Advancing Evidence-Based Practice through Nurse Education

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Abstract
The concept of evidence-based practice is very relevant in the current societal and healthcare climate. Great ‘lip-service’ is continually paid to the notion of evidence-based practice and many would claim that it is already the reality (McKenna, Ashton and Keeney, 2004). However, this claim does not stand up to scrutiny when examined in the philosophy and context of what evidence-based practice is. Such an anomaly clearly has implications for nurse education and in particular the way in which research is presented and delivered to students. With this in mind, two undergraduate nursing research modules were modified to embed a culture of evidence-based practice through the teaching and delivery of module content. Teaching and assessment were structured to make the principles and process of evidence-based practice meaningful for students. The impact of this initiative was formally evaluated using a quantitative post-test only design. The aim of this initiative was to engender a culture of evidence-based practice at undergraduate level and beyond through specifically tailored teaching and assessment methods implemented within the academy. It also set out to elicit the attitudes and beliefs, knowledge level and utilization of evidence-based practice of undergraduate student nurses following their undertaking of a research module embedded in evidence-based practice. Data were collected using the Evidence Based Practice Beliefs Scale© and Evidence Based Practice Implementation Scale©. A sample comprising 217 undergraduate nursing students was utilised, giving a response rate of 66%. Descriptive and inferential statistics were employed to analyse the data. Key findings demonstrate a positive predisposition among students towards evidence-based practice. Implementation of evidence-based practice scored less favourably, however, and possible explanations will be proffered for this. The importance of embedding evidence-based practice in nurse education programmes cannot be underestimated if evidence based practice and its positive patient outcomes are to be realised in healthcare settings.

Keywords
Evidence-Based Practice, Nurse Education, Teaching and Learning, Patient Outcomes, Research.

Background
In order to deliver clinically effective health care, it is essential to engender a culture of evidence-based practice among healthcare practitioners (Fineout-Overholt, Melnyk and Schultz 2005; McInnes et al 2001). In so doing, the potential to deliver improved
patient outcomes can be realised (Craig and Smyth, 2007). Many healthcare practitioners believe that their practice is evidence-based, when in fact often what is meant by this is that the healthcare policies that they adhere to are underpinned by research findings. Gournay (2001), Pearson (2003) and McKenna et al (2004) identified that there is little proof of evidence-based practices among nurses. Pravikoff, Pierce and Tanner (2005) reinforce this point in their study which demonstrated that nurses do not always possess adequate knowledge and skills necessary to find the evidence on which to base their practice. The application in practice of policies that are based on research findings alone does not necessarily guarantee that the care provided is evidence-based. Such beliefs can arise from a lack of understanding of what evidence-based practice actually is, coupled with the fact that it is often considered synonymous with research utilisation (McKenna, Cutchilffe and McKenna, 1999; Goode, 2003; Foster, 2004). This is a misnomer that needs to be addressed.

Melnyk and Fineout-Overholt (2005, p.6) define evidence-based practice as ‘a problem-solving approach to clinical practice that integrates:

- a systematic search for and critical appraisal of the most relevant evidence to answer a burning clinical question,
- one’s own clinical expertise,
- patient preferences and values.’

Evidence-based practice is a problem solving approach to clinical practice that emphasises the use of best evidence in combination with the clinician’s experience as well as patient preferences and values to make the decision about care and treatment. While the utilisation of research findings plays a valuable role in the process of evidence-based practice, evidence-based practice is far greater and infinitely more patient-centred than research utilisation alone. The above definition clearly implies that the process itself places immense value on the experience and expertise of the practitioner in addition to the patients’ own preferences. The main aim of evidence-based practice is to optimise outcomes for patients and clients by selecting interventions that have the greatest chance of success (Melnyk and Fineout-Overholt, 2005).
The Role of Education in Evidence-Based Practice

Fostering a culture of evidence-based practice in nurses will enable them to influence policy and potentially transform healthcare for future generations (Killeen and Barnfather, 2005). In order for such a culture to prevail, it is imperative that appropriate instruction is instigated as early as possible in the career of the nurse and, ideally, at pre-registration level nurse education. Teaching concepts of evidence-based practice to student nurses to enable them to recognise and deliver high quality care that is evidence based is a key outcome of all nurse education programmes (Nursing and Midwifery Council, 2004; An Bord Altranais, 2005). The Nursing and Midwifery Council, UK (2004, p.5) requires nurses upon qualification to engage in practice that is ‘based on the best available evidence’ to ensure safe nursing practice. Similarly, the Irish Nursing Board (An Bord Altranais) requires that, ‘students develop domains of competence and become safe, caring, competent decision-makers, willing to accept personal and professional accountability for evidence-based nursing care.’ (An Bord Altranais, 2005, p.43). It could be suggested that the integration of the principles, process and skills of evidence-based practice into the nursing curriculum has the potential to enhance research dissemination and utilisation, promote evidence based nursing care, contribute to on-going professional development and foster a culture of life-long learning.

Educational Preparation

All undergraduate and postgraduate nurse education programmes carry research modules endeavouring to assist nurses in the development of skills to read, critique, understand and undertake research. Despite this, nurses continue to experience difficulty in translating theory gained in academic research modules into practice at the bedside (Thompson, 2006; Tarrier, Haddock and Barrowclough 1999; Grant and Mills, 2000; Milne, Westerman and Hanner, 2002). Instilling and fostering research appreciation among nurses appears to be a lofty ideal as many nurses do not appear to feel comfortable or competent in carrying out the basic principles of research, as was demonstrated by McKenna, Ashton and Keeney (2004). However, if this ideal is not operationalised it will continue to serve as a deterrent to undertaking research or worse still, its appropriate application in practice (Ferguson and Day, 2005).
The ability to develop clinical practice guidelines based on research is also essential to the development of evidence-based nursing (Fineout-Overholt et al. 2005; Killeen and Barnfather, 2005). Any programme that espouses evidence-based practice should endeavour to equip students with the knowledge and skills necessary to facilitate their evolution as active discerning consumers of research and practitioners of evidence-based practice (Thompson, 2006; Burns and Foley, 2005; Ciliska, 2005; Fineout-Overholt et al. 2005; Coomarasamy and Khan, 2004). Studies reviewed advocate the use of evidence-based practice in the curriculum (Thompson, 2006; Bradley et al. 2005; Burke et al. 2005, Burns and Foley, 2005; Ciliska, 2005; Coomarasamy and Khan, 2004). However, the results are unclear as to how best to integrate evidence-based practice into the curriculum and what teaching strategies will best achieve this integration (Bradley et al. 2005; Coomarasamy and Khan, 2004).

Evidence-based practice clearly has implications for nurse education and in particular the way in which research is presented and delivered to students. As nurse educators, the importance of introducing evidence-based practice at curricular level has emerged as an immediate priority. To this end, it was decided that two undergraduate research modules which are co-ordinated and delivered by the researchers would be modified to embed a culture of evidence-based practice through the teaching and delivery of module content. Teaching and assessment strategies structured around the process of evidence-based practice were introduced in an attempt to make the principles and process of evidence-based practice meaningful for students. Teaching strategies such as structured tutorials and the use of a virtual learning environment to facilitate online discussion between lecturers and students provided a rich teaching and learning experience. Collaboration with the subject librarian proved invaluable in terms of enhancing students’ skills of strategically accessing and searching databases and other literature sources. The continuous assessment element of the module comprised an evidence-based practice project. This project was designed in keeping with the process of evidence-based practice and on-going support was provided by the lecturers to students throughout the module as they developed their projects. The above endeavours were then formally evaluated as a research project utilising the Evidence Based Practice Beliefs Scale© (EBPB) and Evidence Based Practice Implementation Scale© (EBPI).
Aim of the Study
The overall aim of the project was to foster a culture of evidence-based practice at undergraduate level and beyond through specifically tailored teaching and assessment methods implemented within the academy. The study also set out to ascertain the attitudes and beliefs, knowledge level and utilization of evidence-based practice of undergraduate student nurses following their undertaking of a research module embedded in evidence-based practice.

Research Design
The study design employed was a descriptive exploratory approach using non-probability convenience sampling. It involved the distribution of two separate questionnaires (Evidence Based Practice Beliefs Scale© (EBPB) and Evidence Based Practice Implementation Scale© (EBPI)). These questionnaires were developed by Melnyk and Fineout-Overholt (of the Centre for the Advancement of Evidence-Based Practice in Arizona State University). Permission was kindly granted to use the questionnaires by the developers.

Sample
The sampling approach used for this study, was the non-probability convenience sampling method. Using this method, subjects are chosen in a non-random way with those who are most accessible and available on the day of data collection eligible to participate. However, the risk of bias is increased and, in some cases, it can limit the generalisability of the research findings (LoBiondo-Wood and Haber, 2006), as the sample may not be entirely representative of the target population. The sampling frame comprised a total of 217 undergraduate students currently pursuing degree level studies in nursing. The sample comprised students accessible in college on the day that data were collected.

Data Collection
Data collection involved the distribution of two separate questionnaires (Evidence Based Practice Beliefs Scale© and Evidence Based Practice Implementation Scale©) upon completion of the modified module. The questionnaires were developed by
Melnyk and Fineout-Overholt (of the Centre for the Advancement of Evidence-Based Practice in Arizona State University) and their reliability and validity have been demonstrated revealing cronbach alpha coefficients ranging from 0.9 to 0.96 and factor analysis coefficients ranging from 0.6 to 0.8, respectively (Melnyk and Fineout-Overholt, personal communication, 12th April 2007). In the study two 5-point Likert-type questionnaires sought to gain primary data relating to the attitudes and beliefs, knowledge level and utilization of evidence-based practice of undergraduate students who have undertaken a research module that had been modified to embed the principles and process of evidence-based practice. On the EBP Beliefs Scale© participants were asked to respond to each of the sixteen items, for example, ‘I believe that EBP results in the best clinical care for patients’, ‘I believe that the care I deliver is evidence-based’. On the EBP Implementation Scale© participants were asked to respond to each of the eighteen items on a 5-point Likert-type scale regarding the degree to which they implemented evidence-based practice within the previous eight week period, for example ‘I used evidence to change my clinical practice’, ‘I critically appraised evidence from a research study’. The format on both scales required participants to circle their selected statement options. The questionnaires were piloted in advance of general distribution to identify any potential ambiguities, language difficulties or other issues that may have needed modification in advance of the main study.

Data Analysis
Both descriptive and inferential statistics were used to summarise and interpret the findings of this study using the software package SPSS for Windows (Version 12.). Descriptive statistics described the characteristics of the sample. Correlations between the individual items on each scale in addition to correlations between the two scales were also be explored. The level of significance was set at 0.05 throughout ($p = 0.05$), accepting a 5% chance that the observed relationships occurred by chance.

Ethical Considerations
Permission to undertake the study was granted by both the School of Nursing Research and Teaching Ethics Committee and the University Ethics Committee, respectively. The research involved students in a dependant relationship to the
investigators as the investigators were the module coordinators of the two modules with eligible participants and therefore had a role in the assessment of the modules. A clear explanation of the proposed study was provided both verbally and in writing. Participants were advised of their right to withdraw from the project anytime in advance of submitting a completed questionnaire. Submission of a completed questionnaire was taken as informed consent. Participants were clearly advised that their participation would not have an adverse affect on their assessment or exam grades. Participants were also advised that only the investigators would have access to the data and that their involvement would be anonymous and data submitted would be treated in the strictest confidence.

Findings
Of the total sampling frame comprising 217 participants, 145 participated, representing a reasonable response rate of 66%. Quantitative data from the questionnaires (Evidence Based Practice Beliefs Scale© (EBPB) and Evidence Based Practice Implementation Scale© (EBPI)) generated very interesting statistics on aspects relating to evidence-based practice beliefs, attitudes and values and to a lesser degree evidence-based practice implementation. The potential summative scores on the EBP Beliefs Scale © ranged from 5 to 80. The mean summative score achieved by the study sample on this scale was 56.47 (SD 7.71). The potential summative scores on the EBP Implementation Scale © ranged from 0 to 72. The mean summative score achieved by the study sample on this scale was 18.21 (SD 9.32). It was noteworthy to uncover a positive correlation (Pearson’s $r$) between the two scales ($r = .347$), indicating that the greater the belief in evidence-based practice the greater the likelihood of implementation of evidence-based practice. In relation to direct patient care, participants strongly agreed that evidence-based practice results in the best clinical care for patients ($M = 4.54$ $SD = 0.624$). However, when participants were asked whether they believed that their care was evidence-based their responses tended to cluster around the neutral value on the scale. These findings are reflected in the EBP Implementation Scale ©, suggesting that evidence-based practice implementation is an area that requires substantial attention.
Discussion of Findings

Although the response rate could have been higher, at 66% of the sampling frame, it still enabled meaningful deductions to be derived from the data in relation to evidence-based practice beliefs and evidence-based practice implementation. The mean summative score of 56.47 (SD 7.71) on the EBP Beliefs Scale © demonstrates a very positive predisposition among participants towards evidence-based practice. This bodes well for future patient care provided that this predisposition translates into actual practice. Ensuring that students, who are the practitioners of the future, utilize an evidence-based practice approach to underpin care is essential. However, ‘therein lies the rub’. In light of the findings from the EBP Implementation Scale © (M 18.21 SD 9.32), indicating that implementation of evidence-based practice amongst the participants was, in fact, poor, this continues to be a challenge. There are a number of possible explanations for this low score. First and foremost students that participated in the study had spent the previous five weeks in college (at the start of the academic year) undertaking theoretical instruction as part of their nursing programme. As a consequence their most recent clinical exposure was potentially anything up to six months prior to their involvement in the study. In addition, this practice placement occurred in advance of any formal instruction on the principles and process of evidence-based practice. Furthermore as students they may not feel sufficiently empowered to influence or drive change in practice given their level of experience and confidence. The above factors need to taken into consideration when planning similar studies in future. When both scales were examined more closely a positive correlation (Pearson’s r) was demonstrated between the two scales (r = .347). This clearly illustrates that the higher one’s beliefs regarding evidence-based practice are, the more likely it is that one will implement evidence-based practice. Changing the mindset through education should therefore translate positive beliefs into best practice thus improving patient outcomes. The findings yielded by the EBP Beliefs Scale© demonstrate that this positive attitude has been achieved in this sample of students. Subsequent possible studies on this particular sample could illustrate whether this positive attitude has translated into actual implementation of evidence-based practice in patient care settings.

In relation to direct patient care, participants strongly agreed that evidence-based practice results in the best clinical care for patients. This is in keeping with the
mean summative score achieved on the EBP Beliefs Scale further reiterating the positive attitude towards evidence-based practice. However, when asked whether they believed that their care was evidence-based the responses tended to cluster around the neutral value on the scale indicating their reluctance to either ‘strongly agree’ or ‘strongly disagree’ on this item. While the response to this single item provides no conclusive answer, when taken in the context of the summative score for the EBP Implementation Scale it could suggest that practice in this sample may not be evidence based.

Limitations

While a single site study has obvious limitations in relation to the generalisability of findings the study did produce some interesting and reassuring data on the willingness and desire of students to engage in evidence-based practice. The research design originally intended for use in this study was a pre-test / post-test quasi-experimental approach. This would have been more robust that the non-experimental post-test only design employed. However time constraints relating to ethics approval resulted in an overall delay to the commencement of the study by which time the module instruction had already commenced. Therefore it was deemed more appropriate in this instance to employ post-test only design.

Conclusion

Overall the findings reinforce the current evidence that advocates the integration of evidence-based practice into nursing curricula. If we change the beliefs and attitudes of nursing students through our curriculum we are presented with a very real opportunity to influence practice on a wider scale. Short, Kitchner and Curran (2004) and Pearson, Field and Jordan (2007) predicted that nursing teams who collaboratively adopt a proactive role in the development and fostering of evidence-based practices will be the catalyst for optimal patient care. Organisations, both educational and healthcare, must encourage philosophies, which are open to enquiry, change and development. Practitioners’ skill and knowledge base must be fostered and enhanced through ongoing education, training and support if optimum patient outcomes are to be maximised. Such strategies will result in a safer, more empowering organisation for patients and staff, which value patient-centred, cost
effective care as fundamental. Clearly, such paradigm shifts carry distinct implications for the education and educators of nurses and require implementation from undergraduate level. It is anticipated that this overall initiative will enhance research dissemination and utilisation, promote evidence-based nursing care, contribute to ongoing professional development and foster a culture of life-long learning. Ultimately it is hoped that this approach will contribute to the development of conscientious, competent practitioners who are prepared to accept personal and professional accountability for evidence-based nursing practice.

Bibliography


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