



Review

The Ottawa model for nursing curriculum renewal: An integrative review

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ABSTRACT

Background: High-quality and relevant nursing education is needed to ensure graduates meet entry to practice competencies. Despite the important role of curricula in the development of nurses and the nursing profession, there does not appear to be a consistent or widely accepted approach to nursing curriculum renewal.

Objective: To identify and synthesize existing curriculum renewal/redesign practices, create an aggregated logic model depicting an evidence-informed process for nursing curriculum renewal, and stimulate dialogue about how to keep nursing curricula relevant in an ever-changing healthcare context.

Design: An integrative review, modeled on the Joanna Briggs Methodology of Systematic Reviews, of the available published articles, including empirical research and discussion articles.

Data sources: We searched for quantitative, qualitative, and non-research literature (English and French) on full nursing programs or curriculum revisions for pre-licensure nursing students enrolled in an undergraduate or associate degree program. Databases included CINAHL, Nursing and Allied Health, and Medline from January 2010 to January 2017. We then did a hand search for articles from January 2017 to April 2019.

Synthesis: Extracted data were synthesized into an aggregated logic model based on Yin's method of cross-case analysis. Data included information about the internal context, the external context, drivers, the preparatory phase, the active phase, outcomes, and evaluation methods of the described curriculum renewal process.

Results: Twenty articles were included, which were published between 2010 and 2018. The resulting logic model, The Ottawa Model for Nursing Curriculum Renewal, includes information on the context, process and outcomes of the renewal process, and how and when to evaluate curricula.

Conclusion: This synthesis aids in defining the process of curriculum renewal for undergraduate nursing education. It stimulates systems level thinking and reveals gaps, such as the need for further research into curriculum evaluation. The Ottawa Model for Nursing Curriculum Renewal is a usable template to aid educators undertaking their own process of curriculum renewal.

1. Background

High-quality and relevant nursing education is needed to ensure graduates meet entry to practice competencies. Nurses are expected to maintain quality and ethical standards in busy, high-pressured, and

sometimes under-staffed clinical environments (de Vries and Timmins, 2016; Peternelj-Taylor, 2013). Nurses support and advocate for individual and collective wellbeing, understand population health needs within fluctuating global landscapes, and provide skillful care for persons with acute and chronic conditions (D'Antonio et al., 2013; Faison

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and Montague, 2013). Given the complexity of nursing practice, undergraduate nursing curricula must constantly adapt and evolve to adhere to professional standards, meet academic accreditation requirements, integrate new evidence, respond to social and demographic changes, and accommodate technological advances (Hickey et al., 2010; Mailloux, 2011; van de Mortel and Bird, 2010).

Contemporary nursing education includes greater pedagogical diversity, integration of new technologies, increased use of simulations, distance learning, and a shift away from strictly didactic teaching approaches (Hsu, 2012; Lira and Lopes, 2011). Research also supports the need to incorporate experiential and work-integrated learning opportunities to ensure that students gain exposure to clinical settings and are safe to enter nursing practice upon program completion (Didion et al., 2013; Noland, 2014; Wright, 2015). Despite the important role of curricula in the development of nurses and the nursing profession, there does not appear to be a consistent or widely accepted approach to nursing curriculum renewal. Without an evidence-informed process to guide curriculum changes, educators appear to be creating their own frameworks, which have varying similarities and differences. Thus, the purpose of this review was to synthesize existing curriculum renewal/redesign practices as they are represented in the literature, articulate an evidence-informed process for nursing curriculum renewal, and stimulate dialogue about how to keep nursing curricula relevant in an ever-changing healthcare context.

2. Our context

This study was conducted as part of the undergraduate curriculum renewal process at the University of Ottawa. The University of Ottawa's Collaborative Baccalaureate Program is a 4-year undergraduate degree program offered jointly between the university and its college partners in both of Canada's official languages, French and English.¹ All students who successfully complete the program are conferred a Bachelor of Science in Nursing (BScN) degree from the university. The authors of the paper comprise a committee that was tasked with facilitating a renewal process that met the particular needs of the University of Ottawa and its collaborative partners, met national accreditation standards, and was responsive to the evolving needs of the healthcare system. More specifically, the mandate of our renewal committee included: 1) changing the format of the existing curriculum to include the introduction of nursing content into the first year of the program; 2) creating opportunities for pedagogical diversity and innovation; 3) scaffolding the learning of core objectives and concepts; 4) working within existing resources (fiscal and human); and 5) integrating continuous evaluative processes. We were to accomplish this while preserving academic freedom in teaching and remaining rooted in the School's philosophy and vision.

We began our renewal work in 2016 by seeking guidance from curriculum development specialists at the University and a consultant who recently led a curriculum renewal at another Canadian university, conducting an environmental scan, and completing an integrative review modeled on the Joanna Briggs Methodology for Systemic Reviews, described here. The specific objectives of the integrative review were to: 1) identify all literature relevant to curriculum renewal (or redesign) and 2) highlight areas of consensus, disagreements, and gaps in this evidence through the production of an aggregated logic model.

¹ It is important to note that the School of Nursing (SON) has multiple programs (entry points) that are not addressed in this paper. The SON offers a Second Entry program as well as a Practical Nursing to BScN Bridging Program. For the curriculum review process, the strategy was to create an ideal structure for the BScN and then adapt to incorporate these other entry points.

3. Methods

3.1. Literature search and study selection

In collaboration with a library scientist at the University of Ottawa, we defined eligibility criteria and a systematic search strategy for our review. Specifically, we searched for quantitative, qualitative, and non-research literature on full nursing programs or curriculum revisions for pre-licensure nursing students enrolled in an undergraduate or associate degree program. We excluded all articles referring to licensed nurses or post-graduate education (including continuing education). French and English publications were sought. Using these criteria, we searched CINAHL, Nursing and Allied Health, and Medline databases to identify published peer-reviewed literature on the topic. We also performed a two-step grey literature search that entailed first searching relevant professional databases (e.g., World Health Organization, Canadian Association of Schools of Nursing), each provincial licensing body's website (e.g., College of Nurses of Ontario), the Canadian Nurses Association website, the Canadian Institutes of Health Research website, as well as the websites of all Canadian Universities with nursing programs. Second, we searched Google using the terms: nursing education renewal or revision; nursing education renewal or revision process; nursing curriculum renewal or revision; nursing curriculum renewal or revision process. Both the database and grey literature search included literature published or available and accessible online from January 2010 to January 24, 2017; this time frame was chosen because a systematic review of curriculum reform in baccalaureate nursing education containing a search of evidence between the years 2000 and 2008 was published in 2009 (Forbes and Hickey, 2009). Finally, we conducted a hand search of the databases in April 2019, to identify recently published literature on the topic.

After duplicate removal, we used a two-step process to select articles. Four reviewers engaged in screening, with at least two reviewers independently screening every citation. First, we screened titles and abstracts for articles about nursing students and education/curriculum. At this stage we retained all relevant citations and those lacking sufficient information to determine relevance. Next, two reviewers independently screened full-texts of the retained citations to identify articles meeting the following criteria: 1) about curriculum renewal/revision of a baccalaureate pre-licensure nursing education program, 2) focused on the revision process as a whole or a particular step in the process, 3) relevant to an entire curriculum (e.g., not just integrating one set of courses or one principle into an existing curriculum). A meeting was held to come to consensus on the final set of articles to include in the review.

3.2. Data extraction and synthesis

After completing an initial scan of the articles, we created a data extraction template based on the key elements of the curriculum renewal process that arose from included articles, in keeping with Yin's process of pattern matching (Yin, 2011, 2018). This template included information about the drivers, external forces, intended outcomes, preparatory phase, active phase, outcomes, and evaluation methods of the described curriculum renewal process (Table 1). For the purposes of this analysis, each article represented a 'case' and we engaged in the process of pattern matching (Yin, 2018) to identify similarities, congruencies and incongruencies in the ways that the cases engaged in the renewal process. Some cases contained all the elements; others included only one or two elements. (See Table 2.)

In order to synthesize this diverse literature, we created a descriptive logic model based on Yin's (2018) method of cross-case analysis. Yin describes the logic model as an analytic technique that matches "empirically observed events to theoretically predicted events" (Yin, 2018, p 186). Logic models have been identified as a way to capture complex, non-binary information from multiple sources in

Table 1
Data extraction template.

| Element | Definition and example | Purpose |
|-------------------|---|--|
| Renewal context | | |
| Drivers | Things that prompt initiation of revision or renewal (e.g.: “integrate new technology”; “change pedagogical practices”; “new standard or recommendation”; “new healthcare priorities”). | Affect how curriculum renewal process was conceived and enacted by creating an opportunity to consider real world settings in which curriculum renewal processes operated from program planning through implementation and evaluation. |
| Intended outcomes | Something that school identified at the outset of the project as their objective (e.g.: certain graduate characteristics; “ability to provide nursing care in a pluralistic society”). | |
| External factors | Things external to the process that have an influence on the process (e.g., financial considerations, accreditation standards, standardized tests). | |
| Renewal process | | |
| Preparatory phase | Work done to inform the process (e.g. “systematic mapping of current curriculum”; “outside expert consultation”; “stakeholder focus groups”). | Articulates the ‘work’ attributed to curriculum renewal. |
| Active phase | Steps taken to renew/revise the curriculum (e.g. “created guiding values”, “chose a conceptual framework”, “re-worked course objectives”). | |
| Descriptions | Descriptions of the renewal process (e.g., “evolving process”; “dynamic”; “time consuming”; “streamlining”). | |
| Renewal outcomes | | |
| Immediate | Desired or observed immediate outcomes, (e.g., “engaged all staff in thinking about pedagogical practices”). | Provides insight into the possible or anticipated outcomes of curriculum renewal. |
| Intermediate | Desired or observed intermediate outcomes, (e.g., “met accreditation standards”; “successfully integrated 4 hybrid courses into curriculum”). | |
| Final | Desired or observed final outcomes, (e.g., “graduates who effectively transition to healthcare environments”; “workforce needs are met”; “more inclusive healthcare”). | |
| Evaluation | Any processes that the school reports using to evaluate the renewed curriculum. | Provides guidance and reflection on how to evaluate the renewed curriculum. |

Table 2
Study characteristics.

| First author (date) | Country | Type of institution | Degree | Type of article |
|-------------------------------|---------------|---------------------|--|---------------------|
| van de Mortel (2010) | Australia | University | Bachelor of Nursing | Discussion |
| Davis (2011) | United States | Community College | Associate Degree in Nursing | Discussion |
| Mailloux (2011) | United States | University | Bachelor of Science in Nursing | Discussion |
| Landry et al. (2011) | United States | University | Bachelor of Science in Nursing | Discussion |
| Beckman et al. (2012) | United States | University | Bachelor of Science in Nursing | Discussion |
| Kumm (2012) | United States | University | Bachelor of Science in Nursing | Discussion |
| Eglinton-Warner et al. (2013) | Australia | University | Bachelor of Nursing | Resource Guide |
| Morris (2013) | United States | University | Bachelor of Science in Nursing | Mixed methods study |
| Faison (2013) | United States | University | Associate of Science Degree in Nursing | Discussion |
| D'Antonio (2013) | United States | University | Bachelor of Science in Nursing | Discussion |
| Duncan (2014) | United States | University | Bachelor of Science in Nursing | Quantitative study |
| Landeen et al. (2016) | Canada | University | Bachelor of Science in Nursing | Qualitative study |
| Theobald (2016) | Australia | University | Bachelor of Nursing | Discussion |
| Dawson et al. (2016) | United States | University | Bachelor of Science in Nursing | Discussion |
| Godfrey (2016) | United States | University | Bachelor of Science in Nursing | Discussion |
| Patterson et al. (2016) | United States | University | Bachelor of Science in Nursing | Discussion |
| Mills et al. (2017) | United States | University | Bachelor of Science in Nursing | Qualitative study |
| Nosek et al. (2017) | United States | University | Bachelor of Science in Nursing | Qualitative study |
| Featherston (2018) | Australia | University | Bachelor of Nursing | Discussion |
| Meiers et al. (2018) | United States | University | Bachelor of Science in Nursing | Discussion |

systematic reviews (Anderson et al., 2011; Baxter et al., 2010) and this technique is useful for the conceptualization of the context, stages, and outcomes of a complex program, intervention, or activity (Yin, 2018). Our logic model, ‘the Ottawa Model for Nursing Curriculum Renewal’, highlights transitions and draws attention to contextual issues that need to be considered throughout (Yin, 2018).

3.3. Results

We identified 1362 potentially relevant citations from the database search and 15 potentially relevant citations from the grey literature search. Of these, 318 were retained after title and abstract screening (Fig. 1). Full text screening led to inclusion of 19 articles: 14 discussion articles, four research studies, and one resource guide for curriculum renewal. One was Canadian, four were Australian (with one of them

published in Canada), and 14 were American. The hand search, done in April of 2019, identified 444 potentially relevant articles, six of which were retained after title and abstract screening. Full text screening led to the inclusion of one additional article.

3.4. The renewal context: internal factors, external factors and drivers

Internal factors—contextual elements related to the particular academic environment—were reported in 13 of the articles. These included institutional structures or policies (Eglinton-Warner et al., 2013; Mailloux, 2011; Theobald and Campbell, 2016); existing partnerships, such as those with affiliate colleges (Landeen et al., 2016; Landry et al., 2011), and clinical placement agencies (Duncan and Schulz, 2015; Featherston et al., 2018); current curricular structure and pedagogical approaches (Mills et al., 2017; Patterson et al., 2016); faculty strengths

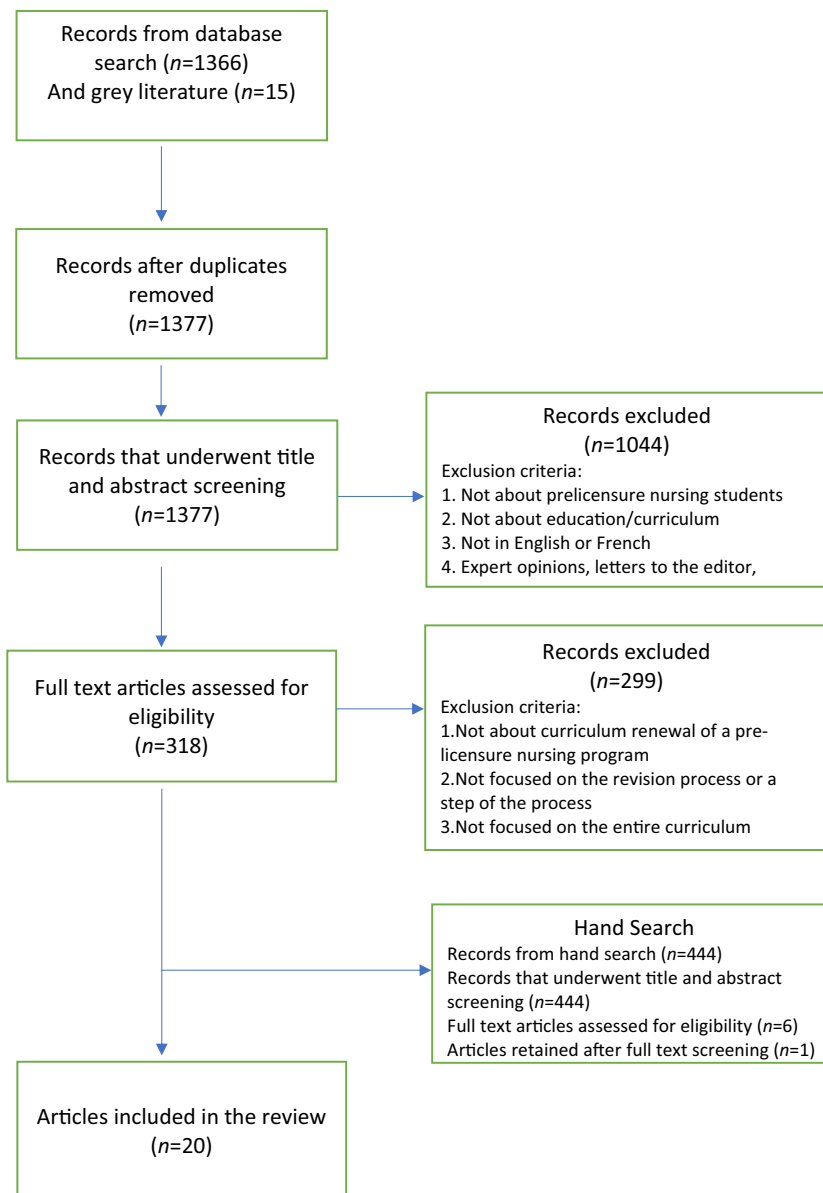


Fig. 1. Pyramid table for literature search.

and expertise (Beckman et al., 2012; Meiers et al., 2018); existing budgets (Beckman et al., 2012; Kumm and Fletcher, 2012), and a valuing of academic freedom (van de Mortel and Bird, 2010).

External factors—contextual elements from outside the particular academic environment—were reported in 14 articles. These included regulatory standards (Davis, 2011; D'Antonio et al., 2013; Kumm and Fletcher, 2012; Landeen et al., 2016; Landry et al., 2011; Mailloux, 2011; Mills et al., 2017; Morris and Hancock, 2013; Theobald and Campbell, 2016), availability (or lack thereof) of published evidence (Duncan and Schulz, 2015), changes to healthcare systems, and demographic shifts or the changing needs of populations (Kumm and Fletcher, 2012; Faison and Montague, 2013; Fetherston et al., 2018; Meiers et al., 2018; Nosek et al., 2017).

Drivers—the catalyst for beginning the renewal process—were identified in all 20 articles, and came from both internal and external factors. Drivers included regular or cyclical program review (Eglinton-Warner et al., 2013; Fetherston et al., 2018; Patterson et al., 2016; van de Mortel and Bird, 2010), organizational changes (Beckman et al., 2012; D'Antonio et al., 2013; Eglinton-Warner et al., 2013; Landeen et al., 2016; Landry et al., 2011); changing healthcare contexts, such as

the implementation of new professional or accreditation standards (Davis, 2011; Dawson et al., 2016; Duncan & Schultz, 2014; Faison and Montague, 2013; Godfrey and Martin, 2016; Mailloux, 2011; Meiers et al., 2018; Mills et al., 2017; Morris and Hancock, 2013; Nosek et al., 2017; Theobald and Campbell, 2016); and new budgetary constraints (Kumm and Fletcher, 2012).

3.5. The renewal process: preparatory and active phases

Fourteen articles described the preparatory phase of the renewal process and 16 articles described the active phase (13 articles described both). The preparatory phase included steps that educators and administrators undertook to create readiness for the curriculum renewal process. These steps were not uniform across schools and included: seeking and gaining faculty interest and administrator buy-in, including provision of funds and faculty time (Duncan and Schulz, 2015; Kumm and Fletcher, 2012); creating a curriculum renewal working group or committee (responsible faculty) (Fetherston et al., 2018; Kumm and Fletcher, 2012; Nosek et al., 2017; Theobald and Campbell, 2016); educating the committee and faculty through use of in-services or

through bringing in experts for consultation (Faison and Montague, 2013; Meiers et al., 2018); creating or confirming an existing philosophical foundation and guiding framework (Beckman et al., 2012; D'Antonio et al., 2013; Davis, 2011; Eglinton-Warner et al., 2013; Landeen et al., 2016; Meiers et al., 2018; Nosek et al., 2017); defining anticipated outcomes of curriculum renewal and creating a timeline (Kumm and Fletcher, 2012; Mailloux, 2011; Nosek et al., 2017); seeking stakeholder feedback (from students, community, and faculty) (Davis, 2011; Fetherston et al., 2018; Landeen et al., 2016; Patterson et al., 2016); reviewing the literature (Faison and Montague, 2013; Fetherston et al., 2018; Landeen et al., 2016); and scanning other national nursing programs (Landeen et al., 2016).

The active phase captured the steps taken to achieve curriculum renewal once preparation was complete. Although there were differences in the way authors described these steps, the steps themselves were seemingly consistent. First, responsible faculty at the schools determined goals and priorities for their new curriculum. Drawing on preparatory work already completed, they finalized program aims and desired graduate attributes (Eglinton-Warner et al., 2013; Fetherston et al., 2018; Meiers et al., 2018). At this point, they decided to what degree their curriculum would be founded on a particular conceptual model or pedagogical focus, and defined other logistical or practical goals, such as a desire to provide some course content through a web-based platform, or take into account how to balance a curriculum that will be taught at multiple sites (D'Antonio et al., 2013; Mills et al., 2017).

Second, responsible faculty assessed the current curriculum against their aims. This was done through curriculum mapping (Kumm and Fletcher, 2012; Landry et al., 2011; Mailloux, 2011; Patterson et al., 2016), a SWOT (Strengths, Weaknesses, Opportunities, and Threats) or SWOC (Strengths, Weaknesses, Opportunities, and Challenges) assessment (Eglinton-Warner et al., 2013; Faison and Montague, 2013), or through analyzing existing content against a chosen theoretical foundation (Beckman et al., 2012; Meiers et al., 2018).

Third, curricular changes were made based on intended student outcomes (D'Antonio et al., 2013; Eglinton-Warner et al., 2013; Faison and Montague, 2013; Fetherston et al., 2018; Godfrey and Martin, 2016; Landeen et al., 2016; Morris and Hancock, 2013). Desired graduate attributes were translated into desired learning outcomes (D'Antonio et al., 2013; Eglinton-Warner et al., 2013; Faison and Montague, 2013; Fetherston et al., 2018; Mailloux, 2011; Meiers et al., 2018). These learning outcomes were evaluated for consistency with the aims and vision of the university and program philosophy (Mailloux, 2011). These were then integrated into a curricular structure (Patterson et al., 2016; Theobald and Campbell, 2016). Next, faculty workgroups designed individual courses (Kumm and Fletcher, 2012; Fetherston et al., 2018; Meiers et al., 2018; Nosek et al., 2017) and this course design took into account prior decisions about pedagogical processes (Beckman et al., 2012; Fetherston et al., 2018; Godfrey and Martin, 2016; Meiers et al., 2018).

Fourth, the curriculum renewal working group or committee initiated the process of approval and planning for implementation (Nosek et al., 2017). During this phase, the team leading curriculum renewal paid close attention to the timelines and requirements of institutional and external organizations involved in the approval of new curricula (Faison and Montague, 2013). Approval involved different procedures for different academic institutions, as well as provincial or state and national regulatory bodies (Eglinton-Warner et al., 2013).

3.6. *Renewal outcomes: process outcomes, internal outcomes and external outcomes*

Process outcomes, identified in seven articles, included: reflection on and renewed commitment to nursing education and pedagogy by faculty and administrative staff (Mailloux, 2011), agency and ownership of courses by faculty (D'Antonio et al., 2013; Meiers et al., 2018;

van de Mortel and Bird, 2010), and unexpected collaboration towards a common goal (Kumm and Fletcher, 2012; Landeen et al., 2016; Nosek et al., 2017).

We identified internal outcomes (outcomes at the level of the institution) in 14 articles; these were related to students, faculty, and the program. Reported outcomes for students included changes to student satisfaction (Duncan and Schulz, 2015; Meiers et al., 2018; Patterson et al., 2016; van de Mortel and Bird, 2010); effects on student stress levels (Mills et al., 2017); increased self-agency of students; and better alignment with intended graduate attributes (Faison and Montague, 2013; Fetherston et al., 2018; Godfrey and Martin, 2016; Landeen et al., 2016; van de Mortel and Bird, 2010). Reported outcomes for faculty included changes to teaching and assessment practices (D'Antonio et al., 2013). Reported outcomes for the program included improved alignment with intended outcomes (Fetherston et al., 2018; Godfrey and Martin, 2016; Mailloux, 2011); integration of new concepts (Landeen et al., 2016; Meiers et al., 2018; Patterson et al., 2016); a better balance of content and better alignment of content between courses (Morris and Hancock, 2013); and an improved process for future renewals, or for staying on track with intended delivery of the courses in a renewed curriculum (Davis, 2011; Godfrey and Martin, 2016).

None of the papers reported on external outcomes (outcomes related to the effect of curriculum renewal on system level factors). However, in six articles, the authors acknowledged a relationship between nursing curriculum and patient safety (Mailloux, 2011), global health (Dawson et al., 2016), the health of communities and populations (D'Antonio et al., 2013; Godfrey and Martin, 2016; Meiers et al., 2018), and a nursing profession that was adapting to meet the needs of a complex and changing healthcare landscape (Fetherston et al., 2018).

3.7. *Evaluation*

Twelve articles reported on some element of evaluation; however, there was little agreement between who should or could be performing evaluative tasks, what elements needed evaluation, and the methods through which these elements should be measured/evaluated. Evaluations were conducted by outside researchers (Duncan and Schulz, 2015; Mills et al., 2017; Morris and Hancock, 2013), expert groups set up within institutions (Eglinton-Warner et al., 2013), and partnerships of course coordinators and learning centre representatives (van de Mortel and Bird, 2010). These evaluators examined comparisons of the new curriculum to an older model (Davis, 2011); alignment with certain standards or competencies (Godfrey and Martin, 2016; Mailloux, 2011; Morris and Hancock, 2013); National Council Licensure Examination (NCLEX) pass rates (Duncan and Schulz, 2015); student stress levels (Mills et al., 2017); and the delivery and integrity of courses when compared with intended outcomes (Eglinton-Warner et al., 2013; Meiers et al., 2018; Patterson et al., 2016; van de Mortel and Bird, 2010). Evaluations ranged from in-depth quantitative and qualitative research studies (Duncan and Schulz, 2015; Mills et al., 2017; Morris and Hancock, 2013), to student focus groups (Davis, 2011; Landeen et al., 2016), to ongoing monitoring of course content and delivery (Eglinton-Warner et al., 2013; Patterson et al., 2016; van de Mortel and Bird, 2010).

3.8. *Ottawa Model for Nursing Curriculum Renewal*

The results of our analysis are displayed in the Ottawa Model for Nursing Curriculum Renewal (Fig. 2). This aggregated logic model, which emerged from the literature synthesis, provides both an accessible overview of what processes schools of nursing have used to renew their curriculum, and a potential roadmap for schools looking to start the curriculum renewal endeavor. It illustrates the fluid connection between curriculum renewal and the context in which it functions. Institutional and system level factors act as internal and external drivers for curriculum renewal; in turn, curriculum outcomes effect these

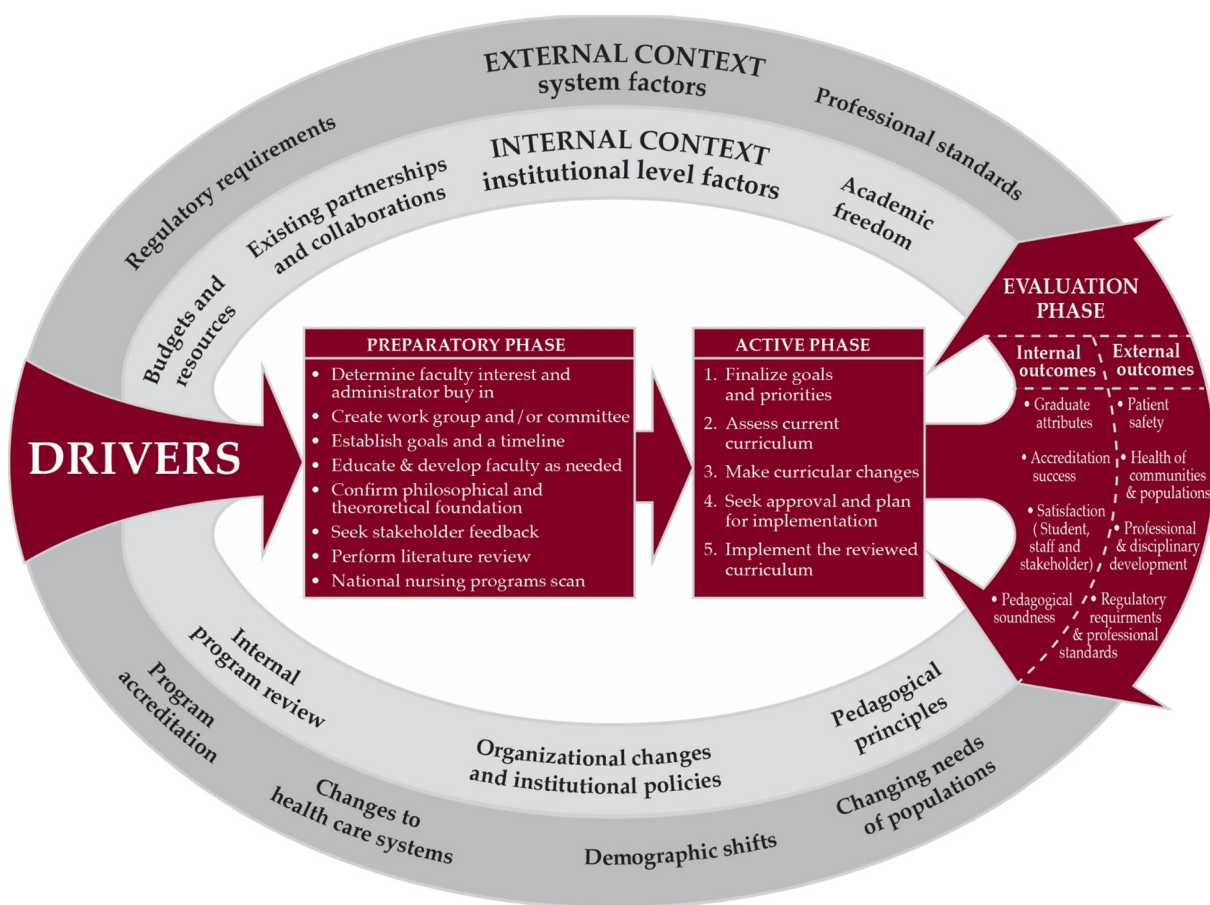


Fig. 2. The Ottawa Model for Nursing Curriculum Renewal.

internal and external contexts. Evaluation of the curriculum, which can happen at any phase of the process, assesses the success of the curriculum in meeting the desired outcomes. To have maximal impact and efficacy evaluation should be an ongoing process.

This model has the potential to assist educators and administrators during the renewal process in several ways. It can be a tool to prompt consideration of unique internal and external contextual factors that need to be weighed before embarking on the renewal process. It can provide preliminary direction to a working group or committee that plans the preparatory and active steps in a curriculum renewal. It can provide program faculty with an overview of the steps to expect during curriculum renewal, an understanding of where their expertise will be required, and a sense of how their work fits into the larger process within the school and educational institution. It can help those involved in evaluation processes to envision how, why and when evaluation happens, as well the essential role of evaluation in the ongoing development of a living, responsive curriculum. The model also draws attention to the role that nursing education plays in influencing the educational institution, the profession, the health system and health outcomes. Further research is needed to empirically test the model. This could be accomplished by reports about experiences as the model is adopted by other schools to guide curricular renewal. Alternatively, the model could be tested in collaboration with accrediting bodies during the accreditation review process.

4. Discussion

The curriculum renewal process was characterized in the reviewed articles as requiring philosophical cohesion (Eglinton-Warner et al., 2013), being built on a shared vision (Fetherston et al., 2018), requiring

the commitment of the entire faculty (Mailloux, 2011), and also as viable, replicable (Eglinton-Warner et al., 2013), collaborative (Fetherston et al., 2018; Nosek et al., 2017), daunting, long, complicated (D'Antonio et al., 2013; Kumm and Fletcher, 2012; Meiers et al., 2018), rewarding (Theobald and Campbell, 2016), and empowering (Mailloux, 2011). Through our analysis we delineated an evidence-informed framework outlining the key considerations and steps of nursing curriculum renewal. By creating an aggregated logic model, we were able to 'see' system level issues that may not otherwise be evident, such as conceptually underdeveloped areas (Anderson et al., 2011). Three such areas were the role of collaboration across the curriculum renewal process, the lack of information about how to engage in evaluative steps of curriculum renewal, and the relationship between nursing curriculum renewal and health system outcomes.

Collaboration played an important role at several points in the renewal process. The driver for the curriculum renewal was, in some cases, based in a collaboration (e.g. the merging of baccalaureate programs, or new partnerships between a university and affiliated colleges). The preparation for renewal relied on administrator buy-in, faculty interest and engagement, and often involved seeking out perspectives of multiple stakeholders, including students, faculty, and community clinical partners. In the active phase, the group tasked with curriculum renewal sought input and approval from multiple groups with varying interests and priorities. Through this process, the nature of existing relationships, partnerships and conflicts infused the process of curriculum renewal; these were also, reciprocally, affected by the renewal process. The logic model offered an opportunity to reflect on both the importance of collaborative relationships throughout the curriculum renewal process and its potential to provide opportunities for positive dialogue and new or renewed partnerships.

Evaluation is a vital step in the curriculum renewal process; it is through evaluation that school staff and outside evaluators determine that the renewed curriculum is being taught as intended and that the planned goals of the curriculum are being met. Evaluation also acts as impetus and guide to ongoing updates and improvements. Continuous, embedded evaluative processes allow schools of nursing to respond to external evaluators seamlessly (in our case, the Canadian Association of Schools of Nursing (CASN), the College of Nurses of Ontario (CNO), and the University of Ottawa Internal Quality Assurance Program (IQAP)). Currently, nursing curricula appears to be evaluated only when called on, typically for cyclical review or accreditation purposes. This review highlights the need for proactive (as opposed to reactive), adaptable, flexible and responsive evaluation methods that create a continuous feedback loop, embedding updates and adaptations into the evaluative process on a continuous basis (Hall, 2014; Keating, 2014; Lannan, 2017).

Through our synthesis, we found that this step in curriculum renewal was not well described, and many articles did not describe this step at all. Those that did lacked consistent or well-described rationales for what, when, and how they chose to evaluate, the key parties involved in the evaluation, or how this information was integrated into ongoing renewal processes. Nonetheless, in synthesizing this literature we identified areas for evaluation and approaches to conducting these evaluations. Specifically, these were: 1) 'Is the course content being taught as planned?' Yearly reviews of each course can be conducted by small groups including teaching faculty from across institutions (i.e. university and collaborators), and teaching and learning centre representatives. 2) 'Are program outcomes aligned with the intended goals of the curriculum?' Program outcomes include graduate attributes, meeting of professional and regulatory standards, and staff, student and stakeholder satisfaction. These outcomes can be evaluated in a number of ways, including NCLEX-RN pass rates, surveys, focus groups, document review, and course mapping. 3) 'What contextual changes (new technologies, health care trends, pedagogical theories, population needs) may require ongoing modification of the program?'. Although many curricula renewal and revision processes happened in response to some external change, no descriptions of the renewal process included a proactive, ongoing way of identifying and responding to contextual developments.

The identified lack of consistency in the ways that nursing curricula are evaluated is an important knowledge gap and more work is needed to identify the most appropriate and effective ways to engage in curriculum evaluation. Clear, defined evaluative strategies could help bring clarity, quality, and consistency to this process, supporting a standardized approach to maintaining a living, breathing nursing curricula.

Finally, as noted in the results section, this review revealed that there was little discussion in the literature about the relationship between nursing undergraduate curriculum renewal and broader, lasting effects on the health of communities and populations. Our logic model prompts reflection on the relationship between undergraduate nursing curriculum renewal and desired local, national, and international health systems and population health outcomes, as well as ongoing evolution of the nursing discipline.

5. Limitations

There are limitations to consider when utilizing the results of this review. First, it was based on English literature only, because no French language articles emerged during our literature searches. Second, we provide general guidance for overall curriculum redesign, with little direction for mitigating context-specific issues. A logic model ought to strike a balance between "an all-inclusive model and a useful heuristic tool" (Anderson et al., 2011, p.40). Therefore, although we worked to create a model that exposed the complexity of the process, this task at the same time required us to simplify and reduce the available data. The

process of logic model development may have limited the ability to highlight nuanced complexities within the contexts of specific nursing programs.

6. Conclusion

Through this review, we highlighted and defined important elements inherent in the renewal process of undergraduate nursing programs. Further, we displayed these elements in a logic model in order to enhance understanding of this complex process and its context, stimulate systems level thinking, and provide a usable template to aid educators undertaking their own curriculum renewal. Undergraduate nursing curricula renewal is a topic that merits ongoing examination; through this review we identified that the evaluation of nursing curricula is an important area needing further exploration. For undergraduate nursing programs, curriculum renewal relies on the involvement and expertise of multiple stakeholders. The Ottawa Model for Nursing Curriculum Renewal provides an evidence-informed visual representation of the process that has the potential to improve communication between parties involved in the curriculum renewal process and bring clarity and consistency to this endeavor.

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None to declare.

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