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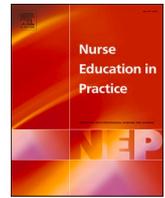
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Review

Learnings from nursing bridging education programs: A scoping review



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ABSTRACT

Aim: The aim of this scoping review is to summarize and critically evaluate research focused on nursing bridging education programs internationally. Specifically, this review addresses bridging from a: (1) Personal Support Worker (or similar) to a Registered Practical Nurse (or similar); and (2) Registered Practical Nurse (or similar) to a Registered Nurse.

Background: Nursing bridging education programs support learners to move from one level of educational preparation or practice to another. These programs can therefore increase nursing workforce capacity. Global healthcare systems have faced nursing shortages for decades. Moreover, the presently insufficient nursing workforce is confronting an ever-increasing volume of needed healthcare that is rising with the global ageing demographic shift.

Design: The Joanna Briggs Institute methods for scoping reviews, combined with Arksey and O'Malley's (2005) guidelines, were used with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR).

Methods: MEDLINE (Ovid), CINAHL, EMBASE and SCOPUS databases were searched. Articles published in English that included Personal Support Workers, Registered Practical Nurses, Registered Nurses and/or nurses in similar categories who were studied through the process of a nursing bridging education program were included in the review. The study search was limited to papers published after 2005 (i.e., the beginning of nurse workload "overload" according to the Canadian Nurses Association). Braun and Clarke's (2006) thematic analysis was used in a content analysis of the included studies.

Results: A total of 15 articles published between 2005 and 2022 were included. Four themes were generated: (1) participating in bridging education programs fuels both professional and personal development; (2) nursing bridging education programs enhance diversity in the nursing workforce; (3) student nurses do not anticipate the challenges associated with participating in a bridging program; and (4) mentor-mentee connection promotes academic learning and successful completion of nursing bridging education programs.

Conclusions: Despite experiencing challenges, participation in/completion of nursing bridging education programs leads to successful role transitioning and self-reported fulfillment of personal and professional aspirations. This review revealed the need for bridging programs to accommodate the unique needs of student nurses. Incorporation of support services, mentorship and faculty familiarity with varying nursing educational backgrounds facilitates role transitions by reducing the perceived challenges of bridging and promoting connection to foster learning. Nursing bridging education programs allow greater numbers of nurses to be trained to build workforce capacity and enable care for the world's rapidly ageing population.

1. Introduction

Globally, initiatives in nursing bridging education have been ongoing for decades as a means to increase capacity in the nursing

workforce (Birkhead et al., 2016; Chachula et al., 2020; Cubit and Lopez, 2012; Hylton, 2005; Ikeda et al., 2008; Juraschek et al., 2012; King et al., 2022; Littlejohn et al., 2012; Registered Nurses' Association of Ontario (RNAO), 2021; Suva et al., 2015; Educational Resources Information

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Center (U.S.), 2001). Internationally, these programs have been referred to as “nursing bridging education” (NBE), “educational advancement”, “career laddering”, “mobility”, “articulation” and/or “bridging” programs (Educational Resources Information Center (U.S.), 2001). For the purposes of this review, the term “NBE” programs will be used to represent any educational program that supports learners to “bridge” or move from one level of educational preparation or practice to another (Coffey et al., 2017). NBE programs recognize that nurses like Registered Practical Nurses (RPNs; or similar categories of nurses like Licensed Practical Nurses in The United States and Canadian provinces outside of Ontario) and Personal Support Workers (PSWs; or similar job titles like Healthcare Aides and Licensed Practical Nurses in the United States, Australia and the United Kingdom) already have valuable skills, knowledge and experiences that can be leveraged to streamline their educational requirements to practice at an advanced educational level (such as that of a Registered Nurse). NBE programs may; therefore, increase the numbers of nurses in the healthcare workforce in a shorter time frame.

During the Coronavirus Disease 2019 (COVID-19) pandemic, an increasing number of nurses resigned from, or indicated their intention to leave, the nursing profession secondary to: increasingly heavy nursing workloads, high rates of personal burnout and reluctance for job reassignment during the pandemic (Lopez et al., 2022). At present, across the globe, there is an unparalleled shortage of nurses (Duncan, 2019; Haddad et al., 2022; Health Workforce Australia, 2014; Murphy et al., 2022; World Health Organization [WHO], 2022) that has been exacerbated by COVID-19 and a globally ageing population (Haddad et al., 2022; Hoover et al., 2002; Kovner et al., 2002). For these reasons, increasing the numbers of nurses in the healthcare workforce is a priority.

Over a decade ago, the Institute of Medicine Report on *The Future of Nursing* was the first to call for a global nursing workforce that is largely educated at a minimum of a baccalaureate-level (2011). This suggests that globally, bridging nurses from one level of education to a baccalaureate-level may be beneficial. For example, in the Canadian province of Ontario, Registered Nurses (RNs) are required, as of 2005, to hold a baccalaureate degree in nursing, whereas RPNs are required, as of 2001, to hold a two-year diploma in nursing (Ontario Ministry of Health, 1999; Salami et al., 2018). The Canadian Nurses Association describes an overlap between the scopes of practice of RNs and RPNs in terms of their knowledge and skills because they largely study from the same body of nursing knowledge and function as autonomous and collaborative practitioners (Canadian Institute for Health Information, 2022; Tarnowski et al., 2017). Both Ontario RPNs and RNs are licensed through the College of Nurses of Ontario (<https://www.cno.org/>). Nursing categories that share some similarities in nursing practice to the RPN in Ontario include Licensed Practical Nurses (LPNs; Birkhead et al., 2016; Cook et al., 2010; Jones et al., 2018) in other Canadian provinces, Enrolled Nurses (ENs; Brown et al., 2015; Rapley et al., 2008) in Australia and New Zealand and Assistant Practitioners, Associate Degree and Associate Nurses (AP, ADN, AN; Driffield, 2016; King et al., 2022) in the United Kingdom. However, in comparison to Ontario’s registered RPNs, the LPN, EN, AP, ADN and AN may not always hold similar nursing education and registration requirements (i.e., they may not be regulated professionals in all jurisdictions), nor have the same autonomous responsibilities as RPNs. For the purposes of presenting the findings from this scoping review, RPN, LPN, EN, AP, ADN and AN nursing titles are exclusively included within the statement “RPN(s) (and similar)” nurse categories.

Personal Support Workers (PSWs), sometimes referred to in the literature as Healthcare Aides (HCAs) or Licensed Vocational Nurses (LVNs), also possess patient care skills and foundational knowledge relevant for participation in an NBE program (Breen et al., 2022; Canadian Research Network for Care in the Community, 2009; Porter-Wenzlaff and Froman, 2008; Sun et al., 2022). PSWs already have valuable skills, knowledge and experiences that can be leveraged to

streamline their educational requirements to practice at an advanced educational level. PSWs bridging to become nurses could increase the number of nurses in the workforce in a shortened time frame. PSWs are not regulated by a health professional college, nor do they hold accredited academic qualifications. PSWs report having low wages, job insecurity and short-term employment (Hapsari et al., 2022). With otherwise little opportunity for career development, NBE programs facilitate PSW-to-RPN (or similar) transitions to address nursing workforce shortages (King et al., 2022; Brennan and McSherry, 2007; Hibbert, 2006). For the purposes of this review, the roles of PSW, HCA or LVN, are exclusively included within any statement of “PSW(s) (and similar)”.

To our knowledge, a scoping review summarizing and critically evaluating domestic and international research addressing NBE programs has not been conducted. In this review we aim to examine research addressing bridging from: (1) PSW-to-RPN (or similar); and (2) RPN-to-RN (or similar). The outcomes of this review will inform policy makers, researchers, educators and employers about the successes and challenges of NBE programs which may contribute to the development of programs that promote solutions for the ongoing nursing shortage and increase capacity within the nursing workforce.

2. Methods

The Joanna Briggs Institute (JBI) methods for scoping reviews (Peters et al., 2020) were used in this review. The five-stage framework developed by Arksey and O’Malley (2005) and further developed by Levac et al. (2010) supplemented the JBI methodology and included: (1) determining the research question; (2) searching relevant databases to identify potential articles; (3) screening all abstracts/titles for relevance; (4) removing duplicates and searching the reference lists of relevant articles for any additional articles; (5) completing a full-text review of eligible articles to determine inclusion; and (6) extracting all relevant data from selected articles. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews (PRISMA-ScR) checklist was also used (Tricco et al., 2018; see Appendix A). A protocol of this review was not registered prior to conducting the search.

2.1. Inclusion and exclusion criteria

The inclusion criteria were: (1) studies published in English; (2) studies that included PSWs, RPNs, RNs and/or healthcare professionals of similar respective categories (i.e., LPN, EN, ADN, AN, HCA, LVN), in NBE programs; and (3) studies published after 2005 (i.e., the date indicated by the Registered Nurses Association of Ontario as the beginning of Ontario nurses experiencing work “overload” [RNAO, 2021]). All types of study designs were considered for inclusion. Articles not available in English, or those including high school students were excluded. Strictly theoretical/conceptual and grey literature was excluded from this scoping review to reduce potential bias (Hopewell et al., 2007).

2.2. Search strategy

Computer-aided searches of MEDLINE (Ovid), CINAHL, EMBASE and SCOPUS databases were conducted in collaboration with a Teaching and Learning University Librarian at Western University on September 27, 2022, to ensure literature saturation. The search was conducted on October 30, 2022 (see Appendix B for search strategy). All search terms were searched as keywords in addition to each database’s specific subject headings (e.g., SCOPUS’ use of keywords only and Medline’s use of subject headings). The words used in the search included: career ladder*; career mobil*; nurses; nursing staff; personal support worker; health care aide; health care assistant; and workforce. No restrictions on language of publication were included in the search (i.e., language was used as an inclusion criterion that was manually confirmed by study

authors).

2.3. Study selection

Covidence review management software was used for study screening and selection (Covidence Systematic Review Software). All citations identified through the database searches were exported and uploaded into Covidence where duplicates were removed. Two authors [NG, AA] independently screened the titles and abstracts yielded by the search against the inclusion and exclusion criteria and conducted full-text reviews to confirm whether articles met the selection criteria. Additional insight from consultation with The Registered Practical Nurses Association of Ontario (WeRPN) was obtained when necessary to resolve concerns about literature eligibility. A priori it was determined that disagreements would be resolved through discussion; however, no disagreements occurred.

2.4. Data extraction and quality assessment

The following information was extracted by two authors [AA, SJ] from each included paper: country of publication, study duration, study design and setting, objectives, aims, sample size, study characteristics, interventions, study findings, themes, implications and limitations. When information was unavailable from included publications, the articles' authors were contacted up to two times to request missing data. If a response was not received within 5 business days missing information was termed "not available". In no instances did study authors reply to requests for additional information; therefore, some information was determined to be not available (as indicated by "NA" in Table 1).

Three authors participated in [NG, AA, SJ] individually assessing the quality of the included papers using Hawker and Payne's (2002) quality appraisal criteria. Each included paper was assessed by two authors. The Hawker and Payne (2002) tool consists of nine subscales (i.e., abstract and title, introduction and aims, method and data, sampling, data analysis, ethics and biases, results, transferability/generalizability and implications and usefulness of the study). The items in each subscale are rated on a 4-point ordinal scale described as good (4), fair (3), poor (2) and very poor (1). Each article receives a total score within the range 9–36 (Hawker and Payne, 2002). A score of 28–36 was associated with good quality articles, 20–27 for fair articles, 10–20 for poor quality articles and less than 10 for very poor-quality articles. An inter-rater correlation of initial quality ratings was computed using a Pearson's r correlation. Discrepancies for the final quality score assigned to a paper were resolved by two authors [SJ, NG] through conversation to reach a consensus.

2.5. Data analysis

To analyze the data within a scoping review, Arksey and O'Malley (2005) suggest using a qualitative content analysis. The reviewed studies were analyzed using Braun and Clarke's (2006) thematic analysis as a flexible guide that includes six phases: (1) becoming familiar with the data; (2) generating initial codes; (3) developing broad themes; (4) reviewing and refining themes, (5) conceptualizing the themes; and (6) writing the findings. The authors [NG, SJ] reviewed the included articles and together developed codes for the initial coding process. Codes emerged after iterative reviewing and discussion between authors [NG, SJ, DC, NS]. After determining how the reviewed literature focused on different aspects of the experience of participating in NBE programs, the remaining data were further coded and developed into themes. The themes became finalized after further discussion and revision by the research team.

To synthesize qualitative and quantitative literature together in a scoping review, Sandelowski et al.'s (2007) integrated synthesis method was used. Integrated synthesis is the process of transforming the results of quantitative data into qualitative findings based on the assumption

that the data from the reviewed articles answer the same research question and thus do not require separate analyses (Sandelowski et al., 2007). The findings from the reviewed literature were combined to summarize the research focused on NBE programs, regardless of the research methods used to collect the data in the individual articles.

3. Results

3.1. Characteristics of included articles

Fifteen articles published between 2005 and 2022 were included in this scoping review (see Fig. 1). Thirteen articles were primary research studies (i.e., five quantitative, seven qualitative and one systematic review). In addition, one program review and one narrative literature review met the inclusion criteria. Five of these studies were conducted in Australia, four in the United States, two in Canada and one in each of Scotland, New Zealand, Japan and England. Eleven primary research articles that were included examined NBE for RPN (or similar)-to-RN transition, one study focused on NBE for PSW (or similar)-to-RPN (or similar) transition and one study focused on NBE for PSWs (or similar)-to-RN transition.

3.2. Methodological quality of the included studies

On the Hawker and Payne (2002) quality assessment scale initial inter-rater correlations of quality scores before discussion to reach consensus was high, $r = 0.75$. After consensus, nine of the 15 studies met criteria for a "good" quality rating. Four studies were rated as "fair" quality and two studies were rated as "poor" quality. On average, studies scored 28/36 (i.e., "good" quality), $SD = 5.61$, $min, max = 16, 36$ on the Hawker and Payne scale (see Table 1).

3.3. Participant characteristics

The eleven papers reported sample sizes. Altogether a total of 39,949 participants in the included literature experienced NBE transition from a RPN (or similar)-to-RN and 14 participants that experienced NBE transition from a PSW (or similar)-to-RPN (or similar; see Table 1). Four studies reported the sex of their participants ($N = 79$; Brennan and McSherry, 2007; Brown et al., 2015; Kenny and Duckett, 2005; King et al., 2022): 75.9% were female and 24.1% were male. One study ($N = 16$) reported an undefined 'majority' of their participants were "mature women" (Hylton, 2005, p. 520). The average age of participants was reported in three included studies ($N = 348$; Cook et al., 2010; Cubit and Lopez, 2012; Ikeda et al., 2008) as 37.1 years of age. Two additional studies reported an age range between 20 and 40 years (Brown et al., 2015; Kenny and Duckett, 2005). Three studies commented on the ethnicity of their participants (Cook et al., 2010; Hylton, 2005; King et al., 2022). Cook et al. (2010) reported that 58% of their LPNs experiencing a NBE program to transition to RNs were "foreign born" (p. 126), Hylton (2005) reported that most of their participants were Māori and King et al. (2022) reported that of their 14 participants, 11 were British Caucasian, two were African American and one was Asian. Two studies reported a total of 36.3% and 40.9%, respectively, of RPNs (or similar) were working in LTC, while only 21.3% were working in hospital settings before their NBE program (Cook et al., 2010; Jones et al., 2018). Only one study reported data regarding matriculation from the New York State LPN-to-RN program at two hospital-based universities over a 12-year period (Birkhead et al., 2016). Course grades, assessments and National Council Licensure Examination for Registered Nursing (NCLEX-RN) results were comparable among LPNs in the NBE program and nursing students enrolled in a non-bridging RN program (Birkhead et al., 2016). A summary of setting characteristics, program structures and findings for the one program review and one narrative literature review included in this scoping review are presented in Table 2.

Table 1
Summary of setting, participant characteristics and findings from primary studies (N=12).

Author, Year, & Country of Publication	Setting	Aim/Purpose	Sample & Participant Characteristics	Study Design	Study Duration	Methods	Key Findings/Conclusions	Quality Score
Birkhead et al. (2016) U.S.A.	2 hospital-based associate degree schools.	To evaluate the effectiveness of New York State LPN-to-RN Articulation Model (NYSLRAM).	NR	Quantitative, retrospective analysis.	12 years	Audit of records; matched pairs of generic nursing students and LPN students.	Model gives credit for previous education, offers tuition payment. Previous education can enhance success in transition from LPN to RN.	29 Good quality
Brennan and McSherry (2007) Scotland	A university in the Northeast of England.	To identify the transitional and professional socialization process experienced by HCAs as they progressed through their nurse training.	Student nurses undertaking 3-year nurse training program whose last employment position was a HCA. N=14 (11 women, 3 men)	Qualitative, thematic content analysis.	NR	Semi-structured focus group interviews.	Issues with transition from HCA to RN around role identity, exposure to RN role, reality shock; retreating to previous role as HCA.	28 Good quality
Brown et al. (2015) Australia	A health service in Southeast Queensland, Australia.	To develop an in-depth understanding of issues relevant to the transition experience of this specific group of RNs who had previous experience as ENs.	RNs who had previous experience as ENs. N=13 (11 women, 3 men) Age = 20–50 years (median 25) Previous EN experience = 2 months to 14 years	Qualitative, thematic analysis.	1 year	Individual, in-depth, semi-structure face-to-face or telephone interviews.	Support required for successful transition to RN role, to consolidate knowledge and skills and contribute towards positive patient outcomes. Reluctance to disclose previous experience as EN when transitioning to RN role.	28 Good quality
Coffey et al. (2017) Canada	On the telephone or using LimeSurvey	To describe the impact and outcomes of the NBE program and their experiences transitioning into RN practice.	Graduates of one NBE program in Ontario Canada N = 30	Qualitative, thematic analysis.	12–16 months	Telephone interviews (N=11) or online qualitative questionnaires (N=19).	Participants provided insight into their experiences as they were asked to reflect on the NBE program and their subsequent practice. NBE program graduates undertook an external process of role transition, while undergoing an internal process of person and professional transformation.	31 Good quality
Cook et al. (2010) U.S.A.	Nursing Department of Prince George's Community College, Largo, Maryland.	To understand demographics, characteristics and the challenges LPNs face in returning to school for their RN education.	LPN-to-RN transition students. N= 79 Average age=38.8 years, employed as LPN for average of 6.6 years. Foreign-born (N= 46)	Quantitative, cross-sectional.	Data collected over 3 years	Survey containing 22 questions administered to students in the LPN-to-RN transition option within the last 2 weeks of the transition course.	Returning to school is a challenge for many adult learners. The need for RNs continues to increase in health care; programs assisting LPNs to become RNs must be sensitive to these challenges.	22 Fair quality
Cubit and Lopez (2012) Australia	A 334-bed medium-sized metropolitan public district teaching hospital in the Australian Capital Territory, Australia.	To explore the transition experiences of graduate nurses who had previously practiced as ENs in a public hospital.	New graduate nurses who had previously practiced as ENs. N=8 (7 females, 1 male). Age range = 24–56 years (median 33.1 years).	Qualitative, descriptive content analysis.	1 year (2009).	3 focus group sessions (1 week after start of program, after 6 months and at end of program).	Graduate nurses who were previously ENs should be treated as any new RNs in the graduate nurse program. Clinical nurses must not expect that newly graduated nurses with an EN qualification will have an easier	31 Good quality

(continued on next page)

Table 1 (continued)

Author, Year, & Country of Publication	Setting	Aim/Purpose	Sample & Participant Characteristics	Study Design	Study Duration	Methods	Key Findings/Conclusions	Quality Score
Hylton (2005) New Zealand	A 2.5-year flexible Bachelor of Health Science program was developed and delivered to ENs at a small rural, satellite campus.	To identify the factors that assisted or hindered transition from EN to RN.	Students (N=10), teachers (N= 6). Most the EN to RN students were mature Maori women with home and family commitments with limited access to technology.	Qualitative, descriptive and comparative analysis.	NR	Focus groups, students and teachers interviewed separately. Second focus group with just students.	transition into practice. Cognitive and behavioral adaptations were made by mature students retuning school. Needing to let go of unproductive learning methods. Students' qualification as ENs facilitated as well as hindered their transition to RN role.	16 Poor quality
Ikeda et al. (2008) Japan	9 hospitals located throughout Japan.	To investigate the career advancement intentions of hospital working LPNs throughout Japan and to clarify the effects of personal attributes, career consciousness and aspirations.	Total of 261/356 (73%) LPNs participated. Mean age= 39.4 ± 11.4 years. Practiced nursing = 18.2 ± 10.1 years, 4 (1.6%) had the title of 'head nurse'. 71% were high school graduates and 25.4% were junior high school graduates.	Quantitative, cross-sectional design.	NR	Questionnaires. Items included: demographic data, working environment, career advancement intention, reasons for not proceeding to transitional programs, job image of LPN, job image of RNs, a sense of reward, determined to continue working as a nurse, comparing the image of LPNs to the image of RNs and role acceptance.	A support system for LPNs to conduct their role with confidence is an important factor for LPNs to be motivated to seek career advancement. Role achievement, type of LPN education, educational background and image of RNs enhanced the career advancement intentions of LPNs to become RNs. Greater role-satisfaction and a positive image of RNs motivated career advancement.	33 Good quality
Jones et al. (2018) U.S.A.	Data on the LPN workforce contained in the North Carolina Health Professions Data System.	Describe the occurrence of LPN-to-RN professional transitions; compare the demographic, professional and geographic characteristics of LPNs who did and did not have transition; and compare professional and geographical characteristics for LPNs who transitioned to RN in the year before and the year of the transition.	LPNs working in North Carolina (N = 39,398).	Quantitative, retrospective audit and evaluation.	Data from 2001 to 2013.	Frequencies and percentages of LPN-to-RN transitions for each year. Logistic regression models on occurrence of transitioning from LPN to RN.	Low frequency of LPN-to-RN transitions suggests the need for strong peer and academic support for LPNs when considering professional transitions, participate in coursework and study for the licensure examination.	33 Good quality
Kenny and Duckett (2005) Australia	A rural university in Victoria, Australia, offering a 2-year RN conversion program for ENs.	Exploring the reasons why rural ENs have chosen to convert to RNs.	N= 38 ENs (95% of total cohort enrolled in 2-year conversion program). Age = 20–40 s years, 30% male, all Anglo-Saxon, from rural communities and traveling for study;	Qualitative, thematic analysis.	2 months	Online focus group.	Scope of practice as EN is significantly broadened in rural areas but RNs in ideal position to manage diversity of rural practice. EN conversion has potential to ease	32 Good quality

(continued on next page)

Table 1 (continued)

Author, Year, & Country of Publication	Setting	Aim/Purpose	Sample & Participant Characteristics	Study Design	Study Duration	Methods	Key Findings/Conclusions	Quality Score
King et al. (2022) England	5 Higher Education Institutions across England.	Factors that have influenced career aspirations and choices for undertaking nursing associate training.	diverse clinical backgrounds, employed in rural areas, clinical experience of 1–20 years (average=9 years). N = 14 training ANs participated; females (N=11), males (N=3); White (N= 11), Black (N= 2) Asian (N= 1), previously worked as HCAs (N= 11).	Qualitative, thematic analysis.	2 years	Semi-structured telephone or video call interviews at two time points (February 2020 and March 2021). Collected interview and diary data.	workforce shortages, particularly in rural areas. Positive and supportive workplace culture is important to participants and crucial to retaining staff at the HCA level. Those who chose to remain in the HCA role talked about making a difference and reflected on times when they felt valued through strong leadership and a positive workplace culture.	36 Good quality
Rapley et al. (2008) Australia	Curtin University of Technology, Perth, Australia.	To determine the relationships between prior education, length of experience as an EN and geographical location of the student to RN pathway.	N=112 EN pathway students. External pathway course eligibility: Min 1 year experience as EN; 1 of 4 university-entry qualifications: hospital-based certificate (N=63), technical college qualification (N = 40), at least 1 year of university study (N=4), bachelor degree in another discipline (N=5). Rural and country students (N = 56).	Quantitative, correlation, retrospective design.	Data from 2000 to 2003	Descriptive statistics, Chi-square analysis, Mann–Whitney U test and logistical regression.	The following did not significantly impact program completion: being located in rural or metropolitan areas, EN educational background and clinical experience. Students with a hospital-based certificate were more likely to complete program compared with a technical college qualification.	27 Fair quality
Suva et al. (2015) Canada	Systematic review conducted by the Registered Nurses' Association of Ontario (RNAO).	To review the evidence examining the influences of successful education and professional role transition for RPNs pursuing an RN licensure through RPN-to-RN bridging programs.	39 papers included in analysis.	Systematic review, thematic analysis. Search conducted on 8 online databases.	Papers published between January 1995 to February 2014	Papers selected that observed or studied the change or transition in designation from RPN to RN, or its equivalent, through bridging programs.	Providing transition supports may enhance successful student transition into and throughout a bridging program. Need to consider advanced standing or credit based on prior knowledge and experiences. Online programs, flexible curriculum plans and classes recommended to improve work-life balance. Mentorship and support from peers, managers and clinical educators are important.	25 Fair quality

Note. AN, Associate Nurse; EN, Enrolled Nurse; HCA, Healthcare Aide; LPN, Licensed Practical Nurse; NR, not reported; RN, registered nurse; RPN, registered practical nurse.

3.4. Integrated synthesis

A content analysis of the 15 included articles focused on NBE programs led to four themes. The themes were: (1) participating in bridging

education programs fuels both professional and personal development; (2) nursing bridging education programs enhance diversity in the nursing workforce; (3) student nurses do not anticipate the challenges associated with participating in a bridging program; and (4) mentor-

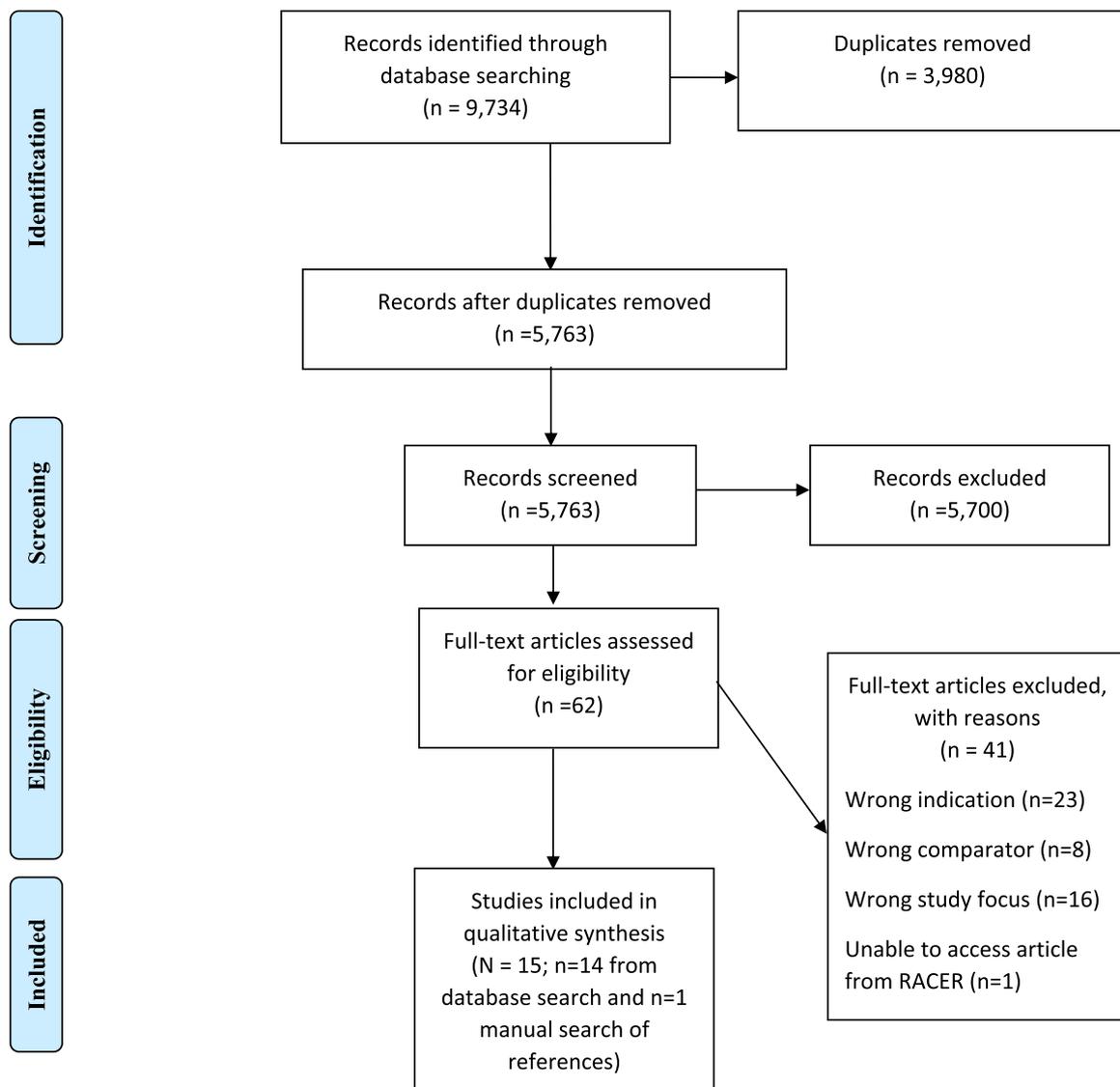


Fig. 1. Flow-chart of the process of the scoping review article identification, screening and eligibility.

mentee connection promotes academic learning and successful completion of nursing bridging education programs (see Table 3).

3.4.1. Participating in bridging education programs fuels both professional and personal development

Advantages of and reasons for, completing a NBE program for students seeking a RPN-to-RN (or similar) transition were most commonly reported to be: increased career mobility (Cook et al., 2010; Kenny and Duckett, 2005); lack of current opportunities in acute care settings (Cook et al., 2010); increased financial security (Kenny and Duckett, 2005); and role ambiguity between other healthcare workers hired at lower wages (Kenny and Duckett, 2005). Further reasons for participating in a NBE program included: organizational requirements, financial advantages compared with traditional educational paths and feeling devalued by their employers in the workplace (Cook et al., 2010; Kenny and Duckett, 2005; King et al., 2022; Ralph et al., 2013).

Participants enrolled in NBE programs described both personal and professional aspirations as motivators for pursuing further education (Brown et al., 2015; Coffey et al., 2017; Cook et al., 2010). In one included qualitative study, participants' reasons for pursuing different registration from PSW (or similar)-to-RPN (or similar) or PSW (or similar)-to-RN included the perception that NBE programs are an accessible route to a nursing career that fulfills personal aspirations

(King et al., 2022). Two included articles reported that gaining an expanded scope of practice, new knowledge and skills were professional reasons for participating in a NBE program (Brown et al., 2015; Cook et al., 2010). One study examining the factors that influence the transition of students from roles as PSWs-to-RPNs (or similar) noted that PSWs perceive RPNs to have a clearer professional identity (King et al., 2022). Training to become a more highly skilled healthcare professional also resulted in a self-perceived greater sense of responsibility in their new roles at work for the participants in the included studies (Brown et al., 2015; Ralph et al., 2013). This view was reported to be highly valuable to the participants in these studies (Brown et al., 2015; Ralph et al., 2013). Participants believed that in their new roles at work they would be able to provide a higher level of care and more complete care, to patients who were more medically complex (Brown et al., 2015). Moreover, one study in the present review reported that students felt there was more emphasis on critical thinking and problem-solving skills in NBE programs compared with their previous education (Suva et al., 2015). In this review, the participants' self-reported professional and personal development led to improved self-confidence, self-efficacy, sense of accomplishment, motivation to be a life-long learner and job satisfaction (Ralph et al., 2013; Suva et al., 2015). Therefore, in the present review, both professional and personal motivators led people to engage in NBE programs and seek a role transition in the workplace.

Table 2
Summary of findings from literature and program review articles (N=2).

Author (s) (Year) Country	Article type	Setting/ Background	Aim/Focus	Outcomes	Key Findings/ Conclusions
Goodwin-Esola and Gallagher-Ford (2009) U.S.A.	Program review	Educators responsible for orientation of newly hired nurses, including those who completed a LPN-to-RN program at a 296-bed community hospital.	To better understand the educational needs of newly hired RNs and the need to provide a different orientation for LPNs who transitioned to RNs.	Challenges reported: interaction with physicians, delegating, assimilating the accountability of an RN in clinical setting. Role-playing allowed processing previous level of responsibility and new responsibility in RN role. LPNs challenged with building respect in the RN role.	Orientation for LPN-to-RNs should: (1) be focused on process and actions/tasks instead of memorization; (2) consider the wide range of backgrounds of learners; (3) allow learners to discover things for themselves (with instructor guidance and help); (4) allow learners to be involved in planning the instruction whenever possible; (5) include case studies, simulations and role playing; and (6) advice instructors to function as facilitators rather than lecturers.
Ralph et al. (2013) Australia	Narrative literature review	A review of the literature on the experiences of ENs undertaking an RN degree and their subsequent conversion to RN status.	To assess determinants for ENs' decision to undertake baccalaureate studies, challenges faced by ENs in the conversion process and factors that influence successful transition to RN status will be explored and discussed.	EN-to-RN pathway resulted in personal development, professional success; personal, social and professional commitment; social, financial, familial hardships; improved self-confidence; opportunity to study by distance education. EN-to-RN students were statistically more likely to be experienced males working outside of the aged care sector and possessed high career aspirations and be working full-time.	Decision to undertake EN-to-RN pathway is emotive and serves as motivation to rediscover their passion for nursing. Distance delivery allows students to better manage their work like balance. Lack of awareness of credit transfers, fearful of academic expectations, family commitments, financial insecurity, feeling of being alienated from EN colleagues and perception of abandoning the EN profession were reasons for not pursuing EN-to-RN pathway.

Note. EN, Enrolled Nurse; LPN, Licensed Practical Nurse; RN, registered nurse; RPN, registered practical nurse.

3.4.2. Nursing bridging education programs enhance diversity in the nursing workforce

Cultural diversity in healthcare is important for creating inclusive healthcare teams and ensures that all patients, specifically racial and ethnic minorities, receive culturally competent care. Four articles in the present review reported that NBE programs improved cultural diversity in the nursing workforce (Birkhead et al., 2016; Cook et al., 2010; Hylton, 2005; Jones et al., 2018). One American study reported that 58% of LPNs enrolled in a bridging program were "foreign-born" (p.126, Cook et al., 2010) with the highest proportion reporting that they were born in Nigeria. In another study included in this review, LPNs who identified as Asian, American Indian, or Black were more likely to transition to become a RN compared with Caucasian LPNs (Jones et al., 2018). A different study conducted in New Zealand reported that most students who enrolled in a NBE program were people working in rural settings and identified as Māori women (i.e., indigenous Polynesian people of New Zealand; Hylton, 2005). Therefore, NBE programs may enhance the cultural diversity of the nursing workforce.

3.4.3. Student nurses do not anticipate the challenges associated with participating in a bridging program

Several challenges were noted by participants in the present review when enrolling in a NBE program. Some of those challenges were reported to prevent people from enrolling altogether. Most notably, four studies reported that financial insecurity, the need to continue to work and family commitments were challenges when considering participating in a NBE program (Cook et al., 2010; Ikeda et al., 2008; Ralph et al., 2013; Suva et al., 2015). One study that surveyed LPNs about their perceptions of NBE programs, reported that a limited number of available programs, limited support from workplaces and no job assurance after obtaining educational advancement were deterrents to considering participation in a NBE program (Ikeda et al., 2008).

Another key challenge identified was a lack of academic

preparedness when entering a university program. Three studies reported that students in NBE programs felt unprepared for the expected level of academic responsibility, commitment and depth and breadth of new knowledge they would need to learn (Brennan and McSherry, 2007; Hylton, 2005; Suva et al., 2015). Two studies reported that participants believed the NBE program would act as a "refresher" on their previous education and that their work experience would be "enough to carry them through" the program (Brennan and McSherry, 2007, p. 210; Cook et al., 2010). One study revealed a high number of students reported experiences of anxiety, low self-esteem and a self-reported perception of "difficulty finding their voice" in their NBE program (Hylton, 2005, p. 521). In another article, transitioning after a NBE program was described as "nerve-racking" secondary to heightened professional demands (Coffey et al., 2017, p. 009) where "you had to figure out how to bring new knowledge and practice to an ongoing practice environment" (p. 009). Cubit and Lopez (2012) generated three themes describing the challenges perceived by participants enrolled in a bridging program: (1) stepping out of comfort zone[s]; (2) being taken advantage of; and (3) needing support as much as others. Moreover, three studies described specific challenges perceived by students during clinical placements in their NBE program including HCAs transitioning to ANs (Brennan and McSherry, 2007) and ENs transitioning to RNs (Cubit and Lopez, 2012; Brown et al., 2015). These students reported nurse wards had increased expectations of students with previous experience in a nursing role (Brown et al., 2015; Brennan and McSherry, 2007) and that this had a "negative influence" on their experience (Brennan and McSherry, 2007, p. 212). Two studies reported that students would intentionally conceal previous nursing experience during clinical placement to avoid being subject to these increased expectations (Brennan and McSherry, 2007; Cubit and Lopez, 2012).

Hylton (2005) described that adult learners were more motivated to learn if the knowledge they gained had practical applications to their work and if they could be self-directed learners. Alternatively, in several

Table 3
Summary of themes describing research focused on nursing education bridging and advancement programs (N =16).

Participating in bridging education programs fuels both professional and personal development	Nursing bridging education programs enhance diversity in the nursing workforce	Student nurses do not anticipate the challenges associated with participating in a bridging program	Mentor-mentee connection promotes academic learning and successful completion of nursing bridging education programs
Expanding scope of practice (Brown et al., 2015).	Educational mobility for LPNs may enhance the diversity of the RN workforce (Birkhead et al., 2016).	HCAAs assumed would carry them through program (Brennan and McSherry, 2007) and assumption that transition course would be a ‘refresher’ (Cook et al., 2010).	Building on experience and recognition of prior learning (Brown et al., 2015).
Acquiring new knowledge and skills (Brown et al., 2015; Cook et al., 2010).	58% of LPNs were foreign-born with the highest number from Nigeria (Cook et al., 2010).	Transitioning after NBE as “nerve-racking” with heightened professional demands (Coffey et al., 2017, p. 009) where you “had to figure out how to being new knowledge and practice to an ongoing practice environment (p. 009).	Need support as much as other new RNs (Cubit and Lopez, 2011).
Greater responsibility (Brown et al., 2015; Ralph et al., 2013).	Majority of students were mature Māori women, who were able to utilize different approaches to assessments which helped them to find their voice (Hylton, 2005).	Unaware of level of academic preparation, time commitment and depth and breadth of knowledge (Suva et al., 2015).	Focus on process and actions/tasks rather than memorization (Goodwin-Esola and Gallagher-Ford, 2009).
Graduates spoke of the growth they experienced on both personal and professional levels (Coffey et al., 2017).	The odds of transitioning from LPN-to-RN were greater for LPNs who were Asian, American Indian, or black compared to Caucasian (Jones et al., 2018).	Lack of understanding around accountability and professional responsibility (Brennan and McSherry, 2007). Student nurses expressed concern for being regarded as an HCA during clinical placements at the expense of their learning (Brennan and McSherry, 2007). Student nurses concealed previous HCA experience as nurse wards would take advantage (Cubit and Lopez, 2011).	Consider a wide range of backgrounds of learners (Goodwin-Esola and Gallagher-Ford, 2009). Instructors functioning as facilitators rather than lecturers (Goodwin-Esola and Gallagher-Ford, 2009).
Improved self-confidence, self-efficacy, sense of accomplishment, and motivation for life-long learning (Ralph et al., 2013; Suva et al., 2015).			

Table 3 (continued)

Participating in bridging education programs fuels both professional and personal development	Nursing bridging education programs enhance diversity in the nursing workforce	Student nurses do not anticipate the challenges associated with participating in a bridging program	Mentor-mentee connection promotes academic learning and successful completion of nursing bridging education programs
Increased job satisfaction (Ralph et al., 2013).		Perceived increased expectations because of previous experience as an EN (Brown et al., 2015).	Awarding recognition/credits of prior learning regardless of educational background (Rapley et al., 2008).
Able to provide higher level care (Brown et al., 2015)		Financial, social, and family responsibilities (Cook et al., 2010; Ikeda et al., 2008; Ralph et al., 2013; Suva et al., 2015).	Recruitment of appropriate mentors in rural areas (Rapley et al., 2008).
More emphasis on critical thinking, inductive reasoning, and problem-solving skills (Suva et al., 2015).		Manager was not supportive (Ikeda et al., 2008) and disapproval from work colleagues (Suva et al., 2015). Stepping out of comfort zone with regards to undertaking a different scope of practice and delegating work to ENs (Cubit and Lopez, 2011).	Feeling connected with faculty and clinical mentors (Suva et al., 2015).
Job advancement and organizational requirements (Cook et al., 2010).		Initial difficulty adapting to an independent learner (Hylton, 2005).	
Motivated to transition due to perception of ENs being ‘downgraded’ by employers who chose to employ unskilled personal care workers (Kenny and Duckett, 2005).		Assumptions of adult learners: accumulation of life experiences are a rich source of learning, adults are more motivated if new knowledge as practical application, and as people mature, they become more self-directed learners (Hylton, 2005).	
Affordable route into registered nursing and fulfill aspirations (King et al., 2022; Ralph et al., 2013).			
RN role perceived to have a clearer professional identity and more professional opportunities (King et al., 2022).		English as a second language and cultural diversity (Suva et al., 2015).	

Note. EN, Enrolled Nurse; HCA, Healthcare Aide; LPN, Licensed Practical Nurse; LVN, Licensed Vocational Nurse; RN, Registered Nurse.

studies, students enrolling in a bridging program who were aged 20–56 years (Brown et al., 2015; Cook et al., 2010; Cubit and Lopez, 2012; Ikeda et al., 2008; Kenny and Duckett, 2005) were concerned about joining a program with younger classmates. People engaging in NBE programs may benefit from gaining further insight into the complexities of workplace transitions between nursing categories, as the participants in the present review were unaware of the challenges associated with participating in a NBE program.

3.4.4. Mentor-mentee connection promotes academic learning and successful completion of nursing bridging education programs

Several studies cited strategies to promote a supportive process for students in NBE programs that can be implemented by students themselves, academic faculty and educational institutions (Brown et al., 2015; Cubit and Lopez, 2012; Goodwin-Esola and Gallagher-Ford, 2009; Rapley et al., 2008; Suva et al., 2015). Recognition of prior learning (Brown et al., 2015), focusing on practical applications rather than memorization (Goodwin-Esola and Gallagher-Ford, 2009) and building relationships with faculty and mentors (Suva et al., 2015) were suggested as ways to optimize student nurses' learning in NBE programs. Two articles reported that online courses allowed students to better manage their time and other responsibilities and that increased supports (e.g., mentorship from faculty and peer-to-peer relationships) helped students overcome the challenges associated with being enrolled in a NBE program (e.g., work-life balance; Ralph et al., 2013; Suva et al., 2015).

Faculty support and mentorship were reported to be important resources with the potential to ease the transition to becoming a RN (Cubit and Lopez, 2012; Rapley et al., 2008; Suva et al., 2015). Connection with mentors promoted learning and successful completion of NBE programs (Cubit and Lopez, 2012; Rapley et al., 2008; Suva et al., 2015). Faculty awareness of curriculum content and varied pre-existing student knowledge bases were recognized as important considerations for promoting success for NBE students (Goodwin-Esola and Gallagher-Ford, 2009). Further, faculty functioning as facilitators rather than lecturers (Goodwin-Esola and Gallagher-Ford, 2009) was recommended to provide clinical mentorship to students and support them in NBE programs. Accessibility to mentors, particularly for students in rural areas enrolled in online delivery, was noted as a positive support that promoted successful program completion (Rapley et al., 2008).

4. Discussion

This scoping review summarizes and critically evaluates available research addressing NBE programs internationally. Specifically, this review addressed bridging from a (1) PSW-to-RPN (or similar); and (2) RPN-to-RN (or similar). Key findings from this scoping review highlight the opportunities for personal and professional development, as well as challenges (e.g., financial insecurity, family responsibilities) inherent with participating in a NBE program. Further, this review highlights that academic institutions can implement support services to students to aid with successful NBE program completion. The results of this review also suggest that NBE programs may improve cultural diversity in the nursing workforce.

This scoping review provides evidence that NBE programs offer opportunities for health care workers to expand their scope of practice, change their role in the workforce and further develop their professional identities. These have all been identified in this review as key motivators for enrollment in NBE programs. Further, NBE programs improve job satisfaction and are considered an affordable option for advancing nursing careers and increasing numbers of nurses in the healthcare workforce. These findings are supported by previous qualitative research that identified key motivators for people to participate in NBE programs included affordability, opportunities for career mobility and geographic convenience (King et al., 2020).

An area not addressed in the papers included in this review included

job satisfaction of graduates and understanding role transitions after participating in a NBE program. Negative perceptions of being “downgraded” by employers, as ENs reported in this scoping review (Kenny and Duckett, 2005, p. 426), were reiterated in another qualitative study that described ENs as ambiguous, limited and “subordinated ‘task-doers’” who felt devalued by employers (Lucas et al., 2021, p. 6). Similarly, results of a survey of RNs, suggests that RNs feel demoralized and perceive a lack of support from employers, staffing issues, failures in leadership and burnout (Heinen et al., 2013; Senek et al., 2020). Demoralization and job dissatisfaction have been identified as predictors of RNs' intention to leave healthcare (Senek et al., 2020). The articles presented in this scoping review did not measure job satisfaction once graduates started working in their new role.

In this review, students encountered logistical (e.g., financial and family responsibilities) challenges as well as unpreparedness for advanced level educational experiences. These challenges and deterrents are supported by the literature reporting difficulty carrying over previous knowledge in EN-to-RN NBE programs (Cubit and Leeson, 2009; Kilstoff and Rochester, 2004). This review also revealed that PSWs and RPNs are more likely to be part of ethnic and cultural minorities. A qualitative study consisting of focus groups and interviews revealed that internationally trained nurses in bridging programs, that require successful completion of qualifying examinations for entry-to-practice, were more likely to drop-out if they had financial and/or family responsibilities (Blythe, 2009). Tuition reimbursements offered for NBE programs may help to ensure equitable access to career mobility and offer an affordable route to advance nursing careers (Coghill, 2018).

To aid in the successful transition of bridging students, academic institutions and stakeholders need to design and implement NBE programs which accommodate the circumstances that are unique to mature students (i.e., the most common cohort found to participate in NBE programs in this review). Implementing orientation sessions prior to commencing a bridging program and providing ongoing mentorship may further aid students to successfully transition out of NBE programs and into the workforce (Miller and Leadingham, 2010; Phillips et al., 2013). Miller and Leadingham (2010) developed the *Nursing Success* program, a faculty-driven mentorship program designed for students transitioning to become RNs to address reading skills, math skills, self-confidence/self-esteem, time management, stress management, English as a second language, test anxiety, test-taking skills, critical thinking, motivation and role confusion. Although scheduling conflicts were a challenge, students felt that accommodation of different learning styles, mentorship and completing assessments in preparation for the National Council Licensure Examination [for] Registered Nurses NCLEX licensure increased their success during their role transition after their NBE program (Miller and Leadingham, 2010). More specifically, other programs have been designed for mature students who are unfamiliar with the requirements of an academic workload, which were shown to improve progression and confidence during students' NBE programs (Heidari and Galvin, 2003; Fleming and McKee, 2005). As an example, Fleming and McKee (2005) implemented a one-week program for mature students focusing on socializing and familiarizing students with university life. Currently, The Registered Practical Nurses Association of Ontario (WeRPN) is offering the Bridging Educational Grant in Nursing (BEGIN) program in collaboration with the Ontario Ministry of Long-term Care and the Ministry of Health (<https://begin.werpn.com/>). BEGIN aims to increase recruitment and retention of nurses in long-term care (LTC) and home and community care (HCC) sectors in Ontario and to create a sector of excellence with the aid of case managers and educational programming.

Although the articles included in this scoping review highlight the importance of NBE programs to increase numbers of nurses in the workforce, the included articles did not examine nursing shortages in the different healthcare sectors. Staffing in community sectors (i.e., LTC and HCC) has been particularly challenging due to negative perceptions regarding unsupportive working conditions and reduced pay and

benefits compared with other healthcare settings (National Academies of Sciences, Engineering and Medicine, 2022; Connelly et al., 2022). For example, LTC sectors employ a Director of Nursing, who is often the only RN working at a given time and who usually holds administrative responsibilities in addition to providing direct patient care (National Academies of Sciences, Engineering and Medicine, 2022). The National Academies of Sciences, Engineering and Medicine (2022) reported the annual turnover rate in Directors of Nursing to be approximately 36%. Adequate nursing staff in LTC is crucial, as the demand for LTC continues to increase with an ageing population (Hirschfeld, 2009). However, nursing staff stress and burnout in LTC sectors has been well documented in the literature (Bamonti et al., 2019; Eder and Meyer, 2022; Eltaybani et al., 2021; Woodward et al., 2016). To combat these challenges many organizations, like the Registered Nurses Association of Ontario (RNAO) for example, have called on government to: (1) increase enrollment and funding for Bachelor of Science in Nursing (BScN) programs including RPN-to-RN NBE programs; and (2) compress NBE programs to two years (RNAO, 2021). Further, some organizations have called on the government to provide further funding for non-profit LTC homes to meet the needs of residents that include hiring more full-time staff, hiring more RNs, having an RN available 24 h per day/ seven days per week and ensuring that residents have up to four hours of care per day from nursing staff (RNAO, 2020). The RNAO (2020) has reported that RNs represent 10%, RPNs represent 18% and PSWs represent 71% of the healthcare staff providing direct care for residents in LTC. The RNAO (2020) is advocating for a greater proportion of direct care provided by regulated staff (i.e., RNs and RPNs) and recommends 20% of a residents' care come from RNs and nurse practitioners (NPs), 25% RPNs and 55% PSWs.

There is still much to be understood regarding the use of NBE programs as a strategy to address nursing workforce shortages. Research focused on nursing retention and career advancement, particularly NBE programs, is likely to increase. Future research should examine recruitment and retention rates of nurses in different sectors, such as LTC and HCC and create incentives, such as tuition coverage or reimbursement programs, to recruit nurses participating in NBE into those sectors. Future research may also consider longitudinal studies examining satisfaction, retention and employment settings after participation in a NBE program.

5. Limitations

The scope of practice, roles and responsibilities of PSWs (or similar) and RPNs (or similar) varies between countries as well as areas of practice, making it difficult to fully appreciate which supports and

resources might need to be in place to assist people to be successful in NBE programs. In addition, low levels of evidence were produced from the studies included in this review. Levels of evidence, sometimes called "hierarchies of evidence" (Burns et al., 2011), are assigned to studies based on the methodological quality of their design, validity and applicability to patient care. These decisions give the "grade [or strength] of recommendation." Levels of evidence range from high (level I) to low (level VII). No research included in this review was presented as a meta-analysis, randomized controlled trial, evidence-based clinical practice guideline, or controlled trial.

6. Conclusion

The present review summarized and critically evaluated research focused on NBE programs. Specifically, this review addressed bridging from a: (1) PSW-to-RPN (or similar); and (2) RPN-to-RN (or similar). The research included in this review came from six different countries across the globe (i.e., United States, Canada, Scotland, New Zealand, Japan and England) and demonstrates commonalities across the literature investigating NBE programs across the globe. The findings suggest that although there are perceived challenges with enrolling and completing NBE programs globally, students entering bridging programs are often driven by both personal aspirations and professional opportunities and are culturally diverse. Strategies, including support services, feeling connected with instructors and mentorship, promote successful completion of NBE programs. Recommendations for future research include further exploration of incentive opportunities to support students in NBE programs and examining long-term retention and preferred employment settings after completion of an NBE program.

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Declaration of Competing Interest

Nancy Snobelen is a research consultant contracted to The Registered Practical Nurses Association of Ontario (WeRPN) to design and implement WeRPN's research strategic plan to encourage and pursue research involving registered practical nurses. Dr. Snobelen served as a member of the research team through in-kind resources from WeRPN to support the research, and facilitate knowledge translation, exchange, and implementation activities from the findings for WeRPN members, non-members, and the public.

Appendix A. Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	2
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results and conclusions that relate to the review questions and objectives.	2–3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	4–6
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	6
METHODS			

(continued on next page)

(continued)

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	7
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language and publication status) and provide a rationale.	7
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	7–8
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	7–8
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	8
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	8–9
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	9–10
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	8–9
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	10
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	10
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	11–12
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	10–11
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Table 1
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	12–17
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes and types of evidence available), link to the review questions and objectives and consider the relevance to key groups.	17–21
Limitations	20	Discuss the limitations of the scoping review process.	21–22
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	22
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	22

JB I = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion and policy document).

From: Tricco et al. (2018)

Appendix B. Search strategy from Ovid MEDLINE database

#	Searches	Results
1	career mobility/	11,966
2	exp Nurses/	95,512
3	1 and 2	1600
4	"personal support worker".mp.	26
5	psw.mp.	402
6	health personnel/ or nursing staff/ or nursing staff, hospital/ or personnel, hospital/	141,655
7	1 and 6	1451
8	Health Workforce/	14,156
9	1 and 8	144
10	2 or 4 or 5 or 6	229,853
11	1 and 8 and 10	30
12	nurs*.mp.	784,782
13	"health care aide".mp.	20
14	"health care assistant".mp.	68
15	2 or 4 or 5 or 6 or 12 or 13 or 14	844,348
16	career ladder*.mp.	317
17	job ladder*.mp.	3
18	career mobil*.mp.	12,035
19	1 or 16 or 17 or 18	12,153
20	15 and 19	4814
21	(workforce or manpower).mp.	108,527

(continued on next page)

(continued)

#	Searches	Results
22	8 or 21	108,527
23	15 and 19 and 22	581
24	2 or 6	229,448
25	1 and 8 and 24	30

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