EXPERIENCE EXCHANGE

Reflections on fostering student nurse evidence-based practice competencies via integration of nursing best practice guidelines

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ABSTRACT

Evidence-based nursing practice has been identified as an important nurse competency and standard of practice by nurse regulators and nurse educators in both the United States and Canada, yet little is known about the curricular strategies which foster development of evidence-based competencies in the undergraduate nursing context. Although there are several evidence-based practice models that are being used by nurses, much of the literature reflects evidence-based practice implementation strategies which are focused on nurses already in practice. It remains unclear how evidence-based practice competencies are being taught to undergraduate nursing students. In the Canadian context, the Registered Nurses' Association of Ontario, promotes the implementation of Nursing Best Practice Guidelines as a viable strategy for implementing evidence-base nursing practice in both the clinical and academic contexts. Clinical and academic institutions that implement best practice guidelines and meet the outcome criteria of the Registered Nurses Association may be designated as a Best Practice Spotlight Organization. In this paper, two of the authors reflect on the curricular strategies they used to integrate Best Practice Guidelines into selected undergraduate nursing courses and the challenges and opportunities that this engendered as part of their university school of nursing's journey to achieve designation as a Best Practice Spotlight Organization (Academic).

Key Words: Evidence-based practice, Undergraduate nursing curricula, Best practice guidelines

1. INTRODUCTION

1.1 Teaching evidence-based practice competencies to nursing students

Professional nursing organizations such as the International Council of Nurses,[1] the American Nurses Association[2] and the Canadian Nurses Association[3] endorse nursing application of evidence-based practice (EBP) as a competency for providing quality, safe nursing care. Despite the integral nature of EBP to 21st-century nursing practice, we know from research that nurses continue to face barriers and experience challenges to engaging in the EBP process in their workplaces.[4] Nurses have long identified time, skills, and interests as significant hurdles to informing their practice with evidence from multiple sources, most notably empirical research. From beginning to end, following the traditional approach to EBP- i.e., developing a research question, finding single studies, appraising them, synthesizing the evidence, making recommendations, and implementing the evidence-based recommendations– can take a team several weeks to complete. With few exceptions, nurses working in direct care practice do not have the breadth of knowledge and skill to accomplish these tasks. Even when they do, time is a signif-

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icant roadblock.[4] Nurses' lack of interest has also been a barrier to implementing EBP.[5,6] Wilkinson[7] argues that to some, research evidence may seem boring, in a language that is uninteresting and unfamiliar, and it does not meet the basic wants and needs of users. That is, people want to know how to accomplish things. Nurses want to know the best way to care for their patients and make good decisions. As Spenceley et al.[8] and others (e.g., Estabrooks et al.,[9,10] O'Leary & Mhaolrúnaigh[11]) note, nurses are more frequently tuned into human sources of information and are inclined to listen to stories and take the advice and experiences of trusted peers and learn from anecdotes and case studies. Thus, to "sell" EBP, those in the know need to change their strategy.

Educators play a significant role in nurses' ability to identify and use evidence in practice. A systematic review of pedagogical strategies to teach nursing students EBP identified that educators predominantly focus on information literacy skills and the research process.[12] Some authors[13,14] contend that millennial learners may not be interested in learning tasks that they do not consider relevant. The review by Aglen[12] also indicates that nurse educators perceive students' negative attitudes to research topics and the view that research is a distraction from their primary interest of learning about nursing practice as barriers to teaching about EBP. Aglen proposes that nurse educators change how they teach about research and EBP. Educators should prioritize knowledge transfer skills that relate to clinical problems that students would find interesting and applicable to their experiences as nursing students and individuals out in the world.

Although "selling" the merits of EBP may seem like a radical learning approach, over the last couple of decades, there has been considerable effort to find ways to make research evidence as accessible as possible to the user audience. Dicenso et al.[15] note that many practical resources have been created, providing access to high-quality, pre-appraised research evidence, and organized these into the 6S model of evidence resources. Clinical decision support (CDS) systems - information technologies aimed at providing clinical decision support - are at the highest possible level of the organizing framework. CDS systems consider detailed individual patient data and context, and through algorithms, offer situation-specific information or recommendations for clinicians to use Although they are the most efficient sources of evidence for practitioners to use,[15] CDS systems are not readily available in all organizations and can be costly to develop and maintain.[16]

When systems are not available or set up to support and inform a problem or question, summaries are the next best type of resource a nurse can use.[15] Dicenso et al. describe summaries as regularly updated clinical guidelines or textbooks that integrate evidence-based information about specific clinical problems. Best practice guidelines (BPGs), also referred to as clinical practice guidelines, are the most common type of summary. BPGs are evidence-based, systematically developed statements intended to assist practitioners and patient decisions about appropriate health care for specific circumstances and are informed by assessing the benefits and harms of alternative care options. When used appropriately, BPGs may "reduce uncertainties associated with clinical decisions, diminish variation around usual practices, demystify unfamiliar terminology, and decrease the need to search for journals and articles"[3](p. 4).

1.2 The Canadian context

In Canada, the Registered Nurses' Association of Ontario (RNAO) has been a leader in championing and developing nursing and interprofessional BPG. RNAO is a voluntary professional nursing organization that represents over 48,000 registered nurses, nurse practitioners and student nurses.[17] Beginning in 1999, RNAO has received multi-year funding from the Ontario Ministry of Health and Long-Term Care to develop nursing and interprofessional BPGs to support evidence-based client care. More than fifty guidelines, several of which are multi-lingual, are available online without cost. RNAO has developed several implementation resources including, an implementation toolkit, resources for educators, and best practice champion workshops to promote BPG implementation.[18] The RNAO also has a more formalized program, the Best Practice Spotlight Organization (BPSO) program, to encourage organizational adoption of BPGs. To achieve the designation of a BPSO, health service or academic organizations partner with the RNAO to implement and evaluate BPGs. Currently, there are over 1,000 designated BPSOs worldwide.[19] Of these, only 14 BPSOs are educational institutions. RNAO also offers an Advanced Clinical Practice Fellowship (ACPF) program for registered nurses or nurse practitioners who wish to acquire BPG implementation knowledge and skills. Registered nurses or nurse practitioners, with the support of their employers, may submit proposals for funding to participate in the fellowship.[20]

There is a significant body of literature on BPGs in the direct practice domain addressing a broad range of foci, including the evidence base of BPGs, implementation and integration, and quality and impact evaluation.[21–27] The implementation of RNAO's BPGs in hospitals and primary care centers in Canada and internationally has been the subject of numerous scholarly works, including research papers.[28–33] Kingsnorth and colleagues' evaluation of a multifaceted implementation strategy to support the adoption of an RNAO BPG on the

assessment and management of acute pain in a pediatric rehabilitation and complex continuing care hospital found significant improvements in nurses' knowledge, attitudes, and behaviours related to optimal pain care for children with disabilities. More recently, Gómez-Díaz et al.[29] reported on the Colombian experience of implementing and consolidating RNAO BPGs in both clinical and academic scenarios.

Despite the success and proliferation of the RNAO's BGG program in Canada and globally, relatively little has been published about the implementation of BPGs in nursing education. There is a dearth of information about the curricular strategies academic nurse educators use to facilitate nursing best practice guideline use by undergraduate nursing students. In this discussion paper, we present the findings of a systematized review to identify the available evidence on curricular strategies or models used to promote clinical guideline implementation in academic nursing contexts. We also reflect on our experiences of integrating nursing best practice guidelines into undergraduate nursing programs in the School of Nursing at Nipissing University in Ontario Canada. In 2018 the School of Nursing at Nipissing University began their three-year journey to becoming an RNAO PBSO (Academic). The school received their designation in 2021 for implementing and evaluating five RNAO nursing BPGs.

2. METHOD

A systematized literature review was conducted following the steps outlined in Table 1. The review explored the question, in a nursing, academic context, what curricular strategies or models are being used to promote clinical guideline implementation? A comprehensive search was performed using CINAHL and ProQuest Nursing and Allied Health for both qualitative and quantitative research search in English for the 10-year period from 2008-2018. A 10-year time span was thought to be reasonable as earlier EBP implementation research was predominantly focused on clinical not academic implementation strategies. The search strategy did not include journal hand searching and a gray literature search except for a search of RNAO's website for relevant guidelines and resources. A total 15 documents, included 14 research documents and one toolkit, were identified, and thematically analysed. Data variables extracted included purpose, method/design, context/sample, and key findings. This allowed for the identification of themes and to summarize the findings of the literature in an organized way (see the Appendix).

Table 1. Steps of the review process undertaken

Review Steps	Review Activities
Step 1. Identify the research question	Research question: In a nursing, academic context, what curricular models are being used to promote clinical guideline implementation?
Step 2. Identify relevant studies	In CINAHL and ProQuest Nursing and Allied Health the following search terms were used: "Curricular models for implementing best practice nursing"; "clinical practice guideline implementation models"; "evidence-based practice models of nursing"; "worldview AND evidence-based practice in nursing"; "nursing educational interventions AND guideline implementation"; "implementing EBP AND nursing"; "implementing EBP" AND "healthcare". Limits: English, 10-year period from 2008-2018, full-text available through university library. The Publications and Resources section of the RNAO website was reviewed for relevant implementation resources.
Step 3. Study selection	A total of 101 references were included. The abstracts of these paper were reviewed for relevancy to the research question. A total of 15 documents were selected.
Step 4. Charting the data	The lead author read and re-read the 15 documents to identify cross-cutting major themes and gaps. Information extracted was summarized into a chart.
Step 5. Collating, Summarizing, and reporting results	3 themes emerged from the analysis of information extracted: 1) guideline implementation, 2) curricular integration of evidence-based nursing competencies, and 3) nurse educator experiences and knowledge of evidence-based practice competencies.

3. RESULTS

The 15 documents included in this review represented a variety of stakeholder perspectives about guideline implementation and evidence-based practice from a range of countries, including Canada, the United States of America (US), Australia, Finland, and South Africa. Stakeholders included nursing students, nursing faculty, clinical instructors, and nurse educators in hospital settings. The level of evidence of the research-based documents varied. There were four survey studies, three literature reviews, three systematic reviews, two qualitative studies, one mixed-method study and one program improvement report on course development.

Three themes emerged from the high-level analysis: guideline implementation, curricular integration of evidence-based practice competencies, and nurse educator experiences and knowledge of evidence-based competencies.

3.1 Guideline implementation

There is limited scholarship about guideline implementation in academic settings. This review found no publications describing a curricular model for implementing or integrating nursing best practices or clinical practice guidelines within an undergraduate nursing context. However, Kastner et al.[34] suggested that the Knowledge to Action Framework[35] might be helpful for structuring programs of research and for implementing and sustanining practice changes. The Knowledge to Action Framework is included in the RNAO's BPG implementation toolkit,[36] their newly released Leading Change Toolkit[37] and is part of the RNAO BPG Champion's Workshops. This framework could be integrated into undergraduate nursing curricula.

Häggman et al.[38] in their systematic review, concluded that there is a lack of strong evidence regarding teaching and learning strategies and educational interventions that support guideline implementation. However, they noted that combining theory and practice-based teaching and learning methods were useful and should be employed simultaneously. Additionally, Häggman et al.[39] concluded from their review of educational interventions on evidenced-based nursing, that interventions should include all components of evidence-based practice and should emphasize the implementation of evidence in patient care with a medium to long-term effectiveness focus. They also recommend further research to investigate how different learning contexts and teaching and learning strategies impact the implementation of BPGs.

3.2 Curricular integration of evidence-based nursing competencies

Four papers were identified that addressed how evidence-based nursing competencies, rather than practice guidelines implementation, were approached in academic contexts. Additionally, one paper outlined the development of a curriculum for evidence-based practice for staff nurses.

• Hande et al.[40] describe how evidence-based competencies were levelled and mapped throughout the baccalaureate, masters, and doctoral nursing programs in a US institution. The authors discuss the importance of developing a curricular strategic plan. Although there are differences in Canadian and American nursing scopes of practice, the idea of creating a strategic curricular plan that maps evidence-based competencies and how guidelines are integrated into the curriculum has merits for all schools of nursing at both the graduate and undergraduate levels.

• Reicherter et al.[41] describe how case reports, seminars, and champion building activities were introduced in second year nursing and health professions curricula as a way of fostering knowledge about evidence-based practice skills and disseminating research findings via poster presentations.

• Leung et al.[42] developed a competency framework for evidence-based nursing designed to measure nurses' knowledge and skills for using evidence in practice. The framework utilizes the 5 steps of the evidence-based practice model outlined by Straus et al.[43] The framework includes the components of effective education strategies and teaching and learning processes but does not define and describe them.

• Longo and Lindsay[44] describe revisions to a second-year nursing inquiry course and their use of pedagogy to help students understand that not only do they need to utilize evidence-based knowledge, but they are also creators of nursing knowledge. The authors question whether the emphasis placed on evidence-based practice may in some ways be a deterrent to nurses creating new knowledge or using knowledge that does not fit into the traditional evidence-based paradigm. This is an important point that educators should heed. Certainly Carper's[45] and Chinn and Kramer's[46] five ways of knowing, with its holistic approach to knowing remains very relevant to nursing practice.[47] Evidence-based practice needs to be a part of a holistic way of knowing.

• In their paper, Burns et al.[48] describe how they utilized research findings to develop a curriculum for staff nurses in the context of shared governance. Although their curriculum design is directed to clinical staff nurses and not students in an academic context, their use of the EBP Beliefs Scale, the EBP Implementation Scale[49] and the Organizational Culture and Readiness for System Wide Integration of EBP Scale,[50] provides some indication of the applicability of these tools to curricular planning in a traditional academic setting.

Clinical guideline implementation is a complex process and requires knowledge of fundamental research skills such as search strategies, knowledge of levels of evidence, ability to formulate and ask research/clinical questions, critical appraisal skills, and knowledge of change management and contextual factors. Typically, undergraduate nursing program research courses focus on developing foundational research and evidence utilization skills such as understanding the research process and searching and appraising research papers. It remains unclear how these courses address clinical practice guidelines and implementation processes. Some nursing research textbooks now include content about BPGs, critical appraisal of BPGs, and guideline implementation. Yet, the extent to which this content is a priority is unknown.

3.3 Nurse educator experiences and knowledge of evidence-based practice competencies

Four papers in this review discussed nursing faculty and clinical instructors' experiences and knowledge of evidence-based practice in general but from varying perspectives.[51–54] Only one paper specifically addressed guideline implementation.

Milner et al.[52] surveyed nursing faculty and other health professionals to explore their beliefs about evidence-based practice, abilities to teach and implement evidence-based practice, and the organizational culture supporting evidence-based practice. The results indicated that faculty believe that their adoption of evidence-based practice is foundational to teaching. Faculty also perceive those standards related to evidence-based proficiency for faculty need to be set by organizations, and programs preparing faculty to teach in nursing programs need to include evidence-based practice in their curricula.

Mthiyane and Habedi's[53] qualitative study of nurse educators teaching in a South African undergraduate nursing program reported that faculty found challenges and benefits to teaching evidence-based practice. Faculty perceived that the students often see research negatively, find it overwhelming, and compete with other learning priorities. This insight resonates with our experience teaching students about evidence-based practice. Other findings from this study were that faculty perceived that preparing students to engage in evidence-based practice allowed them to keep up to date. Faculty also expressed the belief that such preparation improved the quality of care and could reduce health care delivery costs. Research about students' perceptions supports the faculty perceptions reported by Mthiyane and Habedi. Keib and colleagues'[55] study evaluating students' perceptions following completion of a research course found that teaching students about research improves their perceptions of and confidence in research and EBP, increasing the likelihood of applying these skills to future nursing practice. And Ross and Burrell's[56] integrative review of 15 studies concluded that, in general, engaging in a research course or other active research-related activity improves students' attitudes toward nursing research.

In a review of the literature, Canada[51] summarizes evidence-based practice implementation models, identifying the most used, including the Stetler Model of EBP,[57] the Promoting Action on Research Implementation in Health Services (PARIHS) framework[58] and the Johns Hopkins Nursing EBP Model.[59] Canada[51] notes that in the US, the Stetler Model of EBP is used readily in baccalaureate and master's level nursing programs. Rycroft-Malone and Bucknall[60] contend that the model is limited without the facilitation of a supportive environment or mentor. Arguably, this would be true of any model implemented and perhaps even more so in the context of teaching and learning. This review did not find any published documents addressing the use of implementation models in a Canadian nursing education context.

Zelenikova et al.[54] surveyed the top fifty American nursing schools to determine how nursing faculty perceived the effectiveness of evidence-based practice courses for graduate nursing students. Faculty related that it was important that students have the chance to implement their knowledge and evidence-based practice skills. This insight would seem applicable to undergraduate nursing students as well. In addition to providing learning opportunities within research courses or related courses, it may be prudent to offer an elective course whereby students would complete a real-world guideline implementation project in their local community. Recent research into project-based learning[61,62] indicates that such an approach can positively impact students' academic achievement and behavioural outcomes such as skills development and engagement.

Finally, Ritchie et al.'s[63] qualitative study on nursing students and clinical instructors' perceptions of implementing the RNAO BPG related to smoking cessation, highlights the need for including health promotion skills and processes as part of a curriculum that supports guideline implementation. Health promotion involves several skill sets. Depending on the guideline implemented, these skills may be the critical intervention. Students reported anxieties and lacked confidence in health teaching and promotion activities, especially as novice practitioners. These findings illustrate the complex interplay of the skills, knowledge, and attitudes students need to acquire for successful guideline implementation. Nursing curricula will need to support the development of relational and critical thinking skills[51] as foundational competencies for fostering evidence-based practice and successful guideline implementation.

4. DISCUSSION

Overall, the findings from the literature review suggest that not much is known about how clinical practice guideline implementation is taught in the undergraduate nursing context. Additional scholarship, including rigorous studies, is needed. Such work would inform the best pedagogical practices and teaching and learning necessary to derive the learner outcomes faculty desire. This review identified several practice-based models for fostering evidence-based practice. Yet little is known about their integration into nursing curricula. Although the RNAO toolkits,[36,37] are ready-made resources for implementing BPGs, it is unclear if or how the toolkits

are being used in the academic context. This review did not find any published work describing their integration into nursing curricula or use in courses. In the Ontario context, given the proliferation of the RNAO BPG Program and the associated Best Practice Guideline Champion Workshops, understanding the use and the impact of these resources and programs on nursing curricula seems prudent.

4.1 Our experiences integrating BPGs into undergraduate curricula

As highlighted, there is not a ready-made framework for integrating best practice guidelines into nursing curricula. The lack of an implementation framework specific to the academic context posed a challenge to faculty and the team leading the project to designate the school of nursing at Nipissing University as an RNAO BPSO. RNAO resources such as the implementation toolkit and lessons learned shared by other BPSO (academics) provided some guidance. Notwithstanding, faculty had to meet this challenge in ways that made sense for the aspects of the curriculum they were responsible for and their teaching philosophy and approaches. In this section, the two faculty authors (Ewers and Anyinam) present their reflections on integrating the BPGs into their courses during the school's journey to becoming a BPSO (academic) designate.

The first reflection relates to a face-to-face traditional classroom teaching context for a four-year Bachelor of Science Collaborative Nursing program. The second reflection relates to teaching experiences in online teaching for students who are registered practical nurses (RPNs) obtaining a Bachelor of Science in Nursing degree. Both teaching contexts were pre-pandemic. In both contexts, five RNAO BPGs were implemented into our curriculum: Person and Family Centered Care,,[64] Assessment and Management of Pain,[65] Assessment and Management of Pressure Injuries for the Interprofessional Team,[66] Preventing Falls and Reducing Injury from Falls,[67] and Engaging Clients Who Use Substances.[68]

4.1.1 *BPG integration in a traditional classroom context*

1) Course context

Sixty-one, fourth year students were registered for the nursing complex health challenges course in which nursing BPGs would be integrated. A few students enrolled in the class had recently completed a Best Practice Guidelines Champions Workshop which had been sponsored by the RNAO.

2) Pedagogical approach

The course was delivered via cased-based pedagogy. Case study is a pedagogy that supports integrative thinking, reflection, and dialogue.[69] Creating a shared learning environment was important to fostering discussion of the cases and the guideline implementation.

Typically, two to three cases were discussed each week via a three-hour, face to face class. The learning management system (LMS), Blackboard was also used to facilitate access to course syllabi, course lectures and learning resources including the targeted and other relevant best practice guidelines. During the first half of the course, PowerPoint slides highlighting key case concepts as well as additional resources were posted on our LMS as resources for completing the case studies. Cases were reviewed each week in class. After a mid-term test, the classroom was flipped for the remainder of the course. Student groups presented an assigned case study for the remainder of the semester. Their case presentation was worth 30% of their final grade. Content for their case study presentation was deemed testable for the final exam.

3) Identifying BPG integration strategies

Throughout the twelve-week semester, teaching, learning and evaluation strategies that were used for implementing the five designated best practice guidelines into a fourth-year undergraduate nursing complex health course were documented weekly. By reviewing weekly notations, several strategies for integrating the best practice guidelines into the course were identified. These strategies included the following: a) formally listing the targeted best practice guidelines in the course description in the course syllabus; b) intentionally emphasizing guideline implementation as a course focus beginning with the first class and periodically throughout the remainder of the semester; c) weekly posting of links to the targeted and other relevant practice guidelines associated with the course case studies; d) in class review and or critical reflection/discussion or gap analysis of guideline practice recommendations related to the case studies e) gap analysis/ critical reflection of actual patient care scenarios students had encountered in their practice or cases from the media where care was lacking or exemplary; f) encouraging students to utilize the guideline practice recommendations and accompanying guideline resources as a source of information for tests, exams or clinical preparation; g) inclusion of marks on grading rubric for case study term assignment for including evidence-base resources such as best practice recommendations if relevant; and h) inclusion of practice multiple choice questions related to the five targeted practice guidelines on the final course exam.

4) Barriers to BPG integration and application

Over the semester, several barriers to integrating practice guidelines into the course were identified. Like any change to curricula, integrating BPGs into the course infrastructure and learning processes, required a thoughtful, time-sensitive,

and, at times, intensive approach. There was a substantial time commitment and mindset of intentionality that was needed to update course content, syllabi, term assignments and tests.

Supporting critical reflective activities, such as discussion of practice guideline recommendations and engaging in gap analysis learning activities, was pedagogically challenging. The main barriers to application and critical reflection of the practice recommendations were 1) the intensive course focus on National Council Licensure Exam Registered Nurse (NCLEX-RN) content because the exam had recently been adopted in the Canadian context, which often limited discussion relating to guidelines; 2) the large class size and lecture-style setting of the classroom made student engagement in discussions difficult; and 3) that the students were adapting to the case-based learning method and were anxious about this type of learning.

5) Navigating the barriers

Navigating the barriers to integrating practice guidelines was challenging. At times, though more discussion about the practice guideline recommendations was most appropriate, the pressure to include NCLEX-RN course content made it the overriding priority. It was a balancing act that also required being mindful that integrating guideline recommendations needed to be as seamless as possible so that students would not perceive them as add-ons requiring additional study time.

The class size of sixty-one students and the lecture style classroom setting made group work, discussions and establishing personal rapport with students very challenging. As well, although students had some prior exposure to case studies in some nursing courses, early in the semester, students exhibited anxiety about case-based learning and needed support to transition to this type of learning. Much of their anxiety seemed to be about content that would be tested on tests and exams. While testing has its place in the course and the curriculum at large, heavy reliance on testing makes it difficult to create a culture where students want to learn for the sake of learning and developing safe nursing practices regardless of whether the content or knowledge is tested.

Despite the implementation challenges experienced, it was possible to ask students critical questions that linked guideline practice recommendations to the case studies. Although the discussion may not have been robust and fulsome, it modeled the importance of asking critical questions and consulting evidence-based sources to answer questions. Hopefully students, as future graduates, will consult practice guidelines as an evidence-based source for answering clinical questions.

6) Student application and perspectives

Several students included practice guidelines in their group case study presentations, but most did not. In contrast, most students answered the exam questions relating to the practice recommendations of the targeted best practice guidelines correctly. Students were also asked to complete a small survey about the effectiveness of strategies used to increase student knowledge about the practice recommendations of each targeted guideline. However, due to delays in ethics approval, the survey was not available until two weeks after the end of the semester, which was approaching the Christmas holiday break. Only nine out of a possible sixty-one students responded to the survey. As such, the results cannot be generalized. For the future a more formal and rigorous survey tool should be developed and piloted to ensure face and content validity to explore student perceptions regarding curricular strategies for guideline implementation.

Rycroft-Malone[70] suggests that evaluation of guideline implementation should be multimodal and from multiple sources. Building on Rycroft- Malone's suggestion, it may be helpful to develop curricular integration and evaluation strategies beyond those for individual courses and explore BPG integration and evidence-based competencies across the curriculum.

4.1.2 *Integrating BPGs in online non-practice-based courses*

1) Online program context

The online program is for RPNs transiting to registered nurse licensure. The model of the program blends the online delivery of theory-based courses online with traditional practice-based learning experiences. Implementing the RNAO BPGs into the online baccalaureate program differed somewhat from the face-to-face delivery model of the 4-year Bachelor of Science Nursing program. Unlike the 4-year BScN program students, learners in the RPN to BScN blended delivery program enter the program with varying degrees of practice experience. Most students have had exposure to RNAO BPGs or other clinical practice guidelines through their previous education or employment experiences. This familiarity created an advantage by shortening the learning curve related to BPGs for many students. Second, theory-based courses are taught in an asynchronous format whereby students learn on their schedule, within the typical 12-week timeframe with deadlines attached to evaluations and particular course activities. Teaching and learning in this context do not lend themselves to traditional methods. Thus, while implementing the BPGs in practice-based experiential courses was relatively like implementation in clinical practice, doing so in the online theory-based courses posed several challenges.

2) Practice-based courses

In practice-based courses, the five RNAO BPGs identified were integrated by faculty into the course design. In these courses, students were introduced to the BPGs and implemented them through different activities in labs and direct-practice experiences supported by faculty and preceptors. Success indicators of the process included formal and informal student evaluations such as practice debriefing by clinical faculty one-to-one or in a group, reflective writing and competency-based mid-term and final performance evaluations.

3) Theory-based courses

In the theory-based courses, each course took a different approach to integrate the BPGs. In the research course students complete in the second to last or last semester of the program, the most appropriate way to do this was to focus on the skills nurses required to understand BPGs and implement them at the individual level. Without understanding BPG development and know-how about critically appraising and integrating them into their practice, nurses risk falling into the same standardized, rote practice that was a key impetus for the evidence-based practice movement. In the course, students learn about clinical practice guidelines in the context of identifying the highest level of an information resource to facilitate a search for the best evidence to inform clinical decision making. They develop know-how related to critically appraising clinical guidelines and use the 5 RNAO best practice guidelines to practice their appraisal skills. This learning is evaluated through tests and small and large group discussion activities.

4) Curricular considerations

Assessment, evaluation, and student feedback revealed that teaching and learning about BPG development, appraisal, and implementation comes too late in the program's curriculum to stimulate students' interest in BPGs and provide meaningful opportunities to apply related knowledge and skills. Fortunately, these insights coincided with new course development related to program changes to address the broader recognition of the need for the earlier introduction of evidence, information literacy and knowledge brokering as concepts and practices into the program. The revised curriculum replaced the 4th-year research course with 2nd and 3rd-year level courses. These courses build on each other, scaffolding the knowledge and skills learners need to use knowledge such that in their 4th-year of the program, they are familiar with resources such as clinical practice guidelines and move away from novice level towards mastery. Both courses consist of alternating weeks of theory and application, which provides the opportunity to make connections and apply knowledge and skills in situ rather than at the end of the course in a final exam or a capstone assignment. In the year-two course, students learn about sources of knowledge, including empirical evidence and basic knowledge production concepts, and develop their information literacy and literature search and appraisal skills. The 3rd-year course focuses on the processes of nursing knowledge production and integrating evidence into nursing decision-making in practice. Specific to BPGs, students develop their understanding of guidelines as a high-level information resource and learn to search for and critically appraise them. They are provided with practice opportunities and are evaluated on their ability to search for, critically appraise and compare one of the 5 RNAO practice guidelines identified in the BPSO project against another BPG with the same focus. Finally, students consider how they would implement the chosen guideline and address potential barriers to implementation.

5. Conclusion

The authors of this paper believe that fostering curricular processes that support a culture of inquiry is foundational to successful guideline implementation and the overall goal of safe, evidence-informed practice. Given the lack of information about guideline implementation and integration into undergraduate nursing curricula, conceptualizing and evaluating a curricular model or framework that supports evidence-based nursing practice and in particular, guideline implementation within the context of a pedagogy of inquiry is a reasonable next step to addressing the gaps that have been identified. Integrating the Knowledge to Action framework[35]into research courses may be a useful strategy for helping students address challenges associated with guideline implementation or other practice changes.

Conflicts of Interest Disclosure

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