

# An Analysis of Evidence-Based Practice Curriculum Integration in Australian Undergraduate Nursing Programs

Gulzar Malik, Lisa McKenna, and Debra Griffiths

**Abstract—** Evidence-based practice (EBP) remains a relatively new concept to nursing, creating many challenges in relation to curriculum evaluation. Most of the available literature on EBP focuses to a great extent on clinical practice. There is limited literature available addressing the incorporation of EBP into nursing curricula, particularly at the undergraduate level. Existing literature highlights discrepancies in how EBP is implemented into nursing curricula, and reveals ambiguity in defining the concepts of EBP, appropriate place in the course in which to initiate EBP skills training, and in merging EBP with the research process. In the Australian context and internationally, EBP is variably addressed within undergraduate nursing education.

**Aim:** This paper reports findings of an analysis of curriculum outlines from tertiary education providers exploring how EBP is incorporated into Bachelor of Nursing (BN) programs in Australia.

**Method:** Curriculum outlines of BN programs were extracted through public websites. Each subject or unit of study was analysed in relation to units offered which addressed research and EBP, either in isolation or combined. Content analysis informed by Chambers and Chiang (2012) was performed to analyse the data.

**Results:** In Australia, 32 universities and three colleges offer BN programs. Results revealed that of these, three did not appear to offer specific units related to research or EBP. Twenty five combined units on research and EBP with major emphasis on research concepts and methodologies. In addition, 30 education providers integrated EBP related objectives throughout their curricula ranging between one to twelve units of study. Variations among institutions were found in terms of years and semesters in which research and EBP units were introduced.

**Implications:** It is paramount that EBP is considered an integral part of curricula and be embedded in all units of study.

**Keywords-** Evidence-based practice; nursing curricula; undergraduate curricula; research; EBP integration

## I. INTRODUCTION

Evidence-based practice (EBP) has become recognised as the gold standard of care delivery, prompting health care organisations to invest infrastructure for its implementation. Recently, there has been an explosion of knowledge and evidence to guide clinical practice, however studies suggest implementation of evidence-based care by health professionals is typically very slow across the globe [1], [2], [3], [4]. Multiple factors reportedly contribute to slow paradigm shift, particularly in nursing including lack of time, poor knowledge and skills, lack of mentorship and administrative support, limited resources within organisations and rigid organisational culture [5], [6].

Integrating EBP into undergraduate nursing education and preparing future nurses to embrace EBP into clinical practice becomes paramount in today's complex and evolving healthcare environment [7]. The role that EBP plays in the practical lives of nursing students will depend on the degree to which it is promoted by academics, the extent to which it is incorporated in course objectives, content, assessments and its application to the clinical setting [8].

The literature highlights issues that need further discussion, such as how academics can ensure the curriculum embeds principles of EBP, and challenges for nurse educators and nursing students towards EBP engagement [9], [10]. There is limited literature available addressing incorporation of EBP into nursing curricula, particularly at undergraduate level [9], [11]. There is also a lack of clarity about EBP content and process; frequently it is blurred with the research process and outcomes. This often results in continuance of traditional nursing research courses in the hope of preparing EBP practitioners [12].

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Ambiguity also exists in relation to the appropriate year in which the EBP knowledge and skills should be initiated [9]. Available literature highlights that some nursing schools implement EBP skills in the first year of the undergraduate course as a standalone activity, few apply it in clinical rotations and some introduce the concept and application in the final year [13], [14].

The Australian Safety and Quality Framework for HealthCare mandates “a vision for safe and high-quality care for all Australians” and stipulates three core principles of care comprising ‘consumer centred’, ‘driven by information’ and ‘organised for safety’. In order to comply with acceptable standards, health professionals are constantly required to be using up-to-date knowledge and evidence to guide their decisions, hence improving patient care experiences [15]. In response to achieving the mandate for safe, person centred and evidence-based care, the Australian Nursing and Midwifery Accreditation Council (ANMAC)[16] recently revised accreditation standards for undergraduate programs in Australia. Within the revised standards, education providers offering BN program must ensure program content addresses research appreciation and translation. In addition, research and evidence-based inquiry principles should be equally embedded in program content and delivery.

It is expected that in reference to the ANMAC accreditation standards, all undergraduate education providers incorporate research and EBP concepts in program content and delivery. To date, limited evidence is available addressing EBP in nursing education across Australian universities. This may be a result of the fact that few nursing education programs have yet to formally include EBP in their curriculum, and evaluation is either not generated or has not yet been published. Therefore, the current analysis seeks to provide insight into how EBP has been addressed into undergraduate nursing curricula within higher education in Australia.

## II. METHOD

The paper focuses on findings from an analysis of curriculum outlines of Bachelor of Nursing (BN) programs offered by tertiary education institutions in Australia. Curriculum outlines of BN programs were extracted through education providers’ publically available websites. Each unit of study was reviewed in relation to units offered on research and EBP as combined or separate units. The review also explored integration of EBP into various units of study within the undergraduate program.

Text analysis required an approach which condensed the larger text into a small amount of data defused into codes and categories; thus provide the context to the findings. In the literature, content analysis is referred

to “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use” [17: 18]. In qualitative research, content analysis usually involves a process of labelling, organising and interpreting data into a set of codes, concepts, themes or categories [17]. An inductive approach of content analysis informed by Chambers and Chiang [18] was executed to analyse data. Curriculum outlines were collected and organised into a text. In order to place the content appropriately, the text was further organised into themes such as units on research, units on EBP, EBP integration into curricula, and EBP/ Research unit placement. Content analysis was accomplished through use of coding and categories to produce meaningful concepts. Codes were developed by reading each sentence of unit descriptors and headings were written in the margin to describe all aspects of the content. The codes were collected into the coding sheet and categories were inductively generated at this stage.

The aim of categorising is to organise and to reduce the number of concepts into manageable and meaningful concepts [19]. The emerging categories were compared for similarities, disparities and for belongingness which are presented as ‘sub-categories’ in the findings section. The sub-categories were further grouped under higher order ‘categories.’ In addition, frequencies of codes representing each category were also determined by identifying phrases and words appearing most frequently [18]. Trustworthiness of findings was achieved in two ways. The researcher coded the data a few times and found approximately the same result [20]. Secondly, dialogue between the co-researchers about the findings and the recognition of the findings indicated credibility and conformability.

## III. FINDINGS

In Australia, 32 universities and three colleges offer BN programs. These programs prepare graduates to meet the standards required to register as registered nurses in accordance with the national competency standards for registered nurses. Findings are presented into themes comprised of units on research and EBP (Table 1), research unit learning outcomes (Table 2), EBP unit learning outcomes (Table 3), combined unit learning outcomes (Table 4), EBP integration into curricula (Table 5) and unit placement in the program (Table 6).

**TABLE 1: UNITS ON RESEARCH AND EBP**

	No Units on EBP or Research	Unit on Research	Unit on EBP	Combine units on Research and EBP	EBP integration into various units of study
No of academic institutions (N=35)	03	06	02	25	30

From the above analysis, three (8.5%) education providers did not appear to include any units specifically related to research and EBP in their course content. Of these, six (17%) offered units on research and two (5.7%) offered a separate unit on EBP. In addition, 25 (71%) offered combined units outlining the objectives related to research methodologies and evidence-based practice in context of healthcare. Amongst all, 30 (85.7%) education providers had integrated EBP related objectives into their theoretical and clinical units of study.

**TABLE II: RESEARCH UNIT LEARNING OUTCOMES**

Ranking	Categories	Code-freq	%	Sub-categories
1	Research process	26	59.0	Steps in conducting research; ethics; dissemination of research; translation of research
2	Research designs and methodologies	09	20.4	Quant/ Qual research designs; statistics
3	Research significance	09	20.4	Research to practice

(Total codes=44)

Table II indicated that, amongst all education providers six (17%) appeared to offer separate units on research focusing on the significance of research to practice, process of conducting research, research designs, data collection methods, ethical issues, and critique of research studies. In addition, basic descriptive and inferential statistics were covered from clinicians' perspectives.

**TABLE III: EBP UNIT LEARNING OUTCOMES**

Ranking	Categories	Code-freq	%	Sub-categories
1	Evidence informing practice	06	50.0	Use of evidence in practice; relationship between evidence and practice
2	EBP Process	06	50	Structured approach to question practice; seek evidence; critique published literature; change practice

(Total codes=12)

Results from table III revealed that amongst many, only two (5.7%) institutions offered stand-alone evidence-based practice units emphasising spirit of inquiry where students were encouraged to use structured approaches to question current practices. EBP processes and concepts were also explored in relation to evidence informing practice. This unit further invited students to critique published literature and evidence-based practice guidelines. Furthermore, students were expected to explore the relationship between research, evidence and practice in the context of health care.

**TABLE IV: COMBINED UNIT LEARNING OUTCOMES**

Ranking	Categories	Code-freq	%	Sub-categories
1	Research Process	56	45.9	Use of evidence in practice; relationship between evidence and practice
2	Research/ Evidence in healthcare	26	21.3	Structured approach to question practice; seek evidence; critique published literature; change practice
3	Research & EBP	20	16.3	Relationship between research and EBP; EBP concept and process; research principles; barriers and facilitators to EBP and research
4	EBP in Nursing	09	7.3	Application of EBP in nursing practice; EBP and patient safety
5	Knowledge Acquisition	06	4.9	Knowledge generation; forms of knowledge
6	Others	05	4.1	Communication skills; foundations of inquiry based learning

(Total codes=122)

Overall, 25 (71%) education providers appeared to offer combined units on research and EBP with major emphasis on research concepts and methodologies as presented in Table IV. Students were introduced to the research process, qualitative and quantitative research design, ethical issues around undertaking research, managing and analysing data, and application of research into practice and role of nurse as researcher. However, students were briefly familiarised with the concept of EBP, process and its application in nursing and health care. Of the 25, 10 (40%) had 'evidence' in the title, for example, evidence-based practice in nursing or 'evidence-informed health care'; six (24%) had research in the title such as 'research nursing'; five (20%) had both research and evidence in the title, e.g. 'research and evidence-based health' or 'health research and evidence based nursing care'. However, one (4%) provider had introduced research concepts, methodologies and evidence-based practice concepts through integration into the theoretical unit covering a range of topics such as health and diseases in population.

**TABLE V: EBP INTEGRATION INTO CURRICULA LEARNING OUTCOMES**

Ranking	Categories	Code-freq	%	Sub-categories
1	Evidence-based nursing practice	81	47.3	Provision of evidence-based nursing care; evidence-based nursing interventions; knowledge and skills in EBP
2	Evidence-informed practice	56	32.7	Apply and evaluate evidence; clinical decision making using evidence-based framework

3	Evidence-based approach to nursing process	15	8.7	Assess, plan, implement and evaluate care; care plan based on evidence; knowledge and skills in nursing process
4	Research contribution to healthcare	15	8.7	Research application to practice; significance of research

(Total codes=171)

In regards to EBP integration into the BN program curricula, above analysis showed that 30 (85.7%) education providers had embedded EBP throughout their curricula ranging between one to twelve units of study evidencing EBP themes and principles. Through integration into theoretical and clinical units, education providers aimed to facilitate students’ understanding of knowledge and skills in evidence appreciation and translation into clinical process. Data analysis revealed that four providers had introduced content and process of EBP and database searching skills at first year level and continued to advance students’ knowledge and skills through integration into a majority of their units of study. However, the remaining 29 education providers had incorporated EBP skills and knowledge in a few units of study.

With EBP integration into various units of study, academic institutions intended to prepare students in clinical decision making informed by up-to-date evidence. Students were provided with opportunities to find and evaluate relevant evidence from literature to support EBP during their theoretical assignments and clinical placements in a range of health care settings such as acute care, aged care, mental health and community health. Students were further encouraged to apply evidence-based approaches to nursing process within the context of acute and chronic illnesses. This further inculcates values, knowledge and skills required to inform their practice based on evidence as registered nurses.

**TABLE VI: RESEARCH / EBP UNITS PLACEMENTS**

Unit Placement (year, semester)	No of Institutions	%
1, 1	01	2.8
1, 2	12	34.2
2, 1	07	20
2, 2	07	20
3, 1	07	20
3, 2	01	2.8

Table VI highlighted variations among institutions in terms of years and semesters in which research and EBP units were introduced. Of the 35, 33 education providers appeared to offer research and EBP units between first year semester two and third year semester one of their programs of study. Analysis revealed that one provider appeared to offer an EBP unit in the first semester of the BN and a

similar number seemed to offer it in the final semester of their program.

#### IV. DISCUSSION

This curricula analysis has outlined the extent to which EBP is integrated into undergraduate programs across the Australian higher education sector. Overall, the analysis revealed that pre-registration degree programs endeavor to prepare undergraduate students with knowledge and essential competencies in EBP either by offering stand-alone units on EBP or through integration into the program units. To date, no such analysis is presented in the literature exploring EBP into undergraduate programs of study in Australia.

Undergraduate students and nurses are required to adhere to national competency standards during their professional careers. These standards mandate the use of research and EBP, promoting quality outcomes in patient care [21]. Hence, it becomes essential for education providers to instill essential knowledge and competencies required by nurses to embrace EBP during clinical rotations and practice environments. The current analysis demonstrated that three BN degree providers in Australia did not appear to include specific units on research and EBP in their undergraduate curricula. Several studies have reported findings indicating nurses are insufficiently prepared to embrace EBP into practice settings and identified lack of educational preparation as a significant contributing factor [9], [22], [23]. Introducing EBP as a core concept of nursing becomes a framework which guides students’ practice and prepares them for upcoming care related challenges. As newly graduated nurses are challenged with today’s complex and ever-changing healthcare environments, grounding in research and EBP embedded programs ensure future leaders contribute towards safe and evidence-based health care [11].

The findings showed that a majority of BN curricula focused on exposing students to research methodologies, critique of research literature and role of nurses as researcher. It is uncommon that baccalaureate-prepared nurses have been successful in attracting research grants, yet undergraduate programs continue to focus on research and teach basic research methods and statistics; preparing students to be ‘evidence-generators’ rather than producing graduates who will be good ‘research evidence-users’ [24]. Undergraduate education ideally should make learners aware of the research process and its application to health care. It has been argued that teaching research methodologies and critiquing research papers inadequately prepare graduates to support evidence-based nursing care [25]. Application of research evidence informing clinical decision making in consideration of patient preferences,

available resources and the clinician's expertise should be desired outcomes.

Evidence-based practice specific content, process and relationships between research and EBP were introduced in two of the courses as stand-alone subjects. Being able to use research within EBP processes, requires skills development in formulating clinical questions, finding sources of evidence, critical appraisal of evidence, and application of findings into clinical practice (develop plans of care). This arguably, would not be achieved through one course, but with a fully integrated course across all years through theoretical and clinical subjects [22]. Teaching EBP should not be restricted to a single isolated unit where students are exposed to EBP processes and content without any link to other theoretical and clinical units, perhaps a better approach is embedding it into the academic programs' overall curricula in such a fashion that it becomes part of the culture [24]. Learners should be exposed to the language of EBP in their everyday practice and not be considered merely an academic exercise but equally relevant to their clinical practice. Coomarasamy and Khan [26] in a systematic review of 23 studies, found that stand-alone classroom teaching of EBP or critical appraisal skills courses improved knowledge, but clinically integrated teaching enhanced skills, attitudes and behaviours among students.

Although EBP was integrated into various units ranging from one to 12 units of study, consideration must be devoted towards integration into the entire program as supported by literature [10], [27], [28]. Integration of EBP concepts and process across the whole curriculum will more likely produce nurses who can deliver evidence-based nursing care and this is the direction education providers should move towards [7]. Chaboyer et al. [29] reported findings from a benchmarking project in developing a new undergraduate nursing curriculum in one Australian university. The project focused on embedding evidence-based nursing (EBN) into the nursing curriculum and identifying innovative approaches. They found that the way in which a school/ academics promoted research as a fundamental educational objective influenced both staff and students' abilities to base their practice on evidence. A significant finding from this project highlighted that EBN was not merely a focus for the nursing program but there was overall support for its implementation. The philosophy and structure of a school can either help or hinder development of a culture that supports a move towards EBP.

Various academics have voiced difficulty in integrating EBP content into already fully loaded curricula [30]. If this is the case, consideration should be devoted towards modifying research courses. Brancato [12] reported positive outcomes from revising a BSN undergraduate curriculum and integrated EBP into a

clinical practicum. The revision encouraged students to learn required knowledge and skills associated with use of EBP and develop confidence in incorporating EBP into their daily practices. Linking theory to practice where students were expected to demonstrate EBP in the clinical setting would not require major curricula changes. A study by Brown, Kim, Stichler and Fields [31] identified clinically integrated EBP courses enhanced students' confidence in the use of EBP at the time and in future. Active partnerships between academic and clinical institutions were recommended.

Results showed variations between institutions in terms of when EBP was introduced in course content. There is general consensus that addition of a course entirely devoted to EBP emphasising academic literacy, and competencies associated with EBP should be introduced early in the program so that students have opportunities to implement it throughout the program [32]. Positions are ambiguous on the appropriate year and semester in which research and EBP concepts should be introduced. Callister et al. [14] reported that students introduced to EBP concepts earlier in their degree demonstrated better preparation in finding answers to problems during their clinical rotations. Similarly, they reported increased motivation towards EBP/research, and demonstrated greater understanding of its application. Some degree programs have placed research and EBP at the beginning of courses, others later arguing that it becomes challenging for students to develop an understanding of EBP when introduced early [11]. EBP is relatively new for nursing and due to lack of evidence concerning the appropriate year and semester for its introduction, only examples of how and where EBP was placed in the curriculum is addressed.

## V. LIMITATIONS

Limitations of this analysis relate mainly to the lack of information provided in unit outlines, which made it difficult to determine the true breadth of EBP content and foreseeable integration into various units. However; it has provided insight into content and delivery of research and EBP units across undergraduate programs in Australia.

## VI. IMPLICATIONS FOR NURSING EDUCATION

Preparation of future nurses to be engaged in EBP is paramount to ensure safe, quality and effective patient care outcomes. To achieve this, undergraduate curricula must reflect integration of EBP across all levels and courses. Advancing expectations of students' knowledge and skills at various levels, development of assignments reflecting those expectations and innovative teaching strategies

would facilitate students' engagement with EBP. Identified variations among universities' curricula have implications for curriculum revisions. Embedding EBP into curricula has been widely recommended; however only a couple of examples reflect its integration into curricula. Therefore, future research should investigate ways to better integrate EBP into undergraduate nursing education.

*Linking Evidence into Action*

Inclusion of EBP knowledge and skills in the undergraduate program is essential to preparing future EBP practitioners.

There are reported benefits of introducing EBP concepts early in the program.

The content covered in units offering research/EBP concepts require revision considering practice outcomes.

EBP concepts and process should be threaded through the entire curricula, providing opportunity for students to link theory to practice.

VII. CONCLUSION

In line with goals and vision of the Australian Safety and Quality Framework for Health care, it is essential that nursing curricula embed EBP knowledge and competencies throughout academic and clinical experiences. This analysis has highlighted the need to review undergraduate curricula for inclusion of units outlining EBP and research education. Fostering a culture of EBP and preparing future workforce in delivering evidence-based care is a mandatory nursing standard towards which all higher education institutions and health care providers should aim.

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