidence-based practice educational interventions. No specific systematic review exists that compares the effectiveness of evidence-informed practice versus evidence-based practice educational interventions on undergraduate health and social care students’ knowledge, understanding, attitude and behaviour towards the application of evidence into practice. A recent systematic review by Rohwer et al (2017) assessed the effectiveness of e-learning of evidence-based healthcare for increasing evidence-based health care competencies in healthcare professionals. In addition,

As universities and colleges make efforts to develop policies and practices that will effectively aid the application of evidence into practice and ultimately, improve healthcare students’ outcomes, it is essential that health practitioners, stakeholders and policy makers have access to evidence on the comparison of the effectiveness of evidence-informed practice versus evidence-based practice educational interventions in facilitating the application of evidence into practice. Boaz, Baeza & Fraser, (2011) revealed that the effective application of evidence into practice results in effectual patient outcomes. Additionally, it is expected that the results of this systematic review will help stakeholders and healthcare practitioners to be aware of the gaps in evidence, particularly, regarding evidence-informed practice educational interventions in order to make informed decision.

**Objectives**

The primary objective of this systematic review is to evaluate and synthesize literature on the effectiveness of evidence-informed practice versus evidence-based practice educational interventions for improving knowledge, attitudes, understanding and behaviour of undergraduate health and social care students towards the application of evidence into practice.

Specifically, this systematic review will answer the following questions:

1. Is there a difference between evidence-informed practice and evidence-based practice educational interventions?

2. Do participating in an evidence-informed practice versus evidence-based practice educational interventions facilitate the application of evidence into practice?

3. Do both evidence-informed practice and evidence-based practice educational interventions targeted at undergraduate health and social care students affect patient outcomes?

4. What factors affect the impact of evidence-informed practice and evidence-based practice educational interventions?
Existing reviews

Advocates of evidence-based practice have conducted several systematic reviews on evidence-based practice educational interventions and the effects of such interventions. Coomarasamy & Khan (2004), and Flores-Mateo & Argimon (2007) conducted systematic reviews on the impact of evidence-based practice educational interventions on postgraduate students. Furthermore, Dizon et al (2012) assessed the impact of teaching evidence-based practice to allied health practitioners. Moreover, other researchers have systematically reviewed the literature regarding strategies used in teaching evidence-based practice. These include evaluating the effectiveness of journal clubs (Ebbert et al, 2001; Harris et al, 2011) and methods used in teaching critical appraisal (Parkes et al, 2001; Taylor et al, 2000b, Norman & Shannon, 1998). In addition, methods used in assessing evidence-based practice education have been systematically reviewed (Walczak et al, 2010; Shaneyfelt et al, 2006). However, no specific systematic review has been conducted on the effectiveness of evidence-informed practice educational interventions. A systematic review by Yost (2015) concentrated on the effectiveness of knowledge translation on evidence-informed decision-making among nurses. In addition, a more recent systematic review by Rohwer et al (2017) focussed on assessing the effectiveness of e-learning of evidence-based health care on increasing evidence-based health care competencies in healthcare professionals. The proposed systematic review is significantly different from Yost’s (2015) and Rohwer et al’s (2017) study on three fronts. Firstly, the present study focusses on pre-registered undergraduate health and social care students as opposed to only nurses or health care professionals. Secondly, the current study assesses the effectiveness of evidence-informed practice educational interventions while as Rohwer et al’s (2017) and Yost’s (2015) study assessed the effectiveness of e-learning of evidence-based health care and the effectiveness of knowledge translation on evidence-informed decision-making, respectively. Thirdly, the proposed systematic review focuses on comparing the effectiveness of evidence-informed practice versus evidence-based practice educational interventions on undergraduate healthcare students’ knowledge, attitudes, understanding and behaviour towards the application of evidence into practice.

It is imperative that a comprehensive systematic review of the literature that particularly compares the effectiveness of evidence-informed practice versus evidence-based practice educational interventions on undergraduate health and social care students is done. This will aid in reviewing and analysing current evidence-informed practice and evidence-based practice approaches in higher education settings. This systematic review offers originality and is significant because it compares the effectiveness of evidence-informed practice versus evidence-based practice educational interventions. Furthermore, it determines whether or not these two concepts act together, or individually to facilitate the application of evidence into practice. In addition, the present systematic review will help to identify impacts of evidence-informed practice and evidence-based practice educational interventions as well as
gaps in the current literature. This is imperative because it will offer direction for practice, policy and future inquiry in this growing area of research and practice.

**Intervention**

This systematic review will consider studies that assess any formal evidence-informed practice and/or evidence-based practice educational interventions targeted at undergraduate health and social care students in higher education. Evidence-informed practice is broadly defined as involving the use of various types of research evidence when making decision about policy and practice. Evidence-informed practice considers: the best available research evidence, practitioner knowledge and experience, client preferences and values, and the clinical state and circumstances (Nevo & Slovin-Nevo, 2011). Evidence-based practice, on the other hand, is the “conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett et al, 1996 p.71). In this systematic review, evidence-informed educational intervention refers to any formal educational program that facilitates the application of, but not limited to the evidence-informed practice model described by McSherry (2007). Moreover, evidence-based practice educational intervention refers to any formal educational program that enhances the application of evidence-based practice models. An example of such a model could be the evidence-based practice model developed by Melnyk & Fineout-Overhalt (2014). The evidence-informed practice model, as developed by McSherry (2007) is a whole 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). The evidence-based practice model developed by Melnyk & Fineout-Overhalt (2014) comprises of a seven-step approach to the application of evidence into practice.

The mode of delivery of the educational program could be in the form of workshops, seminars, conferences, journal clubs, lectures (both face-to-face and online). The content, manner of delivery and length of the educational program may differ in each of the studies to be included as there is no standard evidence-informed practice/evidence-based practice educational program.

In this systematic review, evidence-informed practice and evidence-based practice interventions that are targeted towards health and social care postgraduate students or registered health and social care practitioners will be excluded. Comparison conditions will include educational interventions that do not advance the teaching of the principles and processes of evidence-informed practice and/or evidence-based practice in healthcare.
**Population**

Participants in this systematic review will include pre-registered undergraduate health and social care students in higher education from any geographical area. Studies that include registered health and social care practitioners and postgraduate students will be excluded from this review.

**Outcomes**

The key outcomes of this systematic review will include:

Studies must report at least one of the following outcomes:

a) Participants’ knowledge of, understanding of, attitudes and behaviour towards the application of evidence into practice as a result of participating in an evidence-informed practice and/or evidence-based practice educational program.

Measurement of the above outcomes may be conducted using standardized or unstandardized instruments. Specific measures will include, but not be limited to:

- The use of a standardized questionnaire to evaluate knowledge, attitude, understanding and behaviour towards the application of evidence into practice. Examples of such questionnaires include, but not limited to the Evidence-Based Practice Belief (EBPB) Scale and Evidence-Based Practice Implementation (EBPI) scales developed by Melynk & Fineout-Overholt (2011).

- Examples of unstandardized instruments include, but not limited to reports from participants and researcher administered measures.

a) Studies that measure the impact of evidence-informed practice and/or evidence-based practice educational programs on patient outcome will be included. Examples of this include user experience, length of hospital stay, nosocomial infections, patient and health practitioner satisfaction, mortality, and morbidity rates.

**Study designs**

This systematic review will integrate findings from both qualitative and quantitative studies. The quantitative component of the review will consider studies that use both experimental and epidemiological research designs such as randomized controlled trials, non-randomized controlled trials, quasi-experimental, before and after studies, prospective and retrospective cohort studies for inclusion.
The qualitative component of the review will consider descriptive epidemiological study designs including case series, individual case reports and descriptive cross sectional studies, focus groups, interviews and approaches such as ethnography, phenomenology, and grounded theory for inclusion.

References


Melnyk, B. (2017). The difference between what is known and what is done is lethal: Evidence-based practice is a key solution urgently needed. Worldviews on Evidence-Based Nursing, 14(1), 3-4.


Review authors

**Lead review author:** The lead author is the person who develops and co-ordinates the review team, discusses and assigns roles for individual members of the review team, liaises with the editorial base and takes responsibility for the on-going updates of the review.

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Roles and responsibilities

- Content and Systematic Review methodology: Ms Elizabeth Adjoa Kumah is a registered general nurse who has worked mainly in the critical care setting as a nurse supervisor and patient advocate. She has been actively engaged in teaching healthcare students in the clinical setting and serving as a mentor. She is currently pursuing a PhD Health program, with evidence-informed practice educational interventions as the area of research focus. She brings knowledge about the content both in terms of teaching healthcare students about the application of research evidence into practice and theoretically for improving knowledge of evidence-informed practice and how it enhances evidence-based practice skills, attitude and behaviour in the educational setting. Elizabeth is passionate about improving the standard of patient care and patient outcome, which she believes could be achieved by effective and consistent implementation of evidence-informed practice. She will also help with the methodological aspects of the systematic review. She has been involved as co-author on a Joanna Briggs Institute review.

- Content and Systematic review methods: Professor Robert McSherry will bring both methodological as well as content expertise relating to evidence-informed practice and the development of teaching programs to the team. His area of expertise is around evidence-informed practice, patient safety, quality and clinical governance using practice development. Practice development is about promoting person-centered care and approaches, which Rob has integrated effectively within both educational and research programs. He is the co-author of a book on systematic reviews and has over thirty years’ experience as a registered general nurse. Rob’s educational and professional expertise has been recognized and rewarded international and nationally. He was awarded the highly prestigious National Teaching Fellow award in the UK in 2011.

- Content and systematic review methods: Dr Josette Bettany-Saltikov will bring significant expertise of Systematic review methods and content to this systematic review, both in terms of knowledge about evidence-informed practice and knowledge about developing educational programs. She has taught systematic review methods to university students at all levels for over 15 years. She has also published a book on how to conduct a systematic review and has been involved in three Cochrane reviews, one of which she led. She has authored a number of systematic reviews on diverse topics published in other journals and has significant experience of developing educational programmes from her teaching experience as a university Senior lecturer for 23 years.

- Content and systematic review methods: Professor Sharon Hamilton will bring expertise in systematic reviewing. She is the director of the Teesside Centre for Evidence-Informed Practice: A Joanna Briggs Institute Centre of Excellence, and has conducted...
a number of qualitative and quantitative reviews. Sharon is a registered nurse and has research expertise in the evaluation of clinical interventions.

- **Information retrieval**: Mrs Julie Hogg brings Information retrieval expertise to the team. Julie is an Academic Librarian at Teesside University and will carry out a thorough and systematic search of the literature.

- **Statistical analysis**: Mrs Vicki Whittaker is a very experienced statistician with over 18 years of experience in teaching and advising students and academics on their research projects and clinical trials. She has been involved in data analysis and meta-analysis of numerous research projects and systematic reviews.

### Funding

This systematic review forms part of a PhD study funded by the University of Teesside Research Development Studentship. It is expected that this systematic review would be completed within one year

### Potential conflicts of interest

The review team declares no potential conflicts of interest.

### Preliminary timeframe

- Date you plan to submit a draft protocol: December, 2017
- Date you plan to submit a draft review: November, 2018