Topic 2

Nursing as a career choice

Literature reviews to support the Independent Review of Nursing Education – Educating the Nurse of the Future

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Kathryn Williams

Anita Westera

Dave Fildes

Yenna Salamonson

Elizabeth Halcomb

Cristina Thompson

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Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
ACETI	Aged Care Education and Training Incentive
AHPRA	Australian Health Practitioner Regulation Agency
ANMF	Australian Nursing and Midwifery Federation
ATSI	Aboriginal and Torres Strait Islander
CaBB	Careers Beyond the Bedside
CALD	Culturally and Linguistically Diverse
CAMDH	Centre for Aboriginal Medical and Dental Health
CCP	Continued Connectivity Program
CINAHL	Cumulative Index of Nursing and Allied Health Literature
cMET	Critical Multicultural Education Training
CRNA	Certified Registered Nurse Anesthetists *(sic)*
DUSON	Duke University School of Nursing
EN	Enrolled Nurse
ESL	English as a Second Language
ESVA RN-BN	Eastern Shore of Virginia RN-BN
GEN	Graduate Entry Nurse
HAR	Holistic Admissions Review
HEA	Health Equity Academy
MADIN II	Making a Difference in Nursing II
NHRSA	National Health Resources and Services Administration
NCIN	New Careers in Nursing program
NCLEX	National Council Licensure Examination
NCSBN	National Council of State Boards of Nursing
NJHI	New Jersey Health Initiatives
NHMRC	National Health and Medical Research Council
NMBA	Nursing and Midwifery Board of Australia
NN-CAT	Nursing Network Careers and Technology
NP	Nurse Practitioner
NPPN	New Paths to Professional Nursing
NRAS	National Registration and Accreditation Scheme
PIP	Pre-entry Immersion Program
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PROGRESS	PROmoting Geoscience Research, Education, and SuccesS
PSN	Pathway to Success in Nursing
RWJBH	Robert Wood Johnson Barnabas Health
RWJF	Robert Wood Johnson Foundation
RN	Registered Nurse
RUSON	Rutgers University School of Nursing
SEP	Succeed to Excellence

Abbreviation	Definition
SIS	School of Indigenous Studies
SLIPP	Success in Learning: Individualised Pathways Program
STAIRSTEP	Students Advancing through Involvement in Research Student Talent Expansion Program
STEM	Science, Technology, Engineering and Mathematics
UWA	University of Western Australia

Key messages

To ameliorate the projected nursing workforce shortfall in Australia and elsewhere, a key strategy is to target non-traditional nursing students, including those from minority groups, who are currently under-represented in nursing education. These groups are characterised as men; people of Aboriginal and Torres Strait Islander backgrounds; and people of culturally and linguistically diverse (CALD) backgrounds. As well as being an untapped resource for the nursing workforce, these groups could contribute to improved health outcomes for the minorities they represent.

However, the capacity to improve representation of men and other under-represented students in nursing is constrained by the perception that caring professions are 'women's work'. The predominance of women in the nursing workforce is likely to deter some men from this career, particularly those for whom masculinity is central to their identity. Similarly, negative perceptions around the prestige of nursing and its perceived status within the community may make this career a difficult choice for some individuals.

Twenty-two international literature reviews and 64 studies were identified which explored the factors associated with nursing as a career choice. Barriers to entry and completion of nursing education for men and other under-represented students were identified, including:

- Low occupational status and limited public understanding of nursing as a profession;

- Lack of acceptance by family and friends of nursing as a career choice;

- Negative stereotypes of male nurses, and threats to male gender identity;

- Obligations to community and extended family, particularly for Indigenous[1] people;

- Challenges associated with poor health and low socio-economic status;

- Lack of role models;

- Sense of isolation or social exclusion;

- Academic underachievement;

- Additional learning challenges due to having English as a second language;

- Discrimination in the learning environment;

- Differing career expectations across generations.

A further nine literature reviews and 53 studies were identified that described interventions to address these barriers. These were directed across three broad categories: (1) pre-university interventions; (2) university participation and retention interventions; and (3) system-level interventions.

There has been a steady increase in the number of studies in recent years seeking to understand and influence perceptions of the nursing profession and to recruit and retain a

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[1] The term Indigenous is used when referring to reviews and studies across multiple countries that pertain to the experiences of First Nations peoples. The Indigenous people of Australia are referred to as Aboriginal and Torres Strait Islander people (or, in the case of Western Australia, as Aboriginal people, in accordance with the WA Government Department of Health 2013 Directive).

broader range of students into nursing education. However, the scale of these studies is generally small. There is a lack of high-quality evaluations and evidence.

The majority of studies reporting on interventions in this field used a qualitative or mixed-methods approach. Typical outcome measures included satisfaction (for individual participants), and overall student enrolment, participation and graduation numbers of nursing students. Most interventions were delivered as part of a broader suite of activities within an overarching program. As processes and outcomes were reported at the program level, it has been difficult in this review to disaggregate the impacts of individual interventions from those of the overall programs in which they were components.

The review identified a number of promising interventions, all of which require further evaluation.

- Initiatives to build capacity within disadvantaged high school students of CALD or Indigenous backgrounds may increase their rate of success in applying for entry to nursing education and provide skills and support to promote retention and completion.

- Holistic admissions processes may improve access to nursing education because they take into account the experiences and attributes of under-represented applicants, including the potential benefits they could bring to their communities.

- Graduate Entry Nursing (GEN) courses generally attract more male applicants, and have higher rates of achievement, retention and completion for men and people from CALD backgrounds, than traditional courses and those generally undertaken by school leavers.

- Financial and technical support, through the provision of targeted scholarships, reduced tuition fees, and the provision of technical support in terms of advice and essential equipment such as textbooks, uniforms and computers, have the potential to encourage participation in nursing education by disadvantaged under-represented groups. This type of support is often part of a suite of interventions within successful programs.

- Mentorship arrangements have been demonstrated as playing a critical role in engaging and retaining students of under-represented population groups. There is now strong evidence regarding mentoring skills and processes that have the most potential to support student retention. Again, these are often implemented as a component of a broader program.

- Professional and academic socialisation interventions focus on skills acquisition in terms of time management, organisational skills, group facilitation and public speaking. This type of program aims to develop leadership attributes among nursing students but the extent to which this affects retention is unclear.

Interventions within nursing faculty to adjust pedagogical approaches and build cultural competency can help create learning environments that are more conducive to the success of students from under-represented groups.

1   Introduction

The Australian Government, Department of Health[1] announced an 'Independent Review of Nursing Education – Educating the Nurse of the Future' (the Review) as a measure in the 2018/19 Federal Budget in May 2018. It will examine how current educational preparation in Australia equips nurses to meet the future needs of the Australian community. The Review is scheduled for completion in 2019 and this project represents an important initial phase.

The Department of Health commissioned a team from the Centre for Health Service Development and School of Nursing, University of Wollongong, to complete a series of literature reviews on particular topics identified as highly relevant to the Review.

1.1   Aims and objectives

This is the second of four literature reviews to inform the national 'Independent Review of Nursing Education – Educating the Nurse of the Future' in Australia.

Each topic has research questions that have been specified by the Department of Health. The results of these literature reviews are presented to prompt and inform discussion and conversation about particular issues that in summary relate to:

1. Fitness for purpose, work readiness and transition to practice,

2. Nursing as a career choice,

3. Clinical skill development, and

4. Future directions in health care delivery.

These are important issues for policy development and decision-making about the future directions of nursing education in Australia. The aim of nursing education is that it adequately prepares nurses of all levels and endorsement, to safely and competently perform their roles; it is from this perspective that these reviews have been framed.

The three nursing designations in-scope for these literature reviews are: Enrolled Nurses (ENs), Registered Nurses (RNs) and Nurse Practitioners (NPs).

1.2   Project governance and implementation

The project governance structure is outlined in Figure 1. To ensure an appropriate breadth and depth of nursing expertise, a national working group of nursing educators and clinicians was established and complemented by an international nursing education advisory team. The national nursing education working group comprises exceptional nursing educators and clinicians drawn from across Australia. The members of this working group have reviewed the search strategy and topic maps, advised on literature selection, in several instances contributed with analysis, synthesis and write-up of sections and reviewed and commented upon the draft version of each literature review.

An international advisory team comprising three experts in nursing education from the US and UK has facilitated exploration of the international context. These international team members have been actively engaged and provided advice on issues arising during the course of the

project. They have also reviewed and commented upon the draft version of each literature review prior to their final submission to the Department.

The work of producing the literature reviews has occurred through four topic teams which included academic staff predominantly from the University of Wollongong, University of Sydney and Western Sydney University. Project leadership was provided by the Centre for Health Service Development and critical review and revision of the draft literature reviews supported by the School of Nursing, University of Wollongong. All personnel contributing to this project are acknowledged in Appendix 1.

Figure 1   Project governance and implementation framework

1.3 Topic 2 Nursing as a career choice

This report provides an overview of current national and international strategies that have the potential to enhance the diversity of nursing students – and the nursing workforce – through improvements to the content, structure, relevance and accessibility of available tertiary educational opportunities.

The research question was provided by the Australian Government Department of Health for Topic 2, and has two parts:

1. What factors influence people (including men) to choose nursing as a career?

2. Consider current / recent trends and interventions to influence gender balance within career pathways traditionally dominated by a particular gender, for example mining, science etc.

Australia's nursing workforce is predominantly female. There may be value in encouraging greater participation by men and people from other under-represented groups (e.g. Indigenous people, CALD groups) in nursing education in an effort to build a more representative nursing workforce for the future. The potential benefits of increasing representation in Australian nursing education will be outlined in Section 3.

The choice of nursing as a career may be influenced by several factors: the professional image of nurses, including stereotypes and media depictions of nursing; perceptions of students and the general public about the personal attributes required to have a successful and satisfying career in nursing; and beliefs regarding organisational contexts in which nurses work and

opportunities for professional autonomy. The review will explore factors that may deter or encourage male and other under-represented applicants to enter and complete nursing education in Australia, and identify the challenges that need to be addressed in order to increase representation. This is presented in Section 5.

Various strategies have been suggested to increase participation of men and other under-represented groups in nursing education and support workforce retention. These fall into three broad categories: (1) pre-university entry interventions; (2) university participation and retention interventions; and (3) system-level interventions to promote and support inclusion of males and other under-represented groups in nursing education. The literature describing and evaluating such strategies is described in Section 0.

In response to the research question, the review looks beyond nursing to trends and interventions utilised in other tertiary education fields currently dominated by female students (e.g., psychology, social work, primary school teaching) or male students (e.g., science, technology, engineering, mathematics). A brief overview of these trends and interventions is provided in Section 7.

A summary of results is presented in Section 8 and the discussion with recommended issues for further consultation concludes the literature review in Section 9.

2 Methods

The short timeframe for implementation of this project (approximately six weeks), necessitated a focused and robust methodology flexible enough to adapt to emerging issues and requirements.

Through these literature reviews the current state and future directions for nursing education are reported, as interpreted from careful analysis of international literature reviews, primary Australian research studies and the grey literature. The literature reviews have uncovered a large quantity of literature on each of the four topic areas. It is not intended to present a detailed analysis of the totality of literature available, as might be the case with a systematic review. Instead, a purposeful narrative review of existing literature is provided, with focus on the implications of key issues for contemporary nursing education in Australia.

These reviews recognise both the technical components of educational preparation as well as the non-technical and philosophical emphasis on nursing as a caring profession. At the heart of nursing and nursing education is the therapeutic relationship between nurse and patient which is built upon the delivery of safe, kind and compassionate nursing.[2]

2.1 Conducting a literature review

There are multiple forms of literature review which are distinguished by their characteristics and associated methodologies. Grant and Booth[3, p.91] developed a typology of 14 review types and concluded that '…few review types possess prescribed and explicit methodologies and many fall short of being mutually exclusive. The term 'literature review' is generic'.

In nursing and health care, common forms of literature review include the systematic review, integrative review and narrative review. It is important to discriminate between these forms of review. Systematic reviews are used to answer highly specific questions about an intervention or aspect of clinical practice,[4] particularly where high levels of evidence may be required. Systematic reviews report in detail on individual studies using explicit criteria and critically evaluate the level of evidence using an accepted hierarchy or classification system.[5] The completion of a systematic review usually requires a substantial timeframe. Integrative reviews are used in nursing research to create and organise a body of literature. They are frequently preferred as they allow the combination of diverse methodologies and aim to provide an in-depth understanding of the topic under study.[6]

Where the purpose of the review is to explore broad or complex issues, deepen understanding through integration of findings and critically reflect on the literature, a narrative review is preferred,[7] which is the approach adopted for this review. The value of expert-led narrative review for policy-makers lies in a '… meaningful synthesis of research evidence relevant to such complex situations that incorporates a broad range of sources and multi-level interpretation and critique'.[8, p 2] The completeness of searching is determined by time/scope constraints, there may be no formal quality assessment or appraisal of each paper, the synthesis can be tabular with narrative commentary and the analysis uses key features to characterise the quantity and quality of literature.[3]

An effective literature review requires: an appropriate understanding of the issue or topic of focus; defined parameters and boundaries; a clear search and selection strategy; intelligent critical analysis and synthesis that leads logically to conclusions that address the original

research question(s); good structuring to enhance flow and readability; and accurate referencing to identify relevant sources.

2.1.1 General methods

For all four literature review topics, common search parameters were established with appropriate limits and exclusions. The short project timeframe led to a focus on both international and Australian peer-reviewed academic literature retrieved from a specific range of databases: Scopus, CINAHL Plus, Medline and Health Source (Nursing / Academic edition). Database searching was supplemented with snowball searching (pursuing references of references and tracking citations forward in time).

Each topic team was supported by a research librarian from the University of Wollongong who advised on database selection and search term combinations and recommended a small selection of journals for hand searching. The research librarians assisted with preliminary searches and prepared reports on journal impact on the basis of the final sources selected for inclusion in each literature review.

Every effort was made to enhance the efficiency of searching by seeking out systematic reviews, meta-analyses, meta-syntheses and other literature reviews. This often provides a prompt overview of the spectrum of issues relevant to the particular topic. If the search results did not generate appropriate or adequate reviews then additional peer-reviewed literature was identified.

Searching the academic and grey literature focused on literature from Australia and other English-speaking countries, specifically; the United Kingdom (UK), Ireland, the United States (US), Canada, and New Zealand (NZ). These countries were selected as their experiences in nursing education are more likely to be generalisable to the Australian context.

2.2 Topic specific methods

Reviewing the literature involved four steps, which occurred concurrently:

Step 1: Search for reviews in the Australian and international nursing literature on (1) factors associated with choosing nursing as a career and (2) interventions to achieve greater representation in nursing education.

Step 2: Guided by the findings from Step 1, search for primary studies, giving priority to Australian studies but including international studies where needed (inclusion to be judged on relevance to the topic).

Step 3: Search for reviews and primary studies reporting on interventions to achieve greater representation in other fields of tertiary education that are currently dominated by a particular gender. The scope of this search was limited, depending on the findings of Steps 1 and 2.

Step 4: Searching for grey literature, focusing on websites with top-level domains of .gov, .edu and .org from Australia, the UK, Ireland, the US, Canada and NZ.

Published material providing a rationale for increasing representation in nursing education was also sought for the background to this review. A considerable amount of relevant information

for the background section was also found in the introductions of papers addressing the two broad questions of the topic.

Table 1   Topic 2 sub-topics or possible issues for investigation

Sub-topic	Comments
Potential value of representation in nursing education	Demographic characteristics of current nursing workforce and nursing students. Reasons for striving to achieve a more representative nursing workforce and potential benefits of attracting a broader range of nursing students.
Factors that affect career choice	How professional image and status of nurses affects recruitment of nursing students from under-represented groups, including men. How professional image and status of nurses differs in other cultures and implications for the nursing workforce in those countries. Nursing occupational titles; professional autonomy; organisational context.
Strategies to attract male and under-represented applicants and enable them to enter nursing education	Communication and marketing to promote a positive, realistic view of nursing to potential applicants and the wider community. Addressing barriers to nursing as a career choice for males and other under-represented groups. Modifications to entry or selection processes to alleviate disadvantage or redress past disadvantage. Graduate entry nursing courses.
Strategies to retain male and under-represented students to successful completion of nursing education	Learning environments that promote participation, retention and completion. Social and educational supports that promote retention and completion. Mentoring of male and under-represented nursing students.
System-level strategies to promote and support diversity in nursing education	Government policy and legislation. Funding incentives (grants, scholarships). Activities of professional organisations and representative bodies in nursing.
Interventions and trends in other female-dominated fields – possible applications in nursing education	Strategies as above, focusing on what can be learned from tertiary education in psychology, social work and primary school teaching and applied to nursing education. Caveat: The organisational context of nursing is quite different from that which prevails in fields such as psychology and other allied health professions. This was considered in assessing suitability of trends and interventions.
Interventions and trends in male-dominated fields – possible applications in nursing education	Strategies as above, focusing on what can be learned from tertiary education in STEM and applied to nursing education. See above caveat. In addition, the factors that limit female entry to these fields may differ from the factors that limit male entry to nursing; this was considered in assessing suitability of trends and interventions.

Details of the search strategies and search terms are included in Appendix 2. The search limiters, inclusion and exclusion criteria are detailed in Table 2.

Table 2   Topic 2 inclusion and exclusion criteria – peer-reviewed literature

Criteria	Recommended approach	Comment
Time period	2012 to 2019	Articles published in the past 5-6 years were used to identify highly cited and useful earlier papers via snowball searching.
Inclusion criteria	English language Journals	*Note.* * Except for Step 3 searches

Criteria	Recommended approach	Comment
	Articles and reviews Subject area: nursing* Studies of interventions must include both description and evaluation of effectiveness Preference for Australian studies	The focus of the review was to identify interventions that may be useful in Australian nursing education. Qualitative and quasi-experimental evaluation designs were included depending on relevance to the topic.
Exclusion criteria	Languages other than English	Insufficient time and resources to translate non-English language papers.
	Books, chapters, letters, book reviews, commentary	Focus on peer-reviewed studies and reviews due to time constraints.
	Advance(d) practice	The concept of advance(d) practice is not consistently defined.
	Specialist areas (e.g., oncology, gerontology, palliative care, mental health, psychiatric, midwifery) where the focus is on entry into these areas from general nursing education	Specialist areas were excluded where the focus was on entry to these areas from general nursing education.
	Cultural safety/competence	Cultural safety training was excluded because its goal is enhancing person-centred care rather than creating a culturally safe environment for nursing students.

The PDF files of included literature reviews and primary studies of factors associated with nursing as a career choice were imported into NVivo[9]. NVivo was then used to facilitate analysis and synthesis of the content by coding the papers to identify the following:

- Historic and current portrayals of nursing in the media.

- Perceptions of nursing by the public and nursing students.

- Experiences of minorities in nursing, including men, Indigenous people, members of CALD groups, and people of different age groups or generations.

- Relevant theories of career selection and/or retention in nursing education.

- Recommendations for addressing barriers to greater representation in nursing education.

Separate NVivo files were also created for the intervention literature, which was coded according to those directed at the university level and broader system level.

Interventions at the university level were coded into two categories: (1) those which facilitated participation of under-represented population groups in nursing education, and (2) those which facilitated retention of students to graduation and beyond.

- Participation interventions were divided into two groups: financial (scholarships, resources) and peer support (strategies to address cultural and social isolation).

- Retention interventions that focused on enhancing student experience were divided into two groups: leadership development activities and mentoring.

At the systems level, interventions were coded into three categories: faculty, legislative and program interventions.

- Faculty interventions comprised: pedagogy, which captured activities such as educational models for example, student-centred learning; and accessibility and flexibility factors that supported student engagement; collaborations both within the university context (cross-faculty interaction, governance arrangements); and with external agencies such as clinical settings and community groups; and diversity and cultural competence processes.

- Legislative interventions included examples of regulatory, legislative or administrative factors that have been found to enhance participation and retention such as scholarship funding, diversity legislation, national policies and strategies.

- Program-level interventions included summaries of the main programs which had utilised a number of the interventions described in previous categories.

The coding structure developed in this way then provided the basis for reporting the results from the international and Australian literature.

2.3 PRISMA flow diagram

The flow diagram (Figure 2) summarises the results of searching the academic and grey literature.

Figure 2 **Flow diagram**
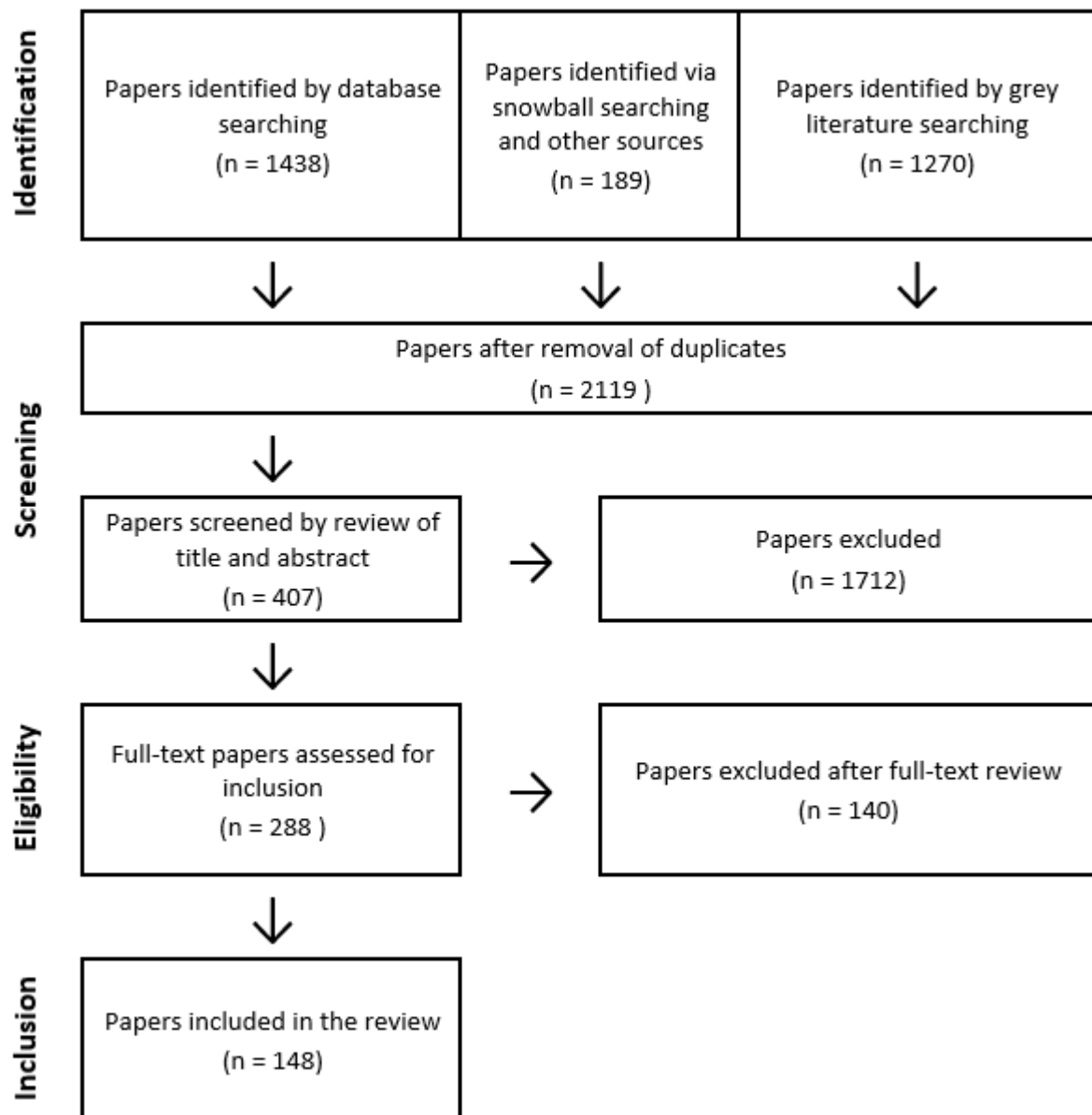
2.4 Methodological quality

2.4.1 General issues

At the outset of the literature reviews it was difficult to predict the volume of relevant and available literature for each topic. The process of sifting through what may be a very large volume of literature can be aided by using an evidence hierarchy that clearly explains the differing levels and quality of evidence. 'Levels of evidence' are often represented as a pyramid with the highest levels of evidence at the top that is, systematic reviews and randomised controlled trials. This makes sense when assessing, for example the efficacy of an intervention.

It can be challenging when conducting narrative reviews to apply this hierarchy as a substantial proportion of useful literature may not have been derived from these higher levels of evidence.

While initially it was anticipated that this process could be aided through using an appropriate critical appraisal tool to describe each of the included studies it soon became apparent that this would not be possible within the available timeframe. Throughout each literature review summaries and syntheses of key sources are provided in tabular form, however these are deliberately not exhaustive. In collaboration with the Department of Health a decision was made that the available time was better invested in comprehensive analysis and intelligent synthesis of findings.

2.4.2 Topic-specific issues

It is appropriate to include a broad range of literature reviews and primary research studies in a review of this type, because the goal is to provide an introduction to the issues, trends and promising interventions rather than identify evidence-based clinical practices. This can only be achieved by drawing on all available evidence, bearing in mind that a much broader range of methods are required (and appropriate) for exploratory research questions than for specific questions about the efficacy of treatments. Further, the inclusion criteria for the first part of the research question (which aimed to identify factors in career choice) were less restrictive than for the second research question (which sought evidence of effective interventions).

The quality of the literature reviews varied, from systematic approaches with a formal assessment of the quality of included studies, to more general narrative approaches with less detail about the search strategies and inclusion criteria. Research questions were generally well defined and most reviews provided a summary of each included study. There was less information on which studies had been excluded, and why, and the extent to which decisions about inclusion and exclusion may have introduced bias into the findings of the reviews.

Regarding the quality of primary studies that evaluated interventions to increase representativeness in nursing, the authors of previous literature reviews have remarked on the lack of studies available, the poor quality of evidence and the need for larger, more robust, and longitudinal studies in order to draw conclusions. The following examples are indicative of many similar observations.

- Perhaps the most noteworthy finding of this integrative review is that, despite the congruence in perceived barriers to clinical education practices as reported by under-represented students in nursing programs throughout the US, no high level of evidence or intervention studies exist in this area.[10, p 136]

- Perhaps the most remarkable finding was the scarcity of studies located for this review. Although many articles focused on diversity in nursing education, only 11 were identified as intervention studies.[11 , p 388]

- This review highlights the necessity for researchers to report more in-depth and detailed information about the implementation of each of the innovative interventions as well as covering the specifics of the interventions.[11, p 393]

- Whilst widening participation is a key issue for both nurse education and the wider profession there is a lack of conceptualisation and focus regarding mechanisms to both encourage and support a wider diversity of entrant.[12, p 66]

- This needs to be underpinned by a much more robust evidence base than is currently available.[12, p 73]

- This review has identified that widening participation in nursing has a poor knowledge base and has tended to focus upon small scale qualitative research…larger, mixed methods, multi-centre research, including longitudinal studies exploring the impact of widening participation engagement across the whole student journey and into employment as registered nurses, is required.[12, p 73]

- Readying individuals from disadvantaged and / or under-represented groups for nursing school success may require funded demonstration projects to document the effectiveness of evidence-based programs.[13, p 475]

- More robust, larger, and longitudinal studies with some sense of data standardisation are needed.[14, p 145]

The report on journal impact for included papers is included as Appendix 3.

3   Background: Rationale for increasing diversity in nursing education

Men, people of Aboriginal and Torres Strait Islander backgrounds, and people of CALD backgrounds are currently under-represented in the Australian nursing workforce. These groups are sometimes referred to as 'non-traditional' nursing students.

Nursing education could play a pivotal role in addressing imbalances in access to culturally appropriate, effective health care and facilitating a more responsive and sustainable nurse workforce to meet future needs. Engagement of under-represented group members in nursing education has the potential to contribute to improved health outcomes for the minorities they represent. Diversity contributes to a 'culture of health' through providing a wide array of viewpoints in work teams, leading to innovative thinking and respect for differences; conversely, lack of diversity can lead to healthcare barriers.[15]

In order to provide culturally congruent and equitable health care, there is a need for men to have a greater presence in the nursing profession.[16] Similarly, greater Indigenous representation in the health workforce is needed in order to enhance a culturally appropriate and safer healthcare system for Aboriginal and Torres Strait Islander peoples.[17] Cunningham argues that diversifying nursing by gender, race and class will help protect against 'apathy and social distance in clinical encounters.'[18, p 148] Increasing diversity in nursing may promote and inform more effective health policy for marginalised minorities.[19]

Under-represented groups are an untapped resource for the nursing workforce. Much has been written in recent years about the looming prospect of a mismatch in nursing workforce and population need.[20,21] According to the most recent formal prediction, the national nursing workforce in Australia will confront a serious shortfall in the next five to ten years.[22] Australia is not alone; this looming nursing shortage is a global problem.[23] For example, the anticipated increase in demand for nurses in the US is estimated at 1.2 million by 2020, with similar trends projected in the UK as one in three nurses are expected to retire in the next decade.[24]

One strategy that developed countries have used to address workforce shortages is to attract trained professionals from developing countries, by offering better working conditions and salaries.[25] This is problematic, because developing countries face nursing shortages of their own. For example, India requires an additional 2.4 million nurses to meet its healthcare needs, while in the English-speaking Caribbean countries, there are as few as three nurses in the population per 2000 people.[25] To enhance workforce planning and development in Australia and elsewhere, a key strategy is often to target nursing students who are currently under-represented in the nursing workforce; that is, the 'non-traditional' students from the groups listed above.

It is also important to ensure that nursing education meets the needs of various age groups, from school leavers to mature age students who move into nursing later in their careers. Other groups that could make a potentially valuable contribution to the nursing workforce are assistants in nursing and care attendants (however named), who may wish to formalise their educational preparation; and university graduates who have completed a non-nursing degree.

Although these groupings are not mutually exclusive, and some of these student characteristics cluster together, there are also distinctive characteristics in each group.[26] Motives for choosing the nursing profession may vary. Each group has its own learning needs, and encounters different challenges during nursing studies.[26,27] For example, men are at higher risk of attrition

from the nursing program,[28] whereas those from CALD backgrounds are more likely to have delayed nursing course completion due to academic underachievement.[26]

3.1   Gender diversity

Of the 403,084 ENs, RNs, NPs and midwives registered with the Nursing and Midwifery Board of Australia (NMBA) in 2018, 88.9% are female and 11.1% are male.[29] This proportion has remained relatively unchanged since national records were first published in 2012.[30] It is similar to the proportion of nurses who are male in the US (11.7% in 2015);[16] Canada (9.7%);[31] and the UK (11%).[32] These numbers reflect the gendered historical origins of the nursing profession in Western society, particularly the influence of Florence Nightingale and her view that women were naturally better suited than men to caring for others.[33,34] Despite the historic perception of nursing as a primarily feminine occupation, there is no evidence that men are unsuited to professional caring roles, or that patients on average prefer nurses who are female.[35]

Rather than depending on half the population to supply 90% of Australia's nurses, there is scope to increase the recruitment of men to increase workforce numbers.[36] However, a major challenge in nursing education is retaining male students. In Australia, men are more likely than women to leave their nursing studies before completion.[37,38] Attrition is highest among men who enter undergraduate nursing education as mature-age students.[37,38] High attrition among male students and new graduates has also been noted as a serious problem in the US.[39] This suggests a systemic problem that requires attention.[37] Specific barriers that may need to be overcome in order to increase male participation in nursing include negative stereotypes, poor academic acceptance and lack of role support.[39]

3.2   Indigenous inclusion

People identifying as Aboriginal or Torres Strait Islander are under-represented in tertiary education, making up only 1.1% of students but 3% of the broader Australian population.[17] Nevertheless, the efforts of health faculties in Australian universities to attract Indigenous students are apparent, given that about a fifth of tertiary students who are of Aboriginal or Torres Strait Islander origin are enrolled in health degrees.[17]

Of the 678,938 health practitioners registered by the Australian Health Practitioner Regulation Agency (AHPRA) at 30 June 2017, 608 identified as Aboriginal and/or Torres Strait Islander.[40] The importance of increasing the number of Indigenous nurses is emphasised in the *National Aboriginal and Torres Strait Islander Health Plan 2013-2023*:

> *Aboriginal and Torres Strait Islander health professionals are essential to the delivery of culturally safe care, in primary health care settings with a focus on health promotion, health education, in specialist and other health services, and the engagement of Aboriginal and Torres Strait Islander people in their own health. The employment of Aboriginal and Torres Strait Islander health professionals also contributes to the development and maintenance of culturally safe workplaces and assists in addressing institutionalised racism.[41, p 23-24]*

Health professional systems and some state governments are also responding to the need for greater Indigenous representation. For example, AHPRA has released a *Statement of Intent* with respect to the National Registration and Accreditation Scheme (the National Scheme) for

health professionals. This document includes a commitment to use relevant legislation and the influence of professional organisations to achieve increased Aboriginal and Torres Strait Islander participation in the registered health workforce and increased representation across all levels of the National Scheme.[42] Queensland Health has committed to increasing health workforce participation by Aboriginal and Torres Strait Islander peoples to 3% by 2022.[43]

To achieve greater workforce participation, tertiary education providers must first adopt strategies to enable Indigenous students to complete their qualifications.[17] Employers also have an important role to play in promoting retention of Indigenous nursing students, a smooth transition to the health workforce, and clear career progression.[43]

3.3 Cultural diversity

Over a quarter of Australia's population was born overseas, and a further 20% have at least one overseas-born parent, making this one of the most culturally and linguistically diverse countries in the world.[44] Further, there is an increasing trend of nurses migrating from developing to developed countries. This, combined with initiatives to widen access to tertiary education for under-represented groups, and continuing success in attracting international students to Australian universities, means there is a growing number of aspiring nurses with English as a second language (ESL).[26,44]

Similar changes in nursing workforce demography have also been seen in the UK and the US.[45] However, despite these trends, the cultural and linguistic background of nurses still does not adequately reflect that of the populations they serve[46]. There is wide agreement in the literature that improving representation in nursing could have wider benefits, not just for the individuals taking up this career, but for the population as a whole. For example, Olichwier [47] argued that greater inclusion of African Americans in the US health workforce would promote positive social change through culturally competent care and improved health outcomes; Stroup and Kuk [48] made a similar argument for greater inclusion of Hispanic Americans. As the largest group of healthcare professionals, nurses work across all healthcare settings; therefore, changes in the racial and ethnic composition of the nursing workforce could potentially have wide-ranging positive consequences for population health.[49]

Anyone wishing to practice as an enrolled or registered nurse in Australia must be able to demonstrate a sufficient standard of English language skills, as defined by the NMBA. The English language requirement is one of five mandatory core standards established by the NMBA under the *Health Practitioner Regulation National Law*. A revised standard came into effect on 1 March 2019, requiring nurses to demonstrate a specified level of proficiency in speaking, listening, reading and writing English.[50] Under most circumstances, applicants for whom English is their primary language are required to provide evidence of *continuous* years of education in English undertaken in a recognised country (Australia, NZ, South Africa, Canada, the US, the UK and the Republic of Ireland). Alternatively, applicants can undertake a recognised English language test (at their own cost) in order to demonstrate the required standard. [51] While the need to be proficient in English language is vital to ensuring patient safety and professional practice, this does create a challenge for those who have ESL.

Nursing education providers could play a vital role in developing a more culturally and linguistically diverse workforce.[49] For these efforts to succeed, a number of challenges need to be addressed. Australian nursing students from CALD backgrounds currently have slower rates

of progression than those who are native English speakers.[26] Their academic performance is poorer and they are at greater risk of failing to complete their nursing education.[44] The reasons for the high rate of attrition among these students have been extensively studied. Specific barriers to completion of nursing education include discrimination, financial and personal difficulties, and study workloads, especially relating to English as the language of instruction.[52]

3.4 Age and generational issues

Another strategy to attract more people into nursing is to target those seeking a change of career, either through traditional nursing courses or by offering accelerated training that recognises previous qualifications. In Australia, this is achieved through Graduate Entry Nursing (GEN) programs.[53] Compared to standard entry nursing students, GEN students are generally older, and have taken numerous personal and contextual factors into consideration before enrolling in the GEN program.[54] Hence, they are likely to be more determined, committed and motivated to complete their nursing studies in minimum timeframes, and are clear regarding their own nursing career trajectory.[55,56]

In traditional nursing degree courses, mature-age students report being more focused and motivated and achieve higher grades, on average, but also tend to spend more hours each week in paid employment to support themselves.[57] Their higher attrition from nursing education may reflect a struggle to balance study and work commitments.[58] Mature-age students may require tailored support strategies to meet their unique needs.

It will also be crucial to recruit and retain school leavers as nursing students, to become the next generation of nursing professionals.[59] This will require an understanding of the factors affecting career choices and expectations among millennials (born 1980 or later)[59] as well as ways to ensure harmonious working among different generations in the nursing workforce.[60]

School leavers are more likely to complete their nursing education than mature age students.[45] Their recent high school education may have prepared them better for academic life, and they are less likely to be burdened with family commitments or financial responsibilities.[57] Millennials have very high rates of attrition in the first year of practice after graduation, however, which is of considerable concern to higher education funders.[57] A better understanding is needed of the factors associated with nursing as a career choice among this generation, in order to prevent disillusionment and to nurture continued interest in the profession.[61]

4 Introduction to the presentation of results

The findings of the review are presented across the next three sections of this report, as they deal with quite different sets of studies. Qualitative research on public perceptions of nurses, and the experiences of minority groups in nursing is synthesised in Section 5, whereas Section 6 draws largely on quantitative studies evaluating interventions in nursing education. Section 7 summarises a variety of sources on trends and interventions in other fields dominated by a particular gender.

Section 5 addresses the first research question: What factors influence people (including men) to choose nursing as a career? Analysis of the literature is informed by a generic theory of factors influencing career choice.[62] This theory provides a framework for the findings, and aids interpretation. First, professional images or stereotypes of nursing are explored from the perspective of nursing students, the general public and media portrayals in order to understand their impact on career choice. This is followed by a review of studies which explored the experiences of under-represented nursing students. The overarching purpose of this section is to identify the needs of such students and the barriers they face in nursing education.

Section 6 presents evidence on interventions designed to meet the needs of men and other under-represented students in nursing education and to help them overcome barriers to entry and completion of their studies. Although not explicitly stated in the research questions specified by the Department of Health, this forms a logical extension to the first research question; the expanded focus was proposed in the *Search Strategy and Topic Map* for this topic which was reviewed and endorsed by the national and international advisors.

Wherever possible, greater emphasis is placed on findings from primary studies and literature reviews conducted in Australia. However, this was not always feasible given that much of the evidence originates overseas, particularly in the US. This is particularly the case for programs which apply multiple intervention strategies in combination to achieve maximum effectiveness. To maintain applicability to the Australian context, individual intervention types are described separately. Tables summarising included papers have been used judiciously to provide the evidence on which conclusions were based.

Section 7 addresses the second research question: Consider current / recent trends and interventions to influence gender balance within career pathways traditionally dominated by a particular gender, for example mining, science etc. Implied in this question is the possibility of learning from these other fields to inform efforts to increase gender diversity in nursing. Therefore, the decision was made to focus on three other fields dominated by women – psychology, social work and primary school teaching – as well as science, technology, engineering and mathematics (STEM) careers which have traditionally been occupied by men. The focus on STEM is appropriate given the specific mention of mining (i.e., engineering, geoscience, environmental science) and science in the research question. Lessons from the Australian and international literature for each of these four career pathways are presented.

5   Factors associated with nursing as a career choice

Gottfredson's[62] theory of circumscription, compromise and self-creation is a generic model of the psychological and social factors that influence career choice. Applying this theory to the participation of men and other minorities in nursing seems particularly apt, as it seeks to describe and explain:

> …the process by which people unnecessarily circumscribe and compromise their career options, often sacrificing fulfillment of their "internal unique selves" in order to meet expectations for job prestige and sextype.[62, p 86]

According to this theory, public perceptions of occupations are highly influential in the career choices of individuals. Occupational images or stereotypes encompass many dimensions: the personalities of the people who have these occupations, the lives they lead, the nature of the work, its rewards and conditions, and its appropriateness for different kinds of people. People make distinctions among occupations based on the dimensions of masculinity-femininity, prestige and field of work.[62] These distinctions are shared and people within a given culture likely have very similar views of occupations. Prestige reflects the perceived intellectual requirements for a career and its social desirability.

Individuals make career choices by seeking the best possible match between their self-concept and their perceptions of occupations, taking into account their abilities and the available opportunities. In this process of circumscription and compromise, career choices are narrowed down from the wide variety of options that society offers to a much smaller range of preferred occupations. This process starts in childhood, and thus certain options may be ruled out before a person has sufficient life experience to make an informed choice.[62] In addition, certain parts of the self-concept are given priority over others in selecting the best occupational match:

> (1) public presentations of masculinity-femininity will be most carefully guarded, (2) protecting social standing among one's fellows will be of considerable but lesser concern, and (3) ensuring fulfillment of activity preferences and personality needs via occupation will be of least concern.[62, p 91]

This theory suggests that selection of nursing as a career will be guided by common, public perceptions and stereotypes of nursing unless more direct experience or personal knowledge is readily available to the individual. The predominance of women in the nursing workforce is likely to deter some men from this career, particularly those for whom masculinity is central to their identity. Similarly, negative perceptions around the prestige of nursing may make this career a difficult choice for some individuals, even if they feel attracted to the field of work.

5.1   The professional identity of nurses

This section draws on literature describing nurses' and nursing students' perceptions of their own profession as well as current and historical influences on the perception of nursing by the public. In their literature review, Girvin et al.[63] identified 13 studies of public perceptions of nursing during the previous five years, in contrast to just six similar studies over the previous 15-year period reported by Ten Hoeve et al.[64] This indicates that nurse academics are increasingly interested in understanding and influencing public discourses around their profession.[63] This interest corresponds with the realisation that job satisfaction is strongly

linked with professional identity, and recognition that the development of this identity begins during nursing education.[65] In addition to the influence of nursing academics, perceptions of nursing are shaped by clinical placements, through interactions with qualified nurses, interdisciplinary healthcare teams and the public.[65] The professional identity of the student nurse is greatly influenced by the nursing profession's collective identity.[65] Therefore, public perceptions of nursing are central to the recruitment and retention of student nurses of all kinds, especially students whose minority status means they do not fit the usual 'mould'.

5.1.1   Historical influences

Florence Nightingale wrote that 'all women are nurses'.[31] Caring for others, she believed, was something that came naturally to women and therefore they did not require any special training or education for the nursing occupation.[66] The belief that nursing and femininity were inextricably linked led to her banning men from her nursing schools.[34] This action set the pattern for male, medical dominance of healthcare settings.[66,67] As a result,

> *Nightingale's image of the nurse as subordinate, nurturing, domestic, humble, and self-sacrificing, as well as not too educated, became prevalent in society.*[68, p 11]

When the Nurses Act 1919 was passed in Great Britain to regulate the profession of nursing, there were separate registers for males and females who were nurses. Segregation of males from nursing was reinforced by the establishment of female-only nurses' homes and residences; the refusal of many nursing schools in the UK, the US and Canada to accept male students; and different education for male nurses, on the assumption that they would not need clinical skills and would mainly perform tasks requiring physical strength. For similar reasons, some hospitals would not employ nurses who were male, instead opting for male orderlies.[33]

Historical resistance to men in nursing was based on concerns that men would suffer a loss of dignity and self-respect if they were forced to work in an 'undesirable occupation performed by untrained lower-class women',[65] or in subordinate positions to female nursing leaders.[33] These attitudes were still evident in the debate over registration of nurses who were male in Quebec, Canada, in 1969.[33] For example, one argument in support of the refusal to register men as nurses, offered by a member of Quebec's legislature, was that it would be immoral for men to be working under the supervision of women.[69]

5.1.2   Current perceptions of nurses and the nursing profession

Analysis of the literature in this part of the review identified that public perceptions about the role of nurses could be grouped into three broad categories: gendered beliefs about caring; perceptions of nursing competence; and the respect, prestige or status associated with the profession of nursing.

5.1.2.1   *Caring as a feminine trait*

In contrast to the 'curing' orientation of medicine, nursing is seen as having a 'caring' orientation.[70] Indeed, caring is the role most strongly associated with nurses.[64,65] Nurses themselves see caring as a central part of their professional identity. Both male and female nurses describe being drawn to nursing because they want to help others.[59,64] As a profession, nurses strive to raise the status of caring, in a society where caring is undervalued.[64]

In contrast, the community associates caring with femininity and lack of professionalism.[36,64,71] Expressions of sympathy and compassion are regarded as more appropriate for females than

males. A paradoxical female 'privilege' in caring operates alongside its low status. It is widely acknowledged that gendered perceptions of caring and its centrality in nursing present major barriers for the recruitment and retention of men.[36,64,71]

Nursing students who are male tend to express discomfort with the caring-focused parts of their learning, and have concerns about whether they will be able to perform these tasks, based on the assumption that women have a natural advantage.[31,71] There is, in fact, some empirical support for this idea. In a study of university students, women had higher scores for empathy traits on average compared to men, who had higher average scores for systematising traits.[34] However, male nursing students scored significantly higher for empathy than males undertaking study in other disciplines. This is consistent with extensive literature which demonstrates that many men who choose nursing do so because they believe caring for others will provide a meaningful, personally satisfying, career pathway.[35,37,57,72-79]

According to men in nursing who were interviewed for a PhD study, caring is 'the essence of the practice of nursing'.[80] This being the case, it may be necessary to 'de-gender' caring and challenge hegemonic masculinity in order to attract more men into the profession.[76] Men in a focus group suggested that caring for others is part of being a 'decent human being' rather than associated with one gender or the other.[76] Other qualitative studies with nursing students who are male have also noted a trend towards viewing caring as a quality that transcends gender. Australian men who had recently graduated from nursing education defined caring in terms of skilled help and support to meet patients' needs, for example:

> Caring is helping the patient focus on their immediate and future health.
> (Participant 2) [74, p 162]

To these men, caring was patient-centred involvement and support to meet emotional and psychological needs, combined with high-level skills and knowledge of the goals and methods of treatment, including the technologies used:

> My problem solving abilities and science research focus using medical technology - I see this is where I can help with best care. (Participant 7)[74, p 162]

Similarly, men undertaking a baccalaureate nursing course in the US defined caring in terms of genuine connection, building trust, advocating for the patient, and good communication.[74]

Some researchers have suggested that men and women have different ways of displaying caring.[37,77] Men may use humour to connect with patients.[77] Nurses who are male may show care by being respectful and businesslike, or warm and friendly, while maintaining a safe emotional distance.[37] In contrast, nurses who are female are more likely to be maternal, use touch, and to be more emotive and expressive in their caring.[37] By expecting men to adhere to feminine ways of expressing care, nursing faculty may inadvertently marginalise male nursing students.[81]

5.1.2.2 Competence and skill

Despite empirical evidence demonstrating a reduction of mortality rates in hospitals with a higher proportion of nurses with graduate level education[82], the misconception persists that the increased academic status in the nursing profession has resulted in decreased standards of

nursing care.[83-85] This perception of an inverse relationship between intellectual and practical nursing skills is also reflected in statements made in the press, that graduate nurses are 'too clever to care'[86] and 'too posh to wash'.[87] Predictably, such distorted messages contribute to a negative public image about nurses and nursing education[23] which adversely impacts on nursing recruitment and retention.

Nursing students, qualified nurses and nurse academics perceive a tension between perceptions of caring and competence in nursing.[64] For example, when asked about their career choices, women who had recently started a nursing degree emphasised personal virtues which were traditional feminine characteristics: kindness, patience, the ability to reassure and comfort others.[88] Although many explicitly rejected the idea that men could not be good nurses, they described themselves, and the ideal nurse, as 'motherly'. This, rather than their academic performance, was what (they believed) uniquely qualified them to become nurses.[59]

Caring and competence are not mutually exclusive. Semi-structured interviews with 11 male RNs with varying levels of experience found they distinguished between caring *for* and caring *about* people.[80] 'Caring for' people referred to skills in addressing patients' physical needs, based on scientific knowledge and skills acquired through training and experience. 'Caring about' people referred to the more nurturing aspects of nursing, and required skilful social interaction and attention to the patient's psychological and emotional needs. The two types were seen as intertwined and part of a package of holistic, patient-centred care.[80]

In a study of first-year nursing students at one Australian university, participants were asked to discuss why they wanted to become a nurse and then to brainstorm words and images associated with nursing. A major theme to emerge was the 'nurse as a competent practitioner' with behaviours such as being knowledgeable, being a life-long learner, and thinking critically.[65] The students realised they needed to be able to connect and communicate effectively, both with patients from diverse backgrounds and with other members of multi-disciplinary healthcare teams. The authors recommended:

> *For this perception of nurses as professional, knowledgeable and competent practitioners in their own right to progress, these principles must be integrated into the development of pre-professional identity.*[65, p 95]

One barrier to establishing public perceptions of nurses as professional, knowledgeable and competent is media reports of healthcare failures, concerns about nursing staffing levels, and publicity about poor nursing practice.[63] Further, it is difficult for the public to distinguish between categories of nurses with different levels of training and competency, and unskilled health workers with titles such as assistants in nursing and nursing assistants.[64]

5.1.2.3   Respect, prestige and status

Although the nursing profession is one of the most trusted,[89] the community still sees it as an occupation with few career opportunities, requiring little intellectual capacity and no academic qualifications, with low status and a lack of professional autonomy.[64] The public's trust appears to be attached to the image of nursing as a vocation, and of nurses as self-sacrificing, altruistic and noble, rather than knowledgeable practitioners in a contemporary profession.[89]

The low status of nursing is associated with its historical perception as an 'extension of women's domestic roles' and therefore unskilled and of low value compared with men's occupations.[66] Therefore, men who choose nursing as a career risk losing their social status and

prestige in a patriarchal culture. They may compromise their respect and sense of self as a man.[66] The low status, even more so than the relatively low remuneration, is likely to deter many men from entering the profession.[39]

A literature review found evidence that UK students viewed nursing as unattractive, low-skilled, dirty and poorly paid, with little intellectual challenge.[90] Another noted that UK parents and school careers advisors were unlikely to recommend nursing as a career.[63] UK secondary students said they were unlikely to choose nursing. Nursing was characterised as not interesting, lacking challenge, creativity and responsibility, and comparable to office work or hairdressing.[63] These beliefs shape mens' interest in nursing as a future occupation, influencing even those who have a more accurate understanding of, and interest in, this field of work.[39] To effect change, nurses need to take a more active role in marketing their profession and promoting their skills 'beyond caring' in order to counter inaccurate public perceptions and gain greater occupational power and prestige.[70]

5.1.3   Media portrayals and stereotypes

Stereotypes strongly influence the way humans perceive and interact with each other. They are the most dominant influence on interpersonal behaviour, after gender, age and ethnicity. [57] There has been considerable research on stereotypes of nursing, including male nurses, and the ways in which these stereotypes are employed in films, on television and in other media.[36,59,64,91-95] Negative stereotypes influence career choices, not just for minorities in nursing, but also for young women who may be considering this profession.

As might be expected, media depictions of nursing often associate it with women, with implications for visibility and the voice of the profession.[96] These portrayals reflect and reinforce public misperceptions and create difficulties for the profession in attracting support for nursing research and for policy development that supports its mission. Stereotyping affects the development of self-concept and self-esteem among nurses, with negative effects on job satisfaction and performance.[65] These effects can, however, be mitigated by professional socialisation interventions.[65]

Numerous female nursing stereotypes have been identified and described,[36,57,59,64,95] including nurses as selfless, nurturing, altruistic, comforting and noble. These stereotypes may present difficulties for men who decide to become nurses, as they reinforce a sense of being marginalised.[25] These difficulties are compounded by male nursing stereotypes. For example, male nursing scholars involved in a US support program were surveyed as part of the program evaluation and asked to nominate the three most significant issues they faced in being part of a female-dominated profession.[15] Negative stereotypes were at the top of the list. They were perceived as unintelligent and not clever enough to get into medicine, or encountered intrusive curiosity about their sexual orientation.

This finding is consistent with a body of research on the impacts of stereotypes and media portrayals on nursing recruitment and retention. Escobar et al.[97] report that young people who might otherwise have been interested in nursing were discouraged by the way in which nursing work is depicted on television. Girvin et al.[63] noted the potential for negative images and portrayals of nursing to affect career choices. Some have called for greater effort to be put into marketing the profession to the general public,[98] while others are sceptical of this approach.[99]

There is the potential for poorly considered marketing campaigns to have counter-intuitive impacts by reinforcing the stereotypes they seek to counter.[100]

5.2 Experiences of groups under-represented in nursing

There is extensive literature on the experiences of men and people from CALD groups in nursing, aiming to identify the barriers they face. Less information is available on the experiences of Aboriginal and Torres Strait Islander nurses and nursing students, or on nurses of different age groups. This literature is briefly summarised below, drawing out the implications for nursing education.

5.2.1 Men

In studies of career choice, male nursing students commonly report that a factor in choosing this occupation was familiarity with nurses, especially within their own families, or previous work in healthcare settings (e.g. as assistants in nursing).[35,68,76,101] Not only did these experiences provide them with a more realistic view of the work of nursing, they were a source of social support while taking on the challenge of nursing education. Acceptance by family and friends was very important to male nursing students.[79] However, this could be difficult to obtain, especially from fathers[68] and male acquaintances.[37,73]

Nursing as a career choice presents a significant threat to male gender identity. Australian studies of male nursing students reveal they are often the target of incredulous questioning around the validity of their career choices, or 'banter' about their sexuality and masculinity.[37,73]

Once in nursing education, men reported difficulties with discrimination and isolation in learning environments. There was a lack of male role models among faculty and in clinical placements, and they felt excluded from female cliques and social activities. A review of gender diversity in nursing found that male nursing students felt they were discriminated against on the basis of their gender. The relative lack of male nurses in textbooks was experienced as alienating.[81] They perceived that clinical instructors and female students had different expectations of them, including leadership, assertiveness, and willingness to take on lifting or physical tasks.

Opportunities to gain clinical experience were reported to be restricted as male students felt they were under close scrutiny. In part, this was attributed to the perception that patients may be uncomfortable with male nurses performing tasks of intimate care.[81] Touch is intrinsic to nursing care, so difficulties with physical closeness may present barriers to the full participation of male students in their clinical training and create feelings of resentment, confusion and fear.[71] Male nursing students require more guidance on this issue, particularly around appropriate expressions of caring and confident touch, cultural beliefs and differences, and communication.[71]

5.2.2 Indigenous people

Nationally, Aboriginal and Torres Strait Islander people are less likely to enrol in degree-level courses (such as a Bachelor of Nursing) than non-Indigenous people, and have significantly lower rates of retention and completion.[102] High attrition rates for this group are also seen in the Vocational education and training (VET) sector, where ENs are trained.[102] The *Review of Higher Education Access and Outcomes for Aboriginal and Torres Strait Islander People: Final Report* highlighted this situation and recommended that universities set targets:

…for the retention and completion rates by Aboriginal and Torres Strait Islander students, matching the rates for those of non-Indigenous students across the disciplines, and at each of the levels of study.[102, p 17]

To achieve this, it will be imperative to understand the barriers and enablers to participation and retention of Aboriginal and Torres Strait Islander students in nursing education. A review conducted by the Indigenous Nursing Education Group identified a number of barriers, particularly unfamiliarity with academic English and the behaviours and conventions of tertiary education environments.[103] Attending university could be seen as a 'cross-cultural experience' for these students, whose own cultural capital was often not recognised or valued in this context.[103] Family and cultural obligations, financial pressures, and community expectations to achieve at study while maintaining political involvement, were identified as additional burdens for Indigenous students.[103]

In a personal account focusing on his own experiences as a nursing student, Gorman[17] observed that Aboriginal students often had multiple sources of disadvantage in tertiary education. These included, coming from low socioeconomic backgrounds; being first in family to attend university; having to relocate from country, family and friends to attend university; being of mature age; and having carer responsibilities. They were more likely to seek financial and personal assistance during the course of their studies. Scholarships were particularly important strategies for enabling Aboriginal people to participate in and complete nursing education.[17] Nevertheless, studies consistently report a high level of motivation among Aboriginal nursing students, who welcome the opportunity to give back to their own communities.[17]

A recent, qualitative study has shed light on the experiences of Aboriginal students undertaking a Diploma of Nursing course in the VET sector in Western Australia. Although this course was designed, tailored and delivered by and for Aboriginal people, it had an attrition rate of 56% over a five-year period to 2011.[104] The course was delivered by a registered training organisation, whose staff were interviewed for the study. Students participated in focus groups and also completed a tailored survey of their views and experiences.[104] Students viewed the training provider as a culturally safe environment that met their educational needs.[104] Undertaking study in blocks allowed them to maintain employment and meet family responsibilities, and the course structure and emphasis on 'learning by doing' suited their learning styles. Culturally relevant content (e.g., inclusion of an elective on diabetes) was appreciated. However, the study blocks were intensive and required students to learn a new language of nursing and medical terminology. This was especially challenging for students who had more limited prior formal education. Bridging courses and content designed to build literacy, numeracy and study skills were highly valued.

Previous experiences in the health workforce, or as a patient, or attending family members receiving health care, had shaped students' desire to study nursing. Students who were 'resilient' – that is, confident in their ability to cope with the challenges of study – were often older, with more life experiences, financial resources, better health, and greater support networks.[104] Those with poorer health, limited family support and inadequate housing were more vulnerable and less likely to persist in their studies. The research identified links between student stress and the Aboriginal concept of shame, associated with socio-cultural disadvantage. Shame could make students reluctant to speak up and ask questions and could

erode self-confidence. However, practicum work which affirmed that they had achieved certain skills was valuable in building and maintaining students' confidence.[104]

Similar barriers and enablers have been identified in research with Māori nursing students in New Zealand.[105] Māori and Pacific students are less likely to achieve high academic results in first year, less likely to pass all first-year courses and less likely to complete health professional education than non-Māori, non-Pacific students.[106] A survey of Māori students at 14 nursing schools found that having to prioritise their commitments to extended family (whānau) over study, and challenges in finding suitable child care, made it difficult for students to undertake a nursing degree. Many reported that they required additional academic support to prepare for assessments. Supportive and culturally safe learning environments were associated with access to Māori role models and mentors, suitable timetables, and encouragement of whānau ('family' based support) groups by faculty.[105]

5.2.3 Culturally and linguistically diverse groups

A growing non-traditional nursing student group in Australia and other developed countries are those from CALD backgrounds.[107,108] Like male nursing students, those from CALD backgrounds often report that they entered nursing with a desire to help others, and with some background knowledge of the profession from family, friends or previous experiences.[107] However, these students are less likely to successfully complete their undergraduate nursing studies within the minimum course completion time,[26] most commonly due to academic under-performance, which delays their course progression and completion.[109]

In particular, ESL among these nursing students has consistently been shown to predict academic under-performance.[110,111] In a number of qualitative studies, students from CALD groups spoke about how their language difficulties had contributed to the burdens and challenges associated with tertiary study.[112,113] Students also encountered discrimination from nurse academics, clinical leaders and patients, based on their English language skills or accents. Frequent experiences of this kind could lead them to doubt themselves and their own intelligence.[114] They felt pressured to prove themselves capable, and were often discouraged by culturally insensitive or patronising feedback on their written assignments.

> It's like they look at it, they look at what you write and that's how they picture you. It's like they think they know you from your writing. So you might be a great nurse or your clinical skills are very strong but if you cannot present yourself in writing, the person who's reading it doesn't know that. They're reading that and saying like: "Oh you're sloppy. You probably never save lives".[115, P 38]

Beyond the classroom, students from CALD backgrounds experienced more challenges and were less satisfied with the clinical learning environment,[116,117] underscoring the need to adequately prepare and address communication and cultural challenges CALD students are likely to encounter during clinical placements.[112,116] English language difficulties interfere with CALD students' ability to communicate effectively with clinical leaders and form therapeutic relationships with patients, limiting their learning in this environment.[26,45,52]

CALD nursing students studying at Australian universities struggle with the Australian idiom. Language difficulties place students at greater risk of failure, by undermining persistence and compounding the psychological stresses associated with tertiary study workloads.[45,114] In addition, they are self-conscious about their grammar and accent, making them reluctant to

speak up in class.[45] They find it difficult to form groups with other nursing students. Other barriers reported by nursing students from CALD backgrounds are financial difficulties and family responsibilities.[49,114]

For male CALD nursing students, the 'culture shock' of entering nursing education is even more confronting.[37] They need to adjust to their new cultural, social and learning environments by developing new patterns of behaviour and communication, and by altering their sense of self. This process is necessary in order to create a feeling of belonging and promote persistence. An analysis of administrative data showed that the Grade Point Average of mature-aged CALD male students was higher than that of other CALD students or mainstream students.[118]

Teaching strategies that take into consideration the learning needs of CALD nursing students (e.g. avoiding slang and complex language, and providing frequent feedback on learning activities) have been suggested.[119] Of significance, a number of studies have shown that interventions which target communication skill support, or provide academic writing support, improve communication skills and the academic performance of CALD nursing students.[119-122]

Given sufficient and appropriate support, people from CALD backgrounds can demonstrate similar levels of self-efficacy to other students in relation to their nursing studies.[48] Those who succeed and graduate can flourish in their careers, orient or precept new nurses, and give back to the community.[52]

5.2.4 Age or generational differences

Evidence from studies comparing nursing students at different time periods, or different generations of nurses, suggest that age or generational differences among students may also need to be addressed in nursing education.

It is notable that qualitative studies of nursing students of different cohorts reveal similar humanitarian motivations around helping others, being professional and taking responsibility, as well as being inspired by family members who are nurses.[59,123] These factors influencing career choice correspond with those reported by men and other under-represented groups, indicating that despite their more obvious differences these students have much in common. Extrinsic motivations for young people entering nursing include job security, having a portable job, and entering a 'family friendly' profession.[59]

The evidence on the needs of different age groups or generations is mixed. Some studies suggest more recent students are less committed to nursing, and more likely to be undecided about nursing as a career. High attrition is reported among recent graduates due to job dissatisfaction and burnout.[57,59] Those who have consciously chosen nursing, rather than fallen into it by chance or as a second choice, have higher levels of self-efficacy and interest.[124] Nursing managers need to adopt different strategies to support nurse recruitment and encourage retention of nurses depending on their generational cohort.[60] In particular, attention is needed to understand the career choices and expectations of today's school leavers, to build a sustainable nursing workforce.[59]

Today's school leavers are classified as millennials (born after 1980) and characterised as placing a high value on work-life balance.[57] Millennials have grown up with an expectation of equality and rewards for participation in education, and are used to praise and feedback. They

may therefore be disappointed in the nursing workforce where new graduates are not treated as equals.[57] Accustomed to speaking up for themselves, they may inadvertently offend older nurses who believe in hierarchy and expect to be treated with deference.[60] There is a risk that if millennial new graduates become disillusioned with their nursing career, they will tend to move on quickly.

5.2.5 Other groups

Lower retention and academic under-performance have been reported among those with previous nursing-related qualifications, such as ENs.[125] This is perhaps not surprising, as EN preparation is not primarily focused on foundational knowledge and literacy skills, to equip students for a successful transition into the second year of a three-year nursing program.[126] Not discounting the benefits of previous nursing experience in promoting confidence during clinical placements, some students have commented that this could also be disadvantageous to their learning because there is a risk of role confusion between their previous clinical role and being a nursing student.[127] To enhance successful transition and promote academic success, a multi-pronged approach consisting of multi-disciplinary academic teams has been suggested, to support these students as they 'play catch up' to upskill themselves in the areas of academic writing and computer literacy; skills required for university studies.[125,126] Further, consideration should be given to the design of accelerated programs and academic credit for previous nursing qualifications. For example, students who receive credit or advance standing for first-year courses may later regret this decision because it affects their successful progression into second-year courses.[128]

There is a lack of empirical evidence on the experiences of nursing students with disabilities. Universities in Australia are required to make reasonable adjustments to allow people with disabilities equal access and opportunity to compete with peers.[45] Statistics from disability services within universities suggest that demand for assistance is increasing. There is some Australian evidence that nursing students with a learning disability (dyslexia) are fearful of being humiliated in clinical settings, while a study from the US found that students with disabilities felt nursing educators were biased against them.[45]

5.3 Barriers to greater representation

In summary, historical and current perceptions, stereotypes and media portrayals of nursing are inaccurate and create a professional identity that is largely feminine and relatively low in status and autonomy. This image represents a serious barrier to recruitment of men and other under-represented groups. (In an age when women have wider career choices, there is a risk that nursing may struggle to attract recruits from its traditional cohorts as well.) Experiences of these groups highlight the following difficulties:

- Low occupational status and limited public understanding of nursing as a profession;
- Lack of acceptance by family and friends of nursing as a career choice;
- Negative stereotypes of male nurses, and threats to male gender identity;
- Obligations to community and extended family, particularly for Indigenous people;
- Challenges associated with poor health and low socio-economic status;
- Lack of role models;
- Sense of isolation or social exclusion;

- Academic underachievement;

- Additional learning challenges due to having English as a second language;

- Discrimination in the learning environment;

- Differing career expectations across generations.

A number of strategies are required to increase student enrolment, which include improving the public image of nursing by challenging the negative stereotypes and redefining nursing as a thinking profession.[86] Currently, the public image of nursing is diminished by the invisibility of nurses, in part, due to ineffective communication strategies to change and influence public perception about nurses.[64] Within nursing education, increased emphasis is needed to empower nursing students to develop their self-concept and professional identity, and to support them in practical ways to address various challenges.

6   Interventions to increase representation in nursing education

The review identified three broad categories of interventions designed to improve diversity in nursing education (Table 3).

The first set of interventions are implemented during the period before university entry and target young people who are making career decisions, aiming to build their interest in nursing and/or their capacity to undertake nursing studies. These interventions include assistance with navigating the admissions process to enable diverse students to enter nursing education.

The second set of interventions are implemented by tertiary education providers changing the content and delivery of courses or putting additional supports in place. These strategies aim to improve the participation and retention of under-represented nursing students.

A third set of interventions take place at the system level and consist of administrative or operational changes within tertiary education providers, as well as funding, policy and legislation enacted by regulatory bodies and governments. These interventions provide an impetus and supportive framework for implementing the other types of interventions.

Table 3   Intervention types

Pre - university entry interventions
Raising awareness and attracting the interest of a targeted population of potential nurses - e.g. careers counselling and experiential activities.
Building capacity of the targeted students so that they can enter an appropriate nursing course – e.g. academic preparation.
Assisting the student in **navigating admissions** – e.g. preparing students for an interview or exam coaching.
University participation and retention interventions
Facilitating participation including interventions such as **scholarships, peer support** and **pedagogical** models (educational approaches such as flipped classrooms, program materials and communication styles).
Interventions that **enhance retention** of nursing students include **mentoring, leadership development** activities and **student placements**.
System - level interventions
Administrative and operational changes within faculties and universities designed to facilitate implementation of the above interventions, and **regulatory processes** including legislative or accreditation standards, requirements or directives.

6.1   Pre - university entry interventions

6.1.1   Raising awareness

There has been a considerable effort in the US, and to a lesser extent Canada and the UK, to raise awareness of nursing among high school students and attract greater interest in nursing as a career choice. This section reports on interventions implemented in each of these countries. Awareness-raising interventions often form part of larger projects or programs. Two reviews were found that categorised relevant interventions before university entry.

In the first review, Loftin et al.[11] included seven studies which described interventions to raise awareness of nursing among high school students, their parents, and school counsellors. These included visits to schools with high minority enrolment to provide students and career guidance

counsellors with information about admissions processes and scholarship opportunities. Often these visits were followed up with letters or phone calls to potential nursing students. Most of the programs were not formally evaluated. However, for some of the programs it was reported that participants were more successful in passing their nursing course on the first attempt, that more minority students graduated and that students and the community positively viewed the interventions.[11]

For the second review, Williams[14] conducted an integrative review of seven studies which utilised various recruitment strategies to increase the awareness of nursing as a career in school children from 11 to 13 years of age. Two included studies implemented awareness-raising strategies and are summarised below.

The University of Massachusetts, in partnership with two local school systems, developed after-school programs aimed at highlighting nursing as a career choice and developing healthy lifestyle habits among students from Hispanic and South East Asian origins.[129] Four sequential modules told a story illustrating the relationship between nursing and health and demonstrating how exciting a career in nursing can be for those who study hard and obtain good grades. In responses to a seven-item survey, students stated that they learned new things about nursing, would recommend nursing to others, would participate in further after-school programs about nursing, and were more likely to consider nursing as a career.

The second awareness-raising strategy was a summer program called Camp Bones, developed by nurse academics to introduce students from under-represented groups to a career in nursing.[130] This two-week summer camp was followed by after-school and weekend seminars. The camp was conducted by nursing faculty staff and graduate students and provided a variety of experiences exploring critical thinking skills in simulated laboratories at the university. Students shadowed a nurse at a local hospital where they learned about entry criteria for nursing school and practised skills in maths and science. Ninety percent of participants expressed intention to enrol in nursing school.

In addition to these reviews, three primary studies were identified. In the UK, the University of Nottingham worked closely with Public Health England to produce a video that promoted nursing as a career choice for men, as part of the nursing school marketing strategy. In addition, the university ensured that there was at least one male academic nurse and one male student ambassador at all recruitment, selection and open day events. The results of this initiative were positive, with the proportion of male applicants offered a place following interview rising to 26% in 2017, close to that for female applicants (31%).[131]

A Canadian project called Inclusive Mosaic used school camps to provide an opportunity for students from minority groups to experience different health professions and different types of nursing through field trips to the School of Nursing and local health care providers. There were two different 'camps': one ran for one week and the other for six weeks at a local community health centre. A total of 60 students participated in the camps between 2009 and 2012. Limited outcomes data is available from this project; however, program activities were described as 'very successful' by project staff, nursing student mentors, and the community health centre manager. Feedback from students who took part was very positive.[132]

In Australia, the Centre for Aboriginal Medical and Dental Health (CAMDH) at the University of Western Australia (UWA) also uses school camps as a way of encouraging recruitment into nursing courses. The Health Careers Workshop Camp aims to orientate and encourage Indigenous students from Years 8-12 to undertaken study in health disciplines. During the camp the students live on the UWA campus for one week. They visit health and science programs, participate in many interactive sessions, attend a careers night, engage in social activities and meet current health students and graduates. Of 370 students that attended the camp between 1995 and 2011, 36% have entered a university course and 15% have entered a health-related tertiary course.[133]

6.1.2 Building capacity

Initiatives to build capacity of targeted students so that they can meaningfully participate in university courses are often referred to as pipeline programs. In this instance, the pipeline refers to programs that support enrolment and retention of under-represented students with the goal of increasing their representation in nursing.[134] Pipeline programs (mainly from the US) that focus on ethnic minorities and students from disadvantaged backgrounds are summarised in Table 4.

Table 4   Pipeline programs to build capacity among targeted students

Program / Country / Reference	Target group, No. participants	Description
The Pre-entry Immersion in Nursing Program, Health Equity Academy Duke University, US.[135]	Under-represented minority students who are economically disadvantaged n=21	Over six weeks students attend seminars on nursing practice and have observational experiences with nurses in an acute clinical setting.
Pathway to Success in Nursing (PSN) Program, Health Equity Academy Duke University, US.[135]	Under-represented minority students who are economically disadvantaged n= 39	Supports the student academically, financially and emotionally. $10,000 US (max), comprising tuition and scholarship. Monthly stipend calculated on a scale that accounts for frugalness, level of poverty, and other financial indicators; provision of equipment: computers, books, uniforms etc.
The Health Career Club, St Louis University School of Nursing, US.[136]	Ethnic minorities n=21	Building capacity and develops retention strategies for students. Uses web-based modules, didactic presentations and experiential learning to explore health careers.
The Nursing Network Careers and Technology (NN-CAT), Western Carolina University, US.[137]	Appalachians, Cherokee and other ethnic minorities n = 89 (pre-nursing) n = 5 (nursing)	Provides a nursing mentor to the students as well as scholarships and stipend for tuition, tutoring and monthly living expenses.
The Success in Learning: Individualised Pathways Program (SLIPP), Loma Linda University School of Nursing, US.[138]	Ethnic minorities n=77	A pre-entrance nursing preparation program. Included study groups, individual counselling and tutoring. Students also received a discount from course fees, a home computer and a scholarship of between $200 and $250 per month.
The Summer Pre-matriculation Program, University of Tennessee Health Science Centre, US.[13]	Students from disadvantaged backgrounds n=33	A four-week course (40 contact hours) introducing students to nursing as a career through financial support, academic enrichment and social support to promote

Program / Country / Reference	Target group, No. participants	Description
		nursing admission success.
Careers Beyond the Bedside (CaBB), The University of North Carolina at Chapel Hill, US.[139]	Disadvantaged and under-represented ethnic minorities n=28	Students receive specific career advice and are offered individual mentoring and tutoring. Needs-based scholarships for disadvantaged students were also available.

Very few of these initiatives have been evaluated using high-quality study designs. One exception is the Success in Learning: Individualised Pathways Program (SLIPP) which targeted disadvantaged and ethnically diverse students with grade point averages significantly below the usual school of nursing requirements.[138] It featured a three-month pre-entrance preparation program focused on improving the students' study skills, heightening their self-confidence, and increasing knowledge needed to be successful in nursing. The small classes (10 -15 students) were taught by four ethnically-diverse faculty members. During session time academic advisors developed individualised plans to ensure students completed all required classes and to meet each student's social, spiritual and financial needs based on identified weaknesses, needs and goals. Academic advisors made themselves available for study groups, individual counselling and tutoring.

Outcomes from the SLIPP were impressive, with 70 of 77 students graduating from a future nursing program. The overall pass rate for SLIPP graduates was 98.6%. As a result of SLIPP, an ethnically diverse group of 70 students traditionally under-represented in nursing entered the nursing workforce. Eighty-six percent of these students are now practicing nursing in medically underserved areas where they have the opportunity to give nursing care to clients from backgrounds similar to their own. However, although SLIPP students clearly valued the academic and social support provided by the program, they felt that they would not have been able to complete the nursing program without the financial support provided.

Evaluating outcomes of the other pipeline programs summarised in Table 4 largely consisted of measuring enrolments in nursing education programs. Over the three years of the Health Career Club program, 392 minority and/or disadvantaged students attended the program, of which, 310 (79%) expressed intent to pursue a health-related or nursing career. At the end of the program, 45 students had enrolled in a health career major in college and 21 students had been admitted to a nursing program.[136]

Over the three-year period of the Summer Pre-matriculation Program, 33 people from an under-represented minority group completed the program and 13 (39%) were accepted into a nursing program. Evaluation results highlighted that building language, reading, and test-taking competence were the most important components of the program as they heightened the levels of skills and confidence participants needed to achieve acceptance into nursing school. The financial support offered to students facilitated program attendance and also diminished the need for students to seek employment to support themselves while studying.[13]

In the final year of the Careers Beyond the Bedside (CaBB) program, 38 CaBB participants applied to the school of nursing and 27 were admitted (71%), compared with a 56% success rate for other applicants from under-represented minorities. Feedback from students demonstrated that CaBB activities and the relationships they had formed helped to affirm and

validate their interests in becoming a nurse, as well as supporting their persistence to succeed.[139]

As indicated above (Section 5.2.2), Indigenous people face specific issues in entering and remaining in nursing education. 'Best practice' programs for attracting Indigenous secondary students into tertiary health programs were reviewed, with a particular focus on Māori.[140] Seventy articles were included in the review, with 15 from Australia and 13 from NZ. Seven articles described 'early exposure' interventions in secondary schools which addressed some of the key barriers to participation by Indigenous students.

To address inequities in academic achievement between Indigenous and non-Indigenous students, particularly in science, interventions assisted students with their choice of appropriate prerequisite subjects and supported their academic achievement to increase their chances of successfully applying for entry into health programs.[140] Secondary enrichment programs provided Indigenous students with opportunities to visit tertiary institutions and health settings. Interventions also targeted school careers advisors by providing professional development, and parents via advertising campaigns, to support more informed decisions about career choice. The reviewers deemed enrichment programs to be important as they introduced students to Indigenous role models and fostered trust between the tertiary education sector and communities.[140] However, the review of the literature was unable to identify 'best practice' as most of the articles were descriptive in nature and did not provide evidence of effectiveness.

6.1.3   Navigating admissions

Traditional nursing admissions processes, based on academic achievement in high school, are potential barriers to establishing a more diverse nursing workforce.[141] There is an increasing realisation that standardised test scores and grades do not capture the breadth of experiences and personal qualities that an individual could bring to the nursing profession.[142] As a result, many universities in the US have begun to incorporate 'holistic review' into the admissions process with the goal of admitting a diverse body of students that will not only excel academically, but will also have the qualities needed for success in the current work environment.[142]

Holistic Admissions Review (HAR) uses experience and attributes in an attempt to look more broadly than test score alone and put greater emphasis on how successful the applicant will be as a student and what contribution they could make to the nursing profession.[143] Experiences such as overseas travel, community service and caregiving may be taken into account, along with attributes or personal characteristics that are potentially valuable in the nursing profession or enhance the individual's ability to provide care to an undeserved population. Examples of attributes could be being a member of an under-represented group, speaking a foreign language or residency in a rural or impoverished community.[143] The principle behind HAR is creating a health workforce with the qualities, skills and experiences to successfully satisfy the health needs of the communities they serve.[142]

HAR was evaluated through a national survey of US tertiary education providers that adopted the method for admissions to health education courses. Published in 2016, the report explored whether schools making a change to HAR in the last decade had experienced an increase in diversity of their incoming classes, and if there were any measureable changes in the academic quality of incoming students, in student retention, or in measures of student success.[142] Of the

228 health professional schools that completed the survey, approximately two-thirds reported they had changed to a holistic admission process within the past 10 years, and 8% indicated that they had used a holistic admission process for more than 10 years. Most reported an increase in student diversity with no detrimental effects on student success rates. Further, most admissions leaders reported the impact of the investment in holistic review to be positive. However, uptake of HAR was lower in nursing schools, with just 47% reporting the use of HAR compared with 93% of dentistry schools and 91% of public health schools.[142] One reason for this relatively low uptake may be that the intensity of focus on individual applicants required for HAR is more difficult to achieve in nursing courses, which have a relatively large intake of undergraduate students.

Interviews with 41 US deans of nursing sought to understand barriers to implementing holistic admissions in nursing schools.[144] A lack of knowledge regarding HAR was identified as an overarching barrier to use of holistic review. Additional barriers included the need for better dissemination of evidence, support from university leaders and administrators, legal guidance to facilitate implementation and appropriate resources to support implementation of the HAR process.

The University of Illinois at Chicago College of Nursing reported their experiences of preparing and implementing a holistic admissions process. They identified that the process required a disciplined and long-term institutional commitment.[141] One of the key challenges was provision of appropriate resources and training to faculty members working with students from backgrounds unlike their own. It was recognised that admissions is a labour-intensive process and it is important to identify the costs and benefits of each phase of the process. Ongoing evaluation of the outcomes of holistic review was recommended. Overall, however, participants believed that holistic review could address diversity among nursing students and provide the first step toward achieving diversity in the nursing profession.[141]

6.1.4   Graduate Entry Nursing

Commonly known as second-degree accelerated nursing programs in the US[145], Graduate Entry Nursing (GEN) programs are offered to students with non-nursing academic degrees. [23] This type of nursing education was developed in the US in the 1970s,[146] and has been offered in Australian universities since the mid-1990s.[53]

Several Australian and international studies that focused on GEN programs reported a higher representation of men (15.6% to 42.7%) compared to standard entry nursing programs.[23,147-149] One explanation was that men enrolled in GEN programs were in search of a more satisfying career, perhaps having worked in various types of jobs previously.[148]

Among non-traditional nursing students, attrition rates of men and non-native English speakers have been reported to be about twice that of female and native English speaking students.[150] However, this is not the case among GEN students, as they have consistently been shown to have lower attrition rates compared to standard entry nursing students.[151] GEN students perform just as well[53,152] or significantly better than students in traditional nursing programs.[147] Despite the two-year accelerated program structure, upon graduation, those who completed the GEN programs have been reported to rate themselves as clinically competent and well-prepared for clinical practice.[153]

'Graduateness', defined as acquisition of knowledge, attitudes and skills having successfully completed a first degree, has been attributed to be a key explanatory factor for the speedy, successful transition of GEN graduates into practice.[153] This is not surprising, as their previous academic scholarship may have facilitated their meta-cognitive skills development, numeracy, information technology and communication skills which are transferrable to both their nursing studies and their professional practice.[154]

GEN students may encounter challenges during clinical placement, such as a lack or misalignment of learning opportunities to their learning needs.[154] These students have described their engagement in fundamental nursing care during placement to be the currency for acceptance into the clinical environment, even if these activities did not value-add to their learning. Nevertheless, despite assisting with the nursing care workload, there was no guarantee that their own learning needs would be viewed as a priority to clinical nurses in the ward environment.[155] Another study reported that GEN students were susceptible to imposter syndrome: appearing successful to others but doubting their own accomplishments[84] As these students viewed themselves as different, they have been reported to inadvertently conceal their intellectual abilities and limit themselves to the most basic nursing tasks to mitigate potential hostility from clinical nurses.[155,156]

It is now well-recognised that GEN programs are highly successful, as students recruited into these programs have a wealth of educational, professional and life experiences.[23,157] The use of clinical simulations have been reported to be a suitable pedagogical approach to meet their learning needs.[158] Despite the increasing popularity of GEN programs in Australia and internationally, there is scope for substantial growth in GEN course enrolments to generate nursing graduates for the workforce.

6.2 University participation and retention interventions

Four reviews were found that categorised relevant interventions in tertiary education settings:

- Curtis et al.[140] included 70 sources on interventions designed to increase recruitment and retention of Indigenous students, 63 of which involved tertiary and system level interventions;

- Dapremont[159] included seven articles across the spectrum from recruitment to graduation;

- Loftin et al.[160] included eleven studies that looked at interventions that supported participation, retention and graduation of nursing students; and

- Milne et al.[161] included 16 articles on interventions supporting undergraduate Indigenous students.

In addition, 40 primary studies were found that described programs or aspects of programs that were found useful in supporting enhanced participation and retention of men and other under-represented groups, including Indigenous students, in nursing education. Interventions were mostly delivered in the context of a broader recruitment and retention pipeline, targeting student cohorts, educational processes and structures, and higher level administrative or regulatory mechanisms. The majority of studies used qualitative, mixed methods and/or quasi-experimental methodologies; outcome measures included satisfaction rates at the individual level, to retention and graduation rates across the broader program level.

Although discussed as discrete interventions, each are inter-related, requiring investments at a higher level to facilitate implementation. At the level of individual students, interventions can be grouped into two types which colloquially can be described as enabling students to 'survive' (e.g. financial and emotional support) and 'thrive' (e.g. mentoring and leadership development). These interventions require investment on the part of the faculty, the university as well as broader administrative and regulatory mechanisms to provide the relevant pedagogical models, accreditation frameworks and financial resources.

6.2.1 Promoting participation

Interventions promoting the participation of under-represented groups can be described as those that enable students to survive within the educational environment, and include two primary mechanisms: financial and technical support, and peer support.

6.2.1.1 Financial and technical support

Many nursing workforce initiatives include an element of financial support designed to address the financial barriers experience by particular population groups in participating in higher education and encourage participation by these groups in nursing and / or in particular fields of nursing. Australian examples include the former Aged Care Education and Training Incentive (ACETI) Program[162] and the Puggy Hunter Memorial Scholarship Scheme for Indigenous students.[163]

Most of the programs identified in the literature around participation included a scholarship component to offset costs associated with undertaking higher education; in addition, several of the capacity-building 'pipeline' programs discussed above had a financial element. Interventions providing technical and financial support are summarised in Table 5.

Table 5   Programs providing financial and technical support for nursing education

Program title / Location / Reference	Description	Amount, Source, No. of participants
Succeed to Excellence (SEP) Duke University, US.[164]	Pre-cursor to PSN program. Included scholarships over four semesters, designed to reduce need for students to have to take on any external employment while enrolled in the program. Equipment: uniforms, textbooks	$7,500 US in scholarships, over four semesters. $10,000 nursing scholarship. No. of participants not provided.
New Careers in Nursing (NCIN), Various, US.[165]	National scholarship program (2008-2015) designed to address the nursing shortage, increase workforce diversity, and raise the profession's educational level. In total, 3,517 nursing students from 130 Schools of Nursing in 41 states and the District of Columbia.	$10,000 p.a. (max); Robert Wood Johnson Foundation and the American Association of Colleges of Nursing. n=20.
New Paths to Professional Nursing (NPPN) Robert Wood Johnson Barnabas Health (RWJBH) Rutgers University School of Nursing, US.[166]	Collaboration between RWJBH and RUSON to support RWJBH employees who desired to become professional nurses. Included fees towards tuition costs; grant funding to support costs related to textbooks, academic fees, supplies, parking, printing, tutoring, and any other costs related to their education. Equipment: electronic tablet for each student	$5,000 p.a., RWJBH, in collaboration with Rutgers University School of Nursing. n=12.

Program title / Location / Reference	Description	Amount, Source, No. of participants
Eastern Shore of Virginia RN-BN (ESVA RN-BN) Old Dominion University, Norfolk, Virginia, US.[167]	Localised program targeting resource-limited rural community. Comprised tuition assistance from the hospital partner and grant-funded scholarships. Equipment: stipend for computer, textbooks etc.	$ not provided; Health Resources and Services Administration (NHRSA), Department of Health. n=18
Centre for Aboriginal Medical and Dental Health (CAMDH) University of Western Australia.[133]	Designed to build capacity of Aboriginal and Torres Strait Islander health workforce. Includes assisting students applying for scholarships, cadetships and financial support. Partnership with local health service provides equipment including: laptops, diagnostic kits and conference attendance costs.	$ not provided; Centre for Aboriginal Medical and Dental Health and St John of God Health Care. No. of participants not provided.
Nursing Workforce Diversity Project Saint Louis University School of Nursing, US.[136]	Retention strategies implemented for newly admitted and enrolled nursing education students, as part of a broader program to increase workforce diversity. Scholarships were provided to decrease need for students to work while studying and undertaking clinical placements.	$5,000 p.a. NHRSA Nurse Workforce Diversity grant. No. of participants not provided.

Financial and technical support has been found to be an important factor in encouraging people to participate in higher education courses in nursing, particularly for Indigenous students. [161] The majority of financial support was through the provision of targeted scholarships, reduced tuition fees, and the provision of technical support in terms of advice and essential equipment such as textbooks, uniforms and computers. As noted above, these interventions were provided as part of a suite of initiatives within successful programs, and therefore it is not clear how much the success was attributable to the provision of this type of support. However, it is likely that the funding played a significant role in supporting students to participate and complete their studies to graduation based on the experience in the UK when funding was withdrawn from nursing student programs. In 2013, the UK government ceased providing bursaries for student nurses and replaced this with 'standard student loans' as part of a package designed to uncap student places. Within a year applications to study nursing had dropped by a third, with those of mature age most affected: 40% decrease in number of applicants aged 25 years or more, compared to 12% for those aged 18 years.[168]

6.2.1.2 Peer Support

Many of the programs specifically incorporated a peer support element to address the social and cultural isolation experienced by students from under-represented population groups. The peer support initiatives included facilitated networks with regular, scheduled meeting times,[135] and introductions to more experienced peer mentors. Such mechanisms gave students the opportunity to provide each other with 'emotional support' and share 'tips on interacting with professors, study skills, juggling classes and work, family pressures and shared messages of endurance and resolution.'[169] Several models included facilitated linkages with existing networks such as student associations.[11,139]

Peer support is particularly important for Indigenous students due to the cultural and social isolation they experience as well as the institutional bias that has not historically provided them with culturally relevant or safe learning experiences or content.[161,170] The Indigenous Nursing Support (INS): Helping Hands program developed by the University of South Queensland[171] includes five steps across the pipeline from recruitment to graduation and beyond which

actively engages peer mentors throughout. The Kia Ora Hauora initiative in New Zealand, designed to increase the number of Māori health workers and support those studying to be health professionals, was described as '(I)ike joining a national club. On Facebook members find like-minded friends and get alerts on scholarship availability and deadlines'.[172, p 1]

Peer support has been facilitated by environmental arrangements, including the establishment of common areas for study and networking. At the UWA, the Centre for Aboriginal Medical and Dental Health (CAMDH) was established within the Faculty of Medicine, Dentistry and Health Sciences to implement a comprehensive approach to Aboriginal health. The physical location of the Centre is within the university's School of Indigenous Studies (SIS), sharing common rooms, computer laboratories and study rooms:

> (B)eing co-located with SIS means health students have the potential for closer contact with other Aboriginal and Torres Strait Islander students on campus.[133, p 57]

The benefits of peer support networks include the capacity to influence ongoing faculty program design and processes:

> The effort to commingle and support diverse students can vitalize (sic) under-represented students, may uncover community-based relationships useful to the school or the curriculum in other ways, and form partnerships that might advise nursing programs on diversity and inclusion.[173, p 91]

6.2.2 Accommodating and retaining students

The barriers experienced by particular cohorts of nursing students to completing their university education have been discussed previously. To reduce attrition and promote completion of nursing courses, many of the programs described in these studies include elements designed to enhance the student experience. The three primary mechanisms are: mentorship, leadership development initiatives, and student placements.

6.2.2.1 Mentorship

Mentorship arrangements have been demonstrated as playing a critical role in engaging and retaining students of under-represented population groups.[165] Historically implemented as fairly loose arrangements, there is now strong evidence regarding mentoring skills and processes that have the most potential to support student retention. However, it is not clear what elements of mentoring within nursing education are the active ingredients in its success.[11]

Mentorship is a key component of all programs designed to enhance retention of students from under-represented groups (Table 6). There are generally four main objectives of mentor arrangements: orientation to the academic environment, socialisation to a professional context, academic guidance and tuition, and emotional support and counselling. Mentors are drawn from a mix of academic (faculty and broader university), clinical and experienced student populations with the main aim of tailoring mentors to the particular needs of the individual students and/or their broader cohort. Activities are generally structured processes which include regular one-to-one meetings between mentors and mentees, small group meetings and seminars that occur for as long as needed, potentially until graduation. In some cases, participation in mentoring arrangements is a requirement of admission to a course; for the

majority, however, the formal arrangements are time-limited and often morph into more informal arrangements as the student progresses.

Table 6   **Mentorship interventions within broader programs**

Program / Reference	Objective	Mentor	Activities	Evaluation
Making a Difference in Nursing II (MADIN II) Program Duke University School of Nursing (DUSON), US. Two programs within MADIN II: Continued Connectivity Program (CCP) and Succeed to Excellence Program (SEP)[164]	CCP: Support students in senior year of study to maintain momentum, complete studies and stay connected with the program team, mentors, advisors etc. Graduand mentees support next generation of NCIN students. SEP: Socialisation to profession; academic guidance and tuition; emotional support and counselling, including financial assistance. Continues post-graduation.	MADIN II co-ordinator – academic; Mama/Papa Mentors: non-clinical or academic, mature individuals with whom students can reach out to for personal support.	Quarterly meetings with MADIN II coordinator to review grades and discuss future career development. Informal contact, as needed. 'Lunch and learn' seminars; 'Sunday Dinners' held monthly at faculty members' homes. Social outings to 'socialize scholars', increase knowledge of 'networking and etiquette'	Exit interviews revealed continued sense of isolation and loneliness, despite being in a program 'in which teamwork is stressed and social events are regularly scheduled.' Meaningful assimilation is 'primarily academic rather than social in nature', primarily due to socioeconomic status and cultural differences.
New Careers in Nursing (NCIN) Various locations, US[165]	Students were required to participate in the mentoring program as part of their acceptance into the NCIN. Key objectives were: socialisation to a professional context; academic guidance and tuition; and emotional support.	RNs from surrounding health services, including case managers, community health, medical, surgical, obstetric nurses, and nurse educators (for 1st year students); Senior students (for 2nd and subsequent years)	The student and RN pairs had face-to-face or telephone contact monthly. Twice during the academic year, the program would host mentor and mentee events that offered continuing education units for the RNs and topics of interest to the students.	Most mentees reported that the peer-mentoring program was beneficial. This program is still going strong and remains popular with incoming students. This popularity aligns the literature highlighting the fact that mentoring increases under-represented students' feelings of being included and helps support their retention.
New Pathways to Professional Nursing (NPPN) New Jersey Health Initiatives (NJHI), in partnership with	Orientation to the academic environment; socialisation to a professional context; academic	Academic Tutor who was a RN that 'had completed the highest level on the clinical	Mandatory monthly meetings with academic tutor, scheduled around student's work and study commitments,	7 out of the 12 students enrolled in the NPPN went on to enrol in BSN; the remaining five 'had other demands and

Program / Reference	Objective	Mentor	Activities	Evaluation
Robert Wood Johnson Barnabas Health (RWJBH) and Rutgers University School of Nursing (RUSON), US[169]	guidance and tuition; and, emotional support and counselling.	ladder' – met with each student individually; academic tutor and member of RUSON Center for Academic Success – group mentoring.	and informal mentoring as needed. Mandatory participation in NPPN monthly lunch-hour meetings discussing study techniques, time-management etc. and issues of relevance to the group. End-of-semester dinners with focus on nurturing and encouraging students, including family and friends as well as academic staff.	pressures that prevented them from completing the program'. Study concluded: 'The role of encouragement through infrastructural support, group support, and personal support contributed to the students' success.'
Eastern Shore of Virginia RN-BN (ESVA RN-BN) Old Dominion University, Norfolk, Virginia, US.[174]	Orientation to the academic environment; socialisation to a professional context; academic guidance and tuition; and, emotional support and counselling.	Academic and peer mentors: Dedicated faculty mentor for all students; peer mentors are hospital employees, 80% of whom were from ethic minority groups.	Monthly formal face-to-face meetings with triad of academic mentor, peer mentor and student. Academic mentor's office located in the hospital, to facilitate ready access by students. Small community hospital, so interaction between mentors-mentee often daily or weekly.	18 students recruited for the current program: 2 males and 16 females; age 23 to 59 years; all live and work in the economically disadvantaged rural area; 5 are from ethnic minority groups. Evaluation shows 78% of ESVA RN-BN students have been retained and are progressing toward graduation on the prescribed schedule. This compares to 50% nationally.
Vision 20:20 University of Auckland Faculty of Medical and Health Sciences, New Zealand. Comprising three components: Maori and Pacific Admissions Scheme (MAPAS); Hikitia Te Ora (Certificate in Health Sciences)	MAPAS: Orientation to the academic environment; socialisation to a professional context; academic guidance and tuition; and, emotional support and counselling.	Peer and academic mentors, including extended family members.	Additional tutorials and pre-exam study weekends. Lunches with peer and extended family members. Camp and marae (Maori community centre) cultural experience; Summer student research opportunities.	Enrolments in Hikitia Te Ora (Certificate course) grew from 24 in 2003 to 49 in 2006. Maori values embedded in courses; strong relationships with 31 secondary schools; range of cultural

Program / Reference	Objective	Mentor	Activities	Evaluation
and Whakapiki Ake project (targeting secondary school students)[140,175]	In addition, reinforcement of cultural values and family/community support; financial scholarships.		Support to learn Maori or Pacific languages.	development opportunities.
Te Rau Puawai NZ Ministry of Health and Massey University.[175]	Orientation to the academic environment; socialisation to a professional context; academic guidance and tuition; and, emotional support and counselling. In addition, reinforcement of cultural values and family/community support; financial scholarships.	Academic mentors that provide learning and personal support (including telephone team learning support).	Assistance with course planning. Access to Maori and student networks. Support visits to distant bursars. Designated website with program information. Student gatherings. Dedicated facilities. Job-seeking assistance.	146 Maori mental health workers (2005). Integrated within broader university environment; Maori focused with strong leadership. High standard of program coordination.
Indigenous Nursing Support (INS): Helping Hands. University of Southern Queensland, Australia.[171]	Orientation to the academic environment; socialisation to a professional context; academic guidance and tuition; and, emotional support and counselling. In addition, reinforcement of cultural values and family/community support; financial scholarships.	Scrub Turkey - Indigenous student relationship officer from Indigenous Support Unit in USQ. Bush Track Suitor - tutors throughout nursing course. Koala year co-ordinator – for first year students. Fire Lighter – academic liaison officer.	Dandiiri breakfast (orientation). Echidna enrolments area (supportive enrolment). Helping and Healing centre (student services). Lizard Learning centres (learning, teaching, library). Coolamon Clinical school. Bush Track (website). Deadly dilly bag – individualised action plan. Boomerang tracker – monitor and support students. Academic footprint tracker – academic support. Heartprint handwritten contract – contract written by students committing to the course. Cockatoo alert – support from all	Increase from two Indigenous nursing students in 1991; between 1994 - 2003 24 nursing graduates.

Program / Reference	Objective	Mentor	Activities	Evaluation
			university staff for those 'at risk'.	

For Indigenous students, the provision of support is 'the most crucial factor' that impacts on success.[161, p 393] Of the programs identified in the literature, mentoring and peer support activities are key elements; however, these are embedded within a broad 'pastoral' framework[140,176] that includes an emphasis on relationships, respect, cultural support in addition to the academic, financial and technical support described above.

> *Our findings highlight the value participants associated with cohort bonding activities, having culturally specific study space, the provision of food with study initiatives, and peer mentoring to encourage good study habits and knowledge of university systems … The inclusion of Māori and Pasifika content (i.e., traditional and cultural practices, health models) and methods within the … curriculum (i.e., cultural wananga or camps) helped students to stay motivated to achieve success, encouraged attendance, enhanced class cohesion and re-enforced cultural pride.*[170, p 598]

6.2.2.2 Leadership development

Leadership development activities have intentionally been incorporated into nurse education programs for under-represented population groups to enhance the likelihood of student retention within university as well as the profession more generally, with the longer-term objective of addressing the lack of diversity within the profession. The expectation is that by providing opportunities for under-represented groups, students will expand their experiences, acquire greater knowledge and a broader 'world view', and an enhanced sense of responsibility and curiosity to ask questions and seek answers on behalf of others.[173] These kinds of interventions target both professional and personal development.

While much of the professional and academic socialisation occurs through mentorship arrangements, skills acquisition in terms of time management, organisational skills, group facilitation and public speaking requires more focused approaches. Examples include leading group meetings and working with prospective students in high schools or pre-entry programs[139,177] and participation in relevant student associations to develop skills in meeting and group processes.[165,178]

Leadership attributes are explicitly addressed within the NCIN program, in which students are taught the difference between management and leadership.[165] Students undertake a personality and leadership assessment at the outset and then undertake tailored leadership and management practice exercises designed to build on and strengthen their identified attributes. An NCIN leadership development kit, including development activities and plans, was developed to support nursing schools involved in the program.

Several programs addressed the role of professional socialisation as a facilitator of success for under-represented students: 'the transition from student to nursing professional requires planning and active participation both inside and outside the classroom'.[49] This occurs through

engagement with peer networks, enabling students to experience social and professional situations and processes to which they may not otherwise have been exposed.

The Making a Difference in Nursing II (MADIN II) Program employed the services of an 'etiquette consultant' to coach students in social and networking skills; these were subsequently tested in real-life situations such as the formal dinner events for School of Nursing alumni, attendance at sporting events and exposure to the arts through attendance at theatres and museums.[164] At the other end of the social scale, the NCIN program required students to volunteer with a community organisation working to address social determinants of health or improve the physical, mental and social well-being of local residents.[165] The extent to which these interventions facilitated retention of nursing students is unclear; as noted previously, the studies in which these interventions are discussed provide findings of overall program outcomes, the sum of several interventions.

6.2.2.3 Student placements

While student placements are central to all nursing programs, there is recognition that the judicious choice of placement can support the retention of nurses both during their studies as well as in the longer term after graduation:

> *Intentionally selecting clinical practice sites where diverse populations reside, creating cases for simulation where cultural-ethnic practices are explored … and storytelling designed to create inclusive visibility are interventions of merit.*[173, p 91]

Due to their geographical location, many programs targeting under-represented groups are likely to be faced with diverse populations within their usual catchment area. These include people with disabilities and older people, as well as people from culturally diverse and lower socio-economic groups.

Placements are designed to expose student nurses to real-life situations where their clinical and organisational skills will be tested and developed. There is often a discrepancy between the 'academic ideal of nursing to the reality of clinical work' with estimates of between 30-60% of nursing graduates reporting they intend to leave the profession in their first year of employment.[179] This suggests there needs to be a better alignment between the nursing curriculum and the lived experience of nursing as a profession. The challenges in terms of work-life balance, particularly for mature nursing graduands who may have caring responsibilities, suggest that personal well-being and work-life balance need to be incorporated within the undergraduate curriculum.[173]

6.3 System-level interventions

Implicit in the discussions above is the need for changes to occur at a system level, within nursing faculties and the broader university environment, as well as government policy and regulation.

Six reviews included system-level interventions:

- Curtis et al.[140] identified 70 sources on interventions designed to increase recruitment and retention of Indigenous students, 63 of which involved tertiary and system level interventions;
- Dapremont[159] included seven articles across the spectrum from recruitment to graduation;

- Loftin et al.[160] included eleven studies that looked at interventions that supported participation, retention and graduation of nursing students;

- Forber et al.[180] conducted a 'discursive exploration' of the literature to determine the challenges and influences experienced by nurse education and identify potential opportunities for improvement;

- Loftin et al.[181] conducted an integrative review of the barriers facing minority groups in completing nurse education;

- Milne et al.[161] (2016) conducted an integrative review and identified 16 articles on interventions supporting undergraduate Indigenous students.

In addition, multiple primary studies and resources were found that described policies, programs or legislation designed to influence or guide the implementation of interventions to improve recruitment, participation and retention of student nurses. The majority of studies used qualitative, mixed methods and/or quasi-experimental methodologies; outcome measures were generally at the broader program level such as application, enrolment and graduation rates.

6.3.1 Faculty level – pedagogy, collaborative capacity building

6.3.1.1 Pedagogy

All programs targeting under-represented population groups include educational techniques designed to maximise the engagement of students and facilitate a culture of inclusion.[173] In the main, this is described as student-centred learning and includes pedagogical models such as the 'flipped classroom' in which students are actively involved in the educational process through leading discussions, conducting presentations, and participating in evaluation processes. In contrast to traditional nursing education, where the educator is regarded as the expert, the 'flipped classroom' engages students from under-represented population groups more actively in the teaching and learning experience and exposes students to perspectives more representative of the clinical world in which nurse graduates will work.

Learning and communication styles may require adjustment to accommodate the needs of students from under-represented groups. Many reports highlighted the importance of flexibility in terms of processes and requirements in supporting participation and recruitment, without compromising the academic rigour required of the profession. Examples include 'stretch programs' that were spread over a number of semesters rather than one, to accommodate students who needed extra time[182]. Flexibility in terms of availability of academic staff and tutors was vital in allowing students to 'feel free to call, email, and text at any hour with issues, problems, questions, news, or simply to express frustrations or accomplishments'.[169, p 164] Others described the importance of having open-door policies and a commitment to respond to emails and phone calls in a timely manner[182], and colocation of offices to facilitate incidental interaction, communication and support.[133]

Several programs included a variety of seminars or workshops to develop and improve study skills, test-taking skills, and time management to advance reading and/or math proficiency and to work on writing skills.[11] Others described the importance of developing 'individually-tailored

educational pathways for each student and the implementation of comprehensive and ongoing supports for students'.[133, p 56]

As indicated above, the participation and retention of Indigenous students is supported through faculties that demonstrate an appreciation of the relevant cultural perspectives and practices. Attributes and activities of universities found to support Indigenous health students include:

- Acknowledgement of spiritual and cultural values and perspectives, which are reflected within the training programs and learning processes;

- Collaboration with Indigenous groups, individuals and representatives in curriculum development, recruitment and workforce placements;

- Mission and vision statements that reflect a demonstrated commitment to Indigenous workforce development;

- Pastoral support for students such as mentoring (formal and informal), access to financial and accommodation support (especially during clinical placements), and availability of role models within student and faculty populations;

- Research and evaluation activities embedded in recruitment programs.[140,170,176]

6.3.1.2 Collaborative capacity building

Supporting under-represented groups to participate successfully in nursing education requires a change in practice at the local and community level. Each of the programs described in the studies was underpinned by a commitment to collaborative capacity building within the faculty, for example through commitment to increasing diversity, and implementation of student-centred learning processes. Change was required within the broader university setting (governance arrangements, admissions policies) as well as partner agencies (clinical placements, student associations).

Prior to any program of change being implemented, it is critical that there is a general consensus amongst key participants (faculty staff) of the need for change. Several programs incorporated a process of assessing the cultural competence of faculty members at the outset to identify the attributes currently available and relevant gaps:[183-185]

> *The concept of cultural competence includes awareness of one's own value system or cultural perspective, an understanding of culture and its interaction with health and health care, sensitivity to the cultural issues of each patient, and understanding how to address the patient's health care needs in a manner congruent with his or her culture.*[184, p 269]

Initial activities for any nurse faculty seeking to support students from under-represented population groups is to recognise the 'unconscious bias' that may be hidden within the curricula.[182] Various toolkits have been developed to assist nursing schools better understand their cultural competence, such as the Critical Multicultural Education Training toolkit (cMET),[186] Blueprint for integration of cultural competence[187] and Toolkit for provision of cultural competence (American Association of Colleges of Nursing, cited by Adams et al.[184] An example of where this has made an impact is the RWJF Nurse Faculty Scholars program, a US program aimed to increase the calibre of nurse scholars. After implementing a strategic plan that included a number of diversity principles, the program increased participation of males

from 17.6% to 20.6% and participants from under-represented racial/ethnic group backgrounds increased from 15.3% to 20.75%.[184]

Impacts on the broader university context are also evident through increasing focus on diversity within nursing schools. Paul[133] describes the development of a 24-item 'Impact of the Aboriginal health curriculum tool' which was introduced by the CAMDH at the UWA to help evaluate new teaching and learning processes, as well as to guide future curriculum development. It concluded that 'the validated evaluation tool has been able to demonstrate significant shifts in student self-reported preparedness to practice in relation to Aboriginal health'.[133, p 58]

Studies also describe impacts on related faculties, particularly in situations where students undertake common elements of subjects in other courses. In the CaBB program, project staff worked with the course coordinators of pathophysiology and pharmacology, 'the most challenging first-year nursing courses', to seek additional tutoring for participants.[139] At the UWA, this has resulted in 'a more integrated curriculum' that is 'owned' by more than just those involved in aboriginal health:

> *Of particular importance is the development of a complete package that encompasses student recruitment and retention strategies, integrated across course curriculum and assessment, evaluation and research that is contributing to the emerging academic field of Indigenous health education.[133, p 58]*

Several programs described active engagement in university governance processes and engaging directly with senior leadership positions across the university to facilitate changes needed to increase diversity amongst students. For example, admission and examination processes may need to be examined, and structural and environmental changes may also be required.[135,144] Relationships established as part of these processes proved useful when students experienced difficulties, for example, in paying university fees.[169]

Universities seeking to enhance the recruitment, participation and retention of Indigenous health students require an appreciation of and commitment to relevant cultural perspectives and practices. In their review of educational strategies to enhance recruitment of undergraduate Indigenous students, Milne et al.[161] highlighted that students often had to negotiate 'living in two worlds'; therefore,

> *Higher education institutions have a responsibility to Indigenous students in creating a welcoming environment that honours and celebrates their culture.[161, p 392]*

Attributes and activities of universities found to support Indigenous health students include:

- Acknowledgement of spiritual and cultural values and perspectives, which are reflected within the training programs and learning processes;

- Collaboration with Indigenous groups, individuals and representatives in curriculum development, recruitment and workforce placements;

- Mission and vision statements reflect a demonstrated commitment to Indigenous workforce development;

- Pastoral support for students that includes mentoring (formal and informal), access to financial and accommodation support (especially during clinical placements), availability of role models within student and faculty populations;

- Research and evaluation activities are embedded into recruitment programs.[140,170,176]

6.3.2 Policies, regulations and legislation

Improving the participation and retention of under-represented population groups in nursing can be facilitated, or stymied, by policies, regulations and legislation at the broader level beyond the university context.

Strategic planning for the sector at the policy level is required to ensure the sector is able to attract a more diverse range of nursing education students and support, sustain and retain them as they enter the profession. Several bodies argue for the need to ensure appropriate resourcing in terms of workforce pay rates, more culturally diverse nursing faculty, adequate numbers of paid nurse educators for student placements, as well as policies regarding caseload and workplace conditions to promote a more positive view of nursing as a profession. This has the potential to increase the level of interest of under-represented groups in considering nursing as a profession.[168,188,189]

The development of responsive policy relating to nursing education and workforce issues can be facilitated by the provision of financial support by governments to establish policy and advocacy groups to champion their cause. The Congress of Aboriginal and Torres Strait Islander Nurses and Midwives (CATSINaM) is an example of an organisation funded by the Department of Health whose 'primary function is to implement strategies to increase the recruitment and retention of Aboriginal and Torres Strait Islander peoples into nursing and midwifery professions.' CATSINaM has influenced the broader nursing population through embedding the concept of cultural safety in the new Code of Conduct for nurses and Code of conduct for midwives (the Codes).[190]

There is clear evidence that the financial levers available to government have the capacity to influence participation in nursing education. In the Australian context this is primarily through the Higher Education Contribution Scheme (HECS); in the Australian Government's 2003-4 Budget, nursing was included as a 'national priority' subject providing for reduced student contributions.[191] When the UK government introduced changes to nurse education funding which included the cessation of the bursary model (described previously), there was a substantial reduction in the applications to study nursing, particularly among mature-aged applicants.

The UK Council of Deans of Health has recently argued that the failure to invest in the nurse educator workforce has also limited the capacity of the health system to support student nurse placements.[192]

An important lever of government to influence nurse education is the provision of financial support through scholarships such as those administered by the Australian College of Nursing and CATSINaM. NZ's Haurora Māori Scholarship program has also proved successful in increasing the number of completions in health-related studies:

> *Success factors include a history of governance-level champions, a clear intervention logic, targeting of Maori and an evidenced based rationale, consistency with*

*government policy, an interdisciplinary and multilevel focus and provision of
financial support to address the barrier of affordability of tertiary education.*[175, p 542]

In the US, a number of jurisdictions have introduced regulatory changes designed to increase
recruitment, participation and retention of nursing students. Examples include the
development of core competencies across nursing specialties and improved coherence of
nursing degree pathways.[182,193] The introduction of the latter in the State of California saw a
reduction in time required to complete nursing degrees and associated costs for participants; it
has also resulted in increased participation from under-represented population groups.[194]

Legislative changes have included different emphases and incentives. A review of US related
legislation found that financial incentives were more effective than workforce enrichment
programs:

> *States whose legislation involved reimbursement (Florida), encouragement
> (Arkansas and California), and funding (Michigan, California, and Texas) were more
> likely to demonstrate increased enrollment (sic) following enactment of legislation,
> while states with legislation that focused on workforce enrichment programs
> (Virginia and Connecticut) did not.*[195, p 6]

7 Interventions in other fields dominated by a particular gender

This section explores strategies that aim to encourage greater gender diversity in other professions dominated by either women or men. In particular, strategies in secondary and tertiary education that encourage more:

- men to enter psychology careers

- men to enter social work

- men to enter primary school teaching

- women to enter science, technology, engineering and mathematics (STEM) careers.

Many professions both within and outside of health care are dominated by either men or women. This highlights that issues of gender diversity likely pervade beyond individual professions and need a policy and community-based approach to break down barriers and facilitate a more balanced gender mix.

7.1 Lessons from psychology

Psychology, once a male bastion, is now a discipline predominantly occupied by women.[196] This female domination is consistent across the educational pipeline around the world. In the US, female graduate students in psychology outnumber males by approximately three to one and have done so for more than a decade.[197,198] In the UK, men represent only one in five of psychology undergraduate students.[199] In Australia, the Australian Institute of Health and Welfare (AIHW) reports that the proportion of female psychologists was 78.6% in 2016.[200]

It is argued that the gradual increase in the number of women in psychology has slowly eroded the field's status and value and made it less appealing to men. The decreased prestige of psychology has also been attributed to economic factors with the consequence that men may not choose psychology because other fields provide greater economic rewards. This is consistent with the phenomenon that female-concentrated occupations have lower pay than other occupations and are less valued.[196] The term 'feminisation' of psychology has been adopted to reflect these changes.[201-203]

The fact that females dominate the field of psychology could be due to the fact that the doctoral training pipeline that feeds the workforce is not diverse enough, which suggests a need to review processes at the point of admission.[204] Despite this, there is a paucity of academic literature that addresses this issue.

7.2 Lessons from social work

Social work has been largely developed and occupied by women and has a caring and nurturing focus as a discipline; as a result it has been construed as a feminised occupation.[205] As is the case in nursing, when men choose social work as a career they are often seen as going against convention.[206] Currently, 83% of Australian social work students are female.[205]

Social work has been described as an unwelcoming and hostile territory for male practitioners, compounded by issues of low status and pay.[207] Men on average perform more poorly than their female counterparts in social work education. It is suggested that social work may have a gendered pedagogic environment that is not gender neutral. This is referred to as a 'feminised climate' in which men may struggle to engage with the course content or its presentation having a negative effect on their academic performance.[208]

Suggestions to reduce the gender imbalance include: mentoring; pre-service programs to prepare men for navigating the profession; including mens' issues in course content to formally address gender stereotypes that may inhibit men from pursuing a social work career; and challenging potential gender-biased assumptions that lecturers may have regarding male students.[209,210] However, despite the gender imbalance in social work, few interventions appear to have been implemented or evaluated and there is a lack of evidence on how to address this issue.

7.3   Lessons from primary school teaching

It is well documented that the primary school workforce around the globe is dominated by women. [211] A decline in the numbers of male primary school teachers is reported in England, Ireland, NZ, Finland, Canada and the US.[212] In Australia, the most recent Australian Bureau of Statistics (ABS) data (2014-2015) reports that men comprise only 18% of the full-time primary teacher workforce nationwide.[213] It is reported that this gender gap has widened in recent years as older male primary school teachers are retiring and not being successfully replaced.[214]

In Australia, the lack of male primary school teachers is not a recent problem. In 2004, the federal government provided 500 scholarships for men to enter primary school teaching at a total cost of AUS$1 million.[215] However, this initiative was found to be unlawful as it was in breach of the *Sex Discrimination Act 1984*. Three attempts to amend the Act to allow the proposed scholarships to go ahead failed because 'there was insufficient evidence that the gender imbalance was adversely affecting children'.[215] Since that time little has been done by governments to address the issue and there are no current workforce diversity policies that aim to redress the decline in male teachers working in Australian government primary schools.[211] In fact, the ongoing lack of male teachers is not considered problematic.[214]

7.4   Lessons from science, technology, engineering and mathematics (STEM)

The research question for this literature review refers specifically to training for mining (i.e., geoscience, engineering, environmental science) and science careers for women, hence the focus here on STEM education. Internationally, the STEM workforce is recognised as being vital to the economy and security.[216] However, there is a global shortage of workers with STEM qualifications.[217] Consequently, governments around the world are developing and investing in programs that aim to increase the STEM workforce to meet demand. Although the proportions of women enrolled in STEM undergraduate programs have generally increased since the 1980s, minimal progress has been made in recruiting and retaining women into the STEM workforce.[216,218]

The shortage of STEM workers is often referred to in the literature as the 'leaky pipeline'. This metaphor relates to a process where students, especially women and other under-represented groups, leave STEM fields. In other words, somewhere between K-16 these students either lose interest in STEM fields, lose confidence in their ability to perform in this field or feel that STEM culture is not welcoming to them.[219]

The Australian Government, through the Department of Industry, Innovation and Science, is currently preparing a Women in STEM Strategy, to increase women's participation in STEM in a coordinated way.[220] The Strategy includes the development of the *Women in STEM Decadal Plan,* led by the Australian Academy of Science in collaboration with the Australian Academy of

Technology and Engineering, to promote sustained increases in women's STEM participation and retention from school through to careers. The plan, scheduled to be launched during 2019, will identify the barriers and enablers which impact on women's participation, retention and success in all areas of STEM.[221]

There is extensive literature relating to engaging women in STEM. At a broad level, barriers to women in STEM have deep societal, cultural and institutional roots. These barriers can present themselves at three key developmental periods. In childhood and adolescence, masculine stereotypes about STEM, peer norms and parents' expectations of their daughters can influence perceptions. During emerging adulthood, feeling like a misfit in STEM classes, being outnumbered by male peers and a lack of female role models can impact on women's experience of STEM. Finally, during early to mid-adulthood women can experience gender bias in hiring and promotion, a non-inclusive climate and the complexity of juggling work and family responsibilities.[218,222]

The influences on whether an individual chooses a STEM career pathway can be either internal or external. Internal factors include ability, interest and self-efficacy whilst external factors include the availability of mentors and academic experience.[223] Many school, college and university based initiatives can be found in the literature that aim to encourage and nurture women into STEM fields though addressing external factors. These include mentoring and science camps.

The PROmoting Geoscience Research, Education, and SuccesS (PROGRESS) program is an example of such a mentoring program trialled at seven universities in the US. This program was specifically targeted at female STEM majors. Participants attended a weekend workshop and gained access to a network of volunteer female scientific mentors. In total, 240 first and second year STEM students participated in the study and results showed that protégées were more likely to receive mentoring support from faculty members and peers. Also, this support strengthened the protégée's scientific identity, their motivation and commitment to science.[224]

STAIRSTEP is a similar mentoring program from the US that provides peer and faculty mentoring and role models, peer tutoring and support, enriched undergraduate research experience and financial assistance to low-income students. This program was able to demonstrate consistent success in STEM retention, graduation, and transition of participants into graduate education or STEM occupations.[225]

Peer mentoring has been shown to be successful at a STEM Women Faculty at the Ohio State University. The Comprehensive Equity at Ohio State (CEOS) is a multi-faceted project that focuses on peer mentoring circles.[226]

Another initiative that has demonstrated efficacy in encouraging women into STEM is science camps. One such example is provided by a chemistry camp targeting middle-school girls in the US state of Rhode Island. This full time, week long outreach group included multiple components such as hands on experiments, field trips and interactions with female scientists. The chemistry camp was successful in enhancing the girls excitement and appreciation, as well as the girls' interests in pursuing STEM-related careers.[227]

Out of school time initiatives have also been found to be important in improving rates of women's participation in STEM. Techbridge Girls is a not-for-profit organisation that delivers STEM education to K-12 girls in the US from low-income and underserved communities. After-

school and summer programs are offered to girls that include hands-on projects, career exploration, and academic and career guidance in science and engineering. At the same time families are guided to offer encouragement in their daughters' pursuits and the girls are linked in with role models and teachers to guide and support them on their pathway to academic and professional fulfilment.[228] Since 2000, Techbridge has trained over 7,000 girls, 20,000 educators, 1,400 family members, 1,500 role models and 1,000 volunteers.[229] An evaluation of the Techbridge Girls Program during the 2010-2011 school year concluded that participants had a better understanding of science and what people working in technology do. Evaluation data highlighted that women who attended the program for two years showed greater change in areas such as recognition that women can succeed in STEM careers than did girls who completed one year.[230]

Although not targeted specifically at women, STEM high schools in the US aim to provide rigorous STEM learning to students of all socio-economic, demographic, and achievement backgrounds. The STEM School Study examined 20 inclusive STEM high schools across the US.[219] The focus of the study was to describe the critical components of models from each high school and identify the commonalities and the key conceptual elements. Seventy-six critical components of STEM schools were identified which were distilled into a framework of eight key elements representing common goals and strategies including: personalisation of learning; problem-based learning; rigorous learning; career, technology, and life skills; school community and belonging; external community; staff foundations and external factors. The authors of the framework believed that it would provide a theoretical basis for measuring the implementation of these elements in inclusive STEM schools in the future. The framework could help STEM schools understand what factors may or may not relate to critical student outcomes, such as positive self-efficacy for STEM disciplines, interest in STEM careers, college-going decisions, and graduating grade point average.[219]

8 Summary of the results

8.1 Factors associated with nursing as a career choice

Search results

- Twenty-two international literature reviews and 64 studies were identified which explored the factors associated with nursing as a career choice.

- There has been a steady increase in the volume of research published in recent years demonstrating an increasing interest in seeking to understand and influence perceptions about the nursing profession.

Challenges

- Selection of nursing as a career is guided by community perceptions and stereotypes of nursing or direct experience and personal knowledge of nursing.

- The predominance of women in the nursing workforce is likely to deter some men from this career, particularly those for whom masculinity is central to identity. Similarly, negative perceptions about the prestige of nursing may make this career a difficult choice for some individuals, even if they feel attracted to the field of work.

- Barriers to participation in nursing education experienced by under-represented groups include limited role models and peer supports, study workload difficulties, discrimination, balancing caring responsibilities and financial constraints. CALD students may face the additional barrier of language challenges.

- Strategies to increase interest in nursing as a viable career choice need to include improving the public image of nursing, including redefining nursing as a thinking profession.

8.2 Interventions to increase representation in nursing education

Search results

- Several international literature reviews and multiple studies were identified which explored the range of interventions to increase recruitment, participation and retention in nursing education.

- Three broad categories of interventions designed to improve diversity in nursing education were identified. Each intervention was employed within a suite of activities across two or all three of the categories as part of a multi-pronged program.

- Evaluation of interventions was generally of poor methodological quality and small in scale. Many interventions were not formally evaluated.

- The outcomes that were measured included satisfaction rates for participants, and student enrolment, participation and graduation numbers within associated Schools of Nursing.

- As the majority of outcomes were reported at a broad program level, it is difficult to disaggregate the impact of particular components of each program.

Pre-university entry interventions

- Awareness-raising initiatives targeting under-represented population groups are likely to have positive responses if facilitated by representatives of that group.

- 'Pipeline' initiatives extend awareness raising within schools and include immersive, experiential and skills development opportunities primarily through the provision of networking events, camps and mentoring arrangements.

- 'Pipeline' initiatives appear to be successful in engaging students' interest and academic preparedness sufficiently to increase enrolments in university based nursing courses. Evaluations of several programs show between 80% and 98.6% of participants expressing an intention to enrol in nursing school. The translation of this level of interest into successful enrolments was relatively high.

- Holistic admissions processes have been introduced among many health faculties to increase diversity by considering additional attributes to school grades such as a potential student's personal attributes and capacity to contribute to the health sector. Outcomes include increased diversity within the majority of institutions involved, without compromising student success rates. Nursing schools, however, have been slower to incorporate this than other faculties such as health and dentistry.

University participation interventions

- Financial, technical and peer support were the main interventions to enhance participation of under-represented population groups in university nursing courses.

- Funding to enhance participation of under-represented groups in university nursing courses was predominantly provided through national grant schemes (the US, the UK and Australia), ranging from one-off grants at the completion of education to annual grants during enrolment.

- Peer support activities were integral to all programs to address the social and cultural isolation many students experienced.

- Technical and environmental resources were also important facilitators for students, including textbooks, uniforms, computers and common areas for students to study and socialise.

There is very little high-quality evidence of effectiveness for any of these programs.

University retention interventions

- Retention interventions included a mix of mentorship and leadership development initiatives. Mentorship interventions were more structured arrangements, usually mandated as part of the overall program, at least for the first year or so. These had four broad objectives: orientation to academic environments, socialisation to professional context, academic guidance and tuition, and emotional support and counselling.

- Most evaluations found mentoring to be helpful in sustaining students through to graduation and beyond as they embarked on their professional careers.

- Leadership activities were intentional within all programs as they sought to equip under-represented nursing students with academic and organisational skills through regular

engagement with academic and / or clinical mentors. In addition, students were encouraged to participate in relevant student associations for both socialisation as well as professional development purposes.

System level interventions

- The interventions described above need to be facilitated at the broader organisational level (faculty, university, clinical setting) and policy (regulations, funding, workforce development) contexts.

- Student-centred learning approaches and cultural competency of faculty staff are promising practices to promote participation and retention of students from under-represented groups.

- Broad, integrated nursing curricula may also contribute to greater representation in the profession. This could be achieved via collaboration between nursing faculties and communities, and by negotiation within the university environment over issues such as entrance requirements, fees etc.

8.3 Interventions in other fields dominated by a particular gender

Lessons from psychology

- Historically a predominantly male profession, psychology is now dominated by females due to workforce pipeline strategies that have primarily focused on admission processes as opposed to retention. There is a paucity of literature that addresses this issue.

Lessons from social work

- Almost 80% of Australian social workers are female. Despite this gender imbalance, there is little evidence of initiatives undertaken to address this issue.

Lessons from primary school teaching

- The lack of male primary school teachers is no longer viewed as problematic, due to a lack of evidence to support the benefits of greater representation.

Lessons from science, technology, engineering and mathematics (STEM)

- Students who are female, from low-income or under-represented population groups, appear to lose interest or confidence in their ability to perform in STEM fields, or feel the field is not welcoming.

- A variety of interventions, including science camps, competitions for high school students, mentoring, and socialisation for tertiary students, have been shown to increase interest, motivation and commitment to STEM education.

9 Discussion

9.1 Nursing as a career choice

Nursing is not the only occupation that is highly gendered. In fact, most occupations that involve caring for the sick, the elderly, or small children are dominated by women. This is not a new phenomenon, but it is problematic that caring and femininity are so closely linked, because:

> *Throughout most of human history, in most human societies, caring has been associated with lowly people.*[231, p 12]

This being the case, it is not surprising that relatively few men choose to enter nursing, given its associations with femininity and its relatively low occupational status. Gottfredson's[62] career choice theory would predict that only those with a particularly strong interest – tied to their core identity – will take on the challenge of a non-traditional career pathway. This is confirmed by findings that nursing students from under-represented groups often report a passionate interest in the profession, a vocation strong enough to prevail over considerations around gender and occupational prestige. In addition, men and other minorities in nursing education often have family members who are nurses, or have had direct personal work or healthcare experiences of nursing. Such experiences provide them with a clearer understanding of the profession and more accurate information on which to make their career decisions, rather than relying on public perceptions and media stereotypes.

The theory would also predict that the factors that deter men from nursing careers are likely to differ from those that deter women from occupations traditionally dominated by men. In general, male-dominated fields such as STEM tend to have higher occupational prestige and are seen as requiring more intellectual capacity and effort. Gender considerations will certainly play a role in deterring women from STEM careers, but public perceptions and social status will not. Women's relative absence from these occupations must be due to other factors. This realisation led to a decision to expand the original focus of the research question beyond gender and beyond mining and STEM, a decision that was endorsed by the national and international advisors and representatives of the Office of the Chief Nursing and Midwifery Officer.

The impact of public perceptions and media stereotypes of nursing emphasises the importance of nurses sharing what it is that they do with the broader community. Promoting nurses, nursing and its impact on health is a powerful strategy to enhance the profession in a number of ways, including making it more interesting for under-represented groups.

The review highlighted barriers to entry and retention in nursing education. High school students, the main source of future nursing students, generally have a poor understanding of what nurses actually do. Those from under-represented groups may lack the confidence and skills to apply successfully for a place in tertiary nursing education. Once in tertiary education, men and other under-represented nursing students report a sense of isolation and a lack of role models. They may struggle with financial and family pressures, academic underachievement and the study workload, particularly if English is not their first language. At times they experience discrimination and negative projections from faculty members, other healthcare

professionals, and patients. These barriers combine to create a higher risk of attrition from nursing education for under-represented groups.

9.2   Interventions and implementation issues

Australian tertiary education providers have a huge role to play in addressing inequities in nursing education and enabling greater participation by men and other under-represented students.

> *The nursing profession's sustainability for the future rests with its ability to attract and retain a diverse nursing workforce. The responsibility in ensuring a diverse nurse population begins with the undergraduate nursing education and faculty.*[16, p 285]

To achieve this goal, the tertiary education sector will require support at a systems level.

There is a lack of high quality evaluations and evidence in this field. With this caveat in mind, promising interventions include:

- Initiatives to build capacity within disadvantaged high school students of CALD or Indigenous backgrounds, to increase their rate of success in applying for entry to nursing education and provide skills and support to promote retention and completion. These initiatives often include a financial component to assist with tuition fees, living expenses and equipment.

- Holistic admissions processes which take into account the experiences and attributes of under-represented applicants to nursing education courses, including the potential benefits they could bring to their communities. In the US, nursing schools that have adjusted selection criteria to have a broader scope beyond test scores and exam results have seen improved diversity with no detrimental impacts on average student achievement.

- Graduate Entry Nursing courses generally attract more male applicants, and have higher rates of achievement, retention and completion for men and people from CALD backgrounds, than traditional courses aimed at school leavers.

- Financial and technical support, through the provision of targeted scholarships, reduced tuition fees, and the provision of technical support in terms of advice and essential equipment such as textbooks, uniforms and computers, has the potential to encourage participation in nursing education by disadvantaged under-represented groups. This type of support is often part of a suite of interventions within successful programs.

- Mentorship arrangements have been demonstrated as playing a critical role in engaging and retaining students of under-represented population groups. There is now strong evidence regarding mentoring skills and processes that have the most potential to support student retention. Again, these are often implemented as a component of a broader program.

- Professional and academic socialisation focusing on skills acquisition in terms of time management, organisational skills, group facilitation and public speaking.

- Interventions within nursing faculty to adjust pedagogical approaches and build culturally appropriate learning environments can help create learning environments that are more conducive to the success of students from under-represented groups.

It appears that there is little to be learned from the fields of psychology, social work and primary school teaching with regard to interventions designed to attract men into these fields.

The international literature concedes that there is a gender imbalance in these three fields and there is little evidence that anything is being done to redress this imbalance.

More can be learned from interventions that have been designed to encourage women into STEM careers. The most successful interventions that encourage women to become interested in STEM careers involve mentoring. Mentoring has been shown to promote scientific identity, enhance personal motivation and stimulate an individual's enthusiasm for science. Other useful strategies to consider could include the provision of after school initiatives such as science camps and science seminars. Both mentoring and after-school initiatives are transferable to programs to attract and retain men and other minorities in nursing education, and indeed have been incorporated as components of successful programs.

The occupations covered by this section of the review cover only a sample of a much larger number of professions that are dominated by a particular gender. This pattern of gender segregation indicates that many professions are facing similar issues which stem from broader societal problems that are beyond the influence of nursing alone.

It is important to note that most of the interventions reviewed have not been implemented independently but usually form part of a suite of activities across several stages of an overarching program. As such, there is no one 'quick fix' which can be implemented to improve nurse education and workforce diversity. For example, programs combining academic development with peer and faculty support are most likely to succeed in retaining ethnically diverse nursing students and helping them succeed in their studies.[232]

9.3 Recommended issues for further consultation

From this review of the literature various issues have emerged that are worthy of further consultation. The following questions are provided to inform that consultation. Several of these questions are more suited to discussions with particular stakeholder groups:

- Is the gender imbalance experienced by the nursing profession problematic?

- What would be the 'ideal' proportion of males in the nursing workforce and how should this be determined?

- What is the most effective point at which to intervene? Although some scholars have recommended marketing strategies to attract new applicants to nursing courses, others are sceptical of this approach. In the absence of firm evidence, what are stakeholders' views on the question of marketing the nursing profession to address workforce shortages?

- Pre-admission academic preparation programs and holistic admissions criteria have shown promise in attracting greater numbers of students from under-represented groups into nursing, especially in the US. However, there is a tension between attracting a wider range of successful applicants and ensuring they are capable of completing their education and joining the workforce. What are stakeholder experiences of these programs in Australia? What is the most appropriate balance between maximising admissions and successful completion of nursing programs in this group of students?

- Is sufficient being done at a systems level in Australia to develop, fund, regulate and support interventions to improve representation in pre-registration nursing education programs?

- What are the challenges involved in supporting students from under-represented groups in Australian universities?

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Appendix 1 Membership of the national nursing education working group, international nursing education advisory team and contributing team members

Project leadership

Ms Cristina Thompson, MBA, BA, (former RN, RM), GAICD

Senior Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Professor Elizabeth (Liz) J. Halcomb, PhD, Grad Cert ICNurs, Grad Cert HE, BN (Hons), RN, FACN

Professor of Primary Health Care Nursing, Head of Post Graduate Studies, University of Wollongong

Professor Kathy Eagar, PhD, MA, Grad Dip Educ Studies, FAFRM (Hon)

Professor of Health Services Research, Director Australian Health Services Research Institute, University of Wollongong

Topic team leaders

Topic 1: Fit for purpose / work ready / transition to practice
Dr Malcolm Masso, PhD, MPH, MNA, BSc (Econ), RN, RM

Former Senior Research Fellow (retired), Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Topic 2: Nursing as a career choice
Dr Kathryn (Kate) Williams, PhD, BA (Hons)

Senior Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Topic 3: Clinical skill development
Dr Jane Currie, PhD, MSc, BSc (Hons), NP, RAANC

Senior Lecturer Acute and Critical Care, Sydney Nursing School, University of Sydney

Topic 4: Future directions in health care delivery
Ms Cristina Thompson, MBA, BA, (former RN, RM), GAICD

Senior Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Members of the topic teams

Ms Catherine (Cathy) Duncan, BSW, Grad Cert Hlth Serv (R&D) PhD Candidate

Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Mr Dave Fildes, MPH, BA

Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Ms Pam Grootemaat, MPH, BNutrSc

Associate Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong

Ms Carol Loggie, Grad Cert Hlth Serv (R&D), Assoc Dip (MRA)

Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

Mr Darcy Morris, MPH, Grad Cert Hlth Serv (R&D), BA

Business Manager, Australian Health Services Research Institute (AHSRI), University of Wollongong

Associate Professor Kath Peters, PhD, Grad Cert HE, BN

Director of Academic Program (International), School of Nursing and Midwifery, Western Sydney University

Mr Peter Samsa, MICT, Grad Cert Hlth Serv (R&D), BSW

Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

Dr Jenny Sim, PhD, Grad Dip Clinical Nurs, Grad Dip Bus Admin, BApplSci (Nursing), RN

Senior Lecturer and Director, Australian Nursing Outcomes Collaborative (AUSNOC); School of Nursing, University of Wollongong

Ms Anita Westera, Grad Cert Hlth Serv (R&D), BA (Hons), RN

Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

International nursing education advisory team

Emeritus Professor Michael (Mike) Carter, DNP, DNSc, MSNc, BSN

Former Dean and Professor, College of Nursing, University of Tennessee, USA

Professor Alan Finnegan, PhD, RN, FRCN, FAAN

Professor of Nursing and Military Mental Health, the University of Chester, UK

Professor Patricia M. Davidson, PhD, MED, RN, FAAN

Professor and Dean School of Nursing, Johns Hopkins University, Maryland, USA

National nursing education working group

Associate Professor Patrea Andersen, PhD, MA (Ng), BHSc (Ng), ADN, RN, SFHEA

Academic Director for Simulation and Visualisation, School of Nursing, Midwifery and Paramedicine, University of the Sunshine Coast

Dr Jane Currie, PhD, MSc, BSc (Hons), NP, RAANC

Senior Lecturer Acute and Critical Care, Sydney Nursing School, University of Sydney

Emeritus Professor John Daly, PhD, Hon. D Nursing, RN, FACN, FAAN

Former Dean of the Faculty of Health; Former Head of the UTS/World Health Organization Collaborating Centre for Nursing, Midwifery and Health Development, University of Technology Sydney

Professor Elizabeth (Liz) J. Halcomb, PhD, Grad Cert ICNurs, Grad Cert HE, BN (Hons), RN, FACN

Professor of Primary Health Care Nursing, Head of Post Graduate Studies, University of Wollongong

Professor Alison L. Kitson, DPhil, BSc (Hons), RN, FRCN, FAAN, FAHMS

Vice-President & Executive Dean, College of Nursing and Health Sciences, Flinders University

Professor Tracey Moroney, PhD, BN (Hons), Grad Cert Ed Studies (Higher Ed)

Deputy Dean, Faculty of Science, Medicine and Health; Head of School of Nursing, University of Wollongong

Associate Professor Kath Peters, PhD, Grad Cert HE, BN

Director of Academic Program (International), School of Nursing and Midwifery, Western Sydney University

Associate Professor Kylie Russell, PhD, Masters in Health Science (Ed), Grad Cert HRM, BN

Postgraduate Coordinator, School of Nursing and Midwifery, University of Notre Dame (WA)

Professor Yenna Salamonson, PhD, MA, Grad Dip Ed, BSc

Director of Academic Workforce, School of Nursing and Midwifery, Western Sydney University

Dr Jenny Sim, PhD, Grad Dip Clinical Nurs, Grad Dip Bus Admin, BApplSci (Nursing), RN

Senior Lecturer and Director, Australian Nursing Outcomes Collaborative (AUSNOC); School of Nursing, University of Wollongong

Ms Cristina Thompson, MBA, BA, (former RN, RM), GAICD

Senior Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

Colleagues from the Australian Health Services Research Institute

Associate Professor Janette Green, MStats, BSc (Hons) Statistics

Associate Professor Applied Statistics in Health, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

Dr Conrad Kobel, PhD, MFinMaths, Diplom (DE)

Research Fellow, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

Dr Christine Metusela, PhD, BA

Research Fellow, Centre for Heath Research Illawarra Shoalhaven Population & General Practice Academic Unit, School of Medicine, University of Wollongong

Research librarians, University of Wollongong

Ms Allison Hill, BA (Lib & Info Sci), Assoc Dip Arts (Library Practice)

Ms Rachel Jones, BA, Grad Dip (Info Studies), Cert IV Frontline Mgmt, CELTA

Ms Jeanetta Kettle, BA, DipEd, Grad Dip (Info Studies)

Ms Christine Wales, BA, Assoc Dip (Lib & Info Services), Grad Dip (Info Tech)

Administrative assistants

Ms Cheryl Blissett

Administrative Officer, Centre for Health Service Development, Australian Health Services Research Institute (AHSRI), University of Wollongong

Dr Anastasia Korlimbinis, PhD, BMedChem (Hons)

Administrative Officer, Centre for Health Research Illawarra Shoalhaven Population, Australian Health Services Research Institute (AHSRI), University of Wollongong

Ms Katlyn Stone DA, SAE (CA)

Administrative Officer, Australian Health Services Research Institute (AHSRI), University of Wollongong

Appendix 2   Search terms

The academic or peer-reviewed literature was drawn from the following databases:

- CINAHL Plus
- MEDLINE
- Scopus
- Health Source (Nursing/Academic Edition).

In addition, the databases of publishers (e.g., Wiley, Taylor & Francis) were used for hand searching of prominent nursing journals:

- Nurse Education Today
- Nurse Education in Practice
- Collegian
- Contemporary Nurse.

The second part of the research question refers to career pathways beyond nursing. In order to identify trends and interventions to influence gender balance in other fields, supplementary Scopus searches were conducted, and the following databases were also searched:

- PsychINFO (psychology)
- ERIC (education).

For the grey literature searches, Google Scholar was used to find relevant reports using the limiters .gov, .edu and .org. The focus of these searches was on grey literature from Australia and four other English-speaking countries, which were selected because the experiences of these countries in nursing education are more likely to be generalisable to the Australian context:

- Australia
- UK
- US
- Canada
- New Zealand.

The national and international advisors highlighted a number of relevant organisations and their websites were also searched:

- Australian College of Nursing
- American Assembly for Men in Nursing
- Advancing Men in Nursing
- Men in nursing
- Minority Nurse
- https://www.aamn.org/

- https://onlinenursingms.com/resources/general/men-in-nursing/
- https://minoritynurse.com/rising-demand-for-male-nurses/

Professional standards, legal principles, etc

- https://www.nursingmidwiferyboard.gov.au/

Topic 2 search terms

Number	Database	Search term
1	CINAHL+ MEDLINE+ Health Source	nurs* AND ("career choice" OR "career selection" OR "career decision making" OR "career planning and development" OR image OR workforce) AND (men OR male OR males OR "gender imbalance" OR "gender balance" OR "gender bias" OR divers* OR ethnic* OR indigenous OR minority)
2	Scopus	nurs* AND ("career choice" OR "career selection" OR "career decision making" OR "career planning and development" OR image OR workforce) AND (men OR male OR males OR "gender imbalance" OR "gender balance" OR "gender bias" OR divers* OR ethnic* OR indigenous OR minority) AND NOT (mental OR psychiatric OR midwife* OR gerontolog* OR palliative OR dying OR "advanced practice" OR "advance practice" OR oncolog*)
3	All of the above, plus ERIC, PsycINFO	social work* student* AND ("career choice" OR "career selection" OR "career planning and development" OR image OR workforce) AND (men OR male OR males OR "gender balance" OR "gender imbalance" OR "gender bias") AND NOT sex* AND NOT nurs*
4	All of the above, plus ERIC, PsycINFO	psych* student AND ("career choice" OR "career selection" OR "career planning and development" OR image OR workforce) AND (men OR male OR males OR "gender balance" OR "gender imbalance" OR "gender bias") AND NOT sex* AND NOT nurs* AND NOT body image
5	All of the above, plus ERIC, PsycINFO	teach* AND educat* AND ("career choice" OR "career selection" OR "career planning and development" OR image OR workforce) AND (men OR male OR males OR "gender balance" OR "gender imbalance" OR "gender bias") AND NOT sex* AND NOT nurs*
6	All of the above, plus ERIC, PsycINFO	("stem education" or science or technology or engineering or mathematics) AND ("career choice" OR "career selection" OR "career planning and development" OR image OR workforce) AND (women OR girls OR female OR females OR "gender balance" OR "gender imbalance" OR "gender bias") AND NOT sex* AND NOT nurs*

Appendix 3   Journal impact report

Journals are listed alphabetically with journal impact factors/scores and category rankings.

Journal title	JCR impact factor[1]	JCR ranking[1]	JCR category[1]	CITE SCORE[2]	CITESCORE Ranking[2]	CITESCORE Category[2]
Affilia	0.833	29/42	SOCIAL WORK	1.03	38/121	GENDER STUDIES
Afterschool Matters	Not ranked	N/A	N/A	Not ranked	N/A	N/A
American Journal of Nursing	1.234	54/115 57/118	NURSING-SSCI NURSING-SCIE	0.30	75/104	GENERAL NURSING
American Psychological Association	Not ranked	N/A	N/A	Not ranked	N/A	N/A
ANZ Journal of Surgery	1.586	115/200	SURGERY	0.76	237/385	SURGERY
Australian Journal of Adult Learning	0.400	224/239	EDUCATION & EDUCATIONAL RESEARCH	0.45	639/979	EDUCATION
Australian Journal of Advanced Nursing	0.511	106/115 109/118	NURSING-SSCI NURSING-SCIE	0.70	18/50 51/104	ADVANCED AND SPECIALISED NURSING GENERAL NURSING
Australian Social Work	0.867	26/42	SOCIAL WORK	0.92	334/1028 92/226	SOCIOLOGY AND POLITICAL SCIENCE SOCIAL SCIENCES (MISCELLANEOUS)
BMC Nursing	Not ranked	N/A	N/A	1.78	11/104	GENERAL NURSING
British Journal of Nursing	Not ranked	N/A	N/A	0.42	64/104	GENERAL NURSING
British Journal of Social Work	1.746	10/42	SOCIAL WORK	1.62	52/226 59/241	SOCIAL SCIENCES (MISCELLANEOUS) HEALTH(SOCIAL SCIENCE)
Cambridge handbook of engineering education research	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Collegian	1.153	60/115 63/118	NURSING-SSCI NURSING-SCIE	1.32	22/104	GENERAL NURSING
Contemporary Nurse	0.673	97/115 100/118	NURSING-SSCI NURSING-SCIE	0.90	43/104	GENERAL NURSING
Creative Nursing	Not ranked	N/A	N/A	0.11	576/841	GENERAL MEDICINE

Journal title	JCR impact factor[1]	JCR ranking[1]	JCR category[1]	CITE SCORE[2]	CITESCORE Ranking[2]	CITESCORE Category[2]
Economics of Education Review	1.293	146/353 133/239	ECONOMICS EDUCATION & EDUCATIONAL RESEARCH	1.60	182/979 142/564	EDUCATION ECONOMICS AND ECONOMETRICS
European Early Childhood Education Research Journal	1.090	161/239	EDUCATION & EDUCATIONAL RESEARCH	0.95	365/979 167/283	EDUCATION DEVELOPMENTAL AND EDUCATIONAL PSYCHOLOGY
European Journal of Clinical Investigation	3.086	32/155 57/133	MEDICINE, GENERAL & INTERNAL MEDICINE, RESEARCH & EXPERIMENTAL	2.63	41/119 159/398	CLINICAL BIOCHEMISTRY BIOCHEMISTRY
Gender and Education	0.943	170/239	EDUCATION & EDUCATIONAL RESEARCH	1.24	29/121 262/979	GENDER STUDIES EDUCATION
Gifted Child Quarterly	1.179	21/40 42/59	EDUCATION, SPECIAL PSYCHOLOGY, EDUCATIONAL	0.96	358/979 163/283	EDUCATION DEVELOPMENTAL AND EDUCATIONAL PSYCHOLOGY
Health and Social Care in the Community	2.039	7/42 47/157	SOCIAL WORK PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	1.95	137/1028 35/226	SOCIOLOGY AND POLITICAL SCIENCE SOCIAL SCIENCES (MISCELLANEOUS)
Health Information & Libraries Journal	1.190	44/88	INFORMATION SCIENCE & LIBRARY SCIENCE	1.02	50/202	LIBRARY AND INFORMATION SCIENCE
Innovative Higher Education	Not ranked	N/A	N/A	1.42	221/979	EDUCATION
International Journal for Human Caring	Not ranked	N/A	N/A	1.13	301/979 33/104	EDUCATION GENERAL NURSING
International Journal of Nursing Education Scholarship	Not ranked	N/A	N/A	1.13	301/979 33/104	EDUCATION GENERAL NURSING
International Journal of Nursing Practice	1.142	62/115 65/118	NURSING-SSCI NURSING-SCIE	1.14	31/104	GENERAL NURSING
International Journal of Nursing Sciences	Not ranked	N/A	Not Ranked	0.78	48/104	GENERAL NURSING

Journal title	JCR impact factor[1]	JCR ranking[1]	JCR category[1]	CITE SCORE[2]	CITESCORE Ranking[2]	CITESCORE Category[2]
International Journal of Nursing Studies	3.656	1/115 1/118	NURSING-SSCI NURSING-SCIE	3.50	3/104	GENERAL NURSING
International Journal of STEM Education	Not ranked	N/A	N/A	Not ranked	N/A	N/A
International Nursing Review	Not ranked	33/115 37/118	NURSING-SSCI NURSING-SCIE	1.49	19/104	GENERAL NURSING
ISRN nursing	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Issues in Mental Health Nursing	0.825	86/115 89/118	NURSING-SSCI NURSING-SCIE	0.76	19/37	PHYCHIATRIC MENTAL HEALTH
Journal for Leadership and Instruction	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Journal of Advanced Nursing	2.267	7/115 7/118	NURSING-SSCI NURSING-SCIE	2.37	6/104	GENERAL NURSING
Journal of Chemical Education	1.758	16/41 96/171	EDUCATION, SCIENTIFIC DISCIPLINES CHEMISTRY, MULTIDISCIPLINARY	1.52	202/979 149/359	EDUCATION GENERAL CHEMISTRY
Journal of Clinical Nursing	1.635	30/115 33/118	NURSING-SSCI NURSING-SCIE	1.71	15/104	GENERAL NURSING
Journal of Counseling and Development	1.356	52/82	PSYCHOLOGY, APPLIED	2.03	62/202	APPLIED PSYCHOLOGY
Journal of Cultural Diversity	Not ranked	N/A	N/A	0.55	276/841	GENERAL MEDICINE
Journal of Ethnographic & Qualitative Research	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Journal of Nursing Education	1.185	56/115 59/118	NURSING-SSCI NURSING-SCIE	1.04	333/979 37/104	EDUCATION GENERAL NURSING
Journal of Nursing Education and Practice	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Journal of Nursing Management	1.912	15/115 16/118	NURSING-SSCI NURSING-SCIE	2.03	1/29	LEADERSHIP AND MANAGEMENT
Journal of Pediatric Nursing	Not ranked	N/A	N/A	1.28	2/24	PEDIATRICS

Journal title	JCR impact factor[1]	JCR ranking[1]	JCR category[1]	CITE SCORE[2]	CITESCORE Ranking[2]	CITESCORE Category[2]
Journal of Perspectives in Applied Academic Practice	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Journal of Professional Nursing	1.256	49/115 52/118	NURSING-SSCI NURSING-SCIE	1.30	24/104	GENERAL NURSING
Journal of Science Education and Technology	1.375	117/239 24/41	EDUCATION & EDUCATIONAL RESEARCH EDUCATION, SCIENTIFIC DISCIPLINES	1.74	153/979 51/270	EDUCATION GENERAL ENGINEERING
Journal of Transcultural Nursing	1.242	52/115 55/118	NURSING-SSCI NURSING-SCIE	0.96	42/104	GENERAL NURSING
Journal of Women and Minorities in Science and Engineering	Not ranked	N/A	N/A	1.65	20/121 17/51	GENDER STUDIES ENGINEERING (MISCELLANEOUS)
Nurse Education in Practice	1.313	47/115 50/118	NURSING-SSCI NURSING-SCIE	1.54	18/104 199/979	GENERAL NURSING EDUCATION
Nurse Education Today	2.067	10/115 10/118	NURSING-SSCI NURSING-SCIE	2.11	8/104 92/979	GENERAL NURSING EDUCATION
Nurse Educator	1.245	51/115 54/118	NURSING-SSCI NURSING-SCIE	1.00	346/979 4/11	EDUCATION FUNDAMENTALS AND SKILLS
Nursing Economics	1.148	61/115 64/118	NURSING-SSCI NURSING-SCIE	0.78	13/29	LEADERSHIP AND MANAGEMENT
Nursing Education Perspectives	Not ranked	N/A	N/A	1.21	27/104 269/979	GENERAL NURSING EDUCATION
Nursing Forum	Not ranked	N/A	N/A	1.17	30/104	GENERAL NURSING
Nursing Inquiry	1.159	59/115 62/118	NURSING-SSCI NURSING-SCIE	1.44	20/104	GENERAL NURSING
Nursing Management	1.912	15/115 16/118	NURSING-SSCI NURSING-SCIE	0.19	24/29 27/29	LEADERSHIP AND MANAGEMENT LEADERSHIP AND MANAGEMENT

Journal title	JCR impact factor[1]	JCR ranking[1]	JCR category[1]	CITE SCORE[2]	CITESCORE Ranking[2]	CITESCORE Category[2]
Nursing Outlook	2.425	4/115 4/118	NURSING-SSCI NURSING-SCIE	1.73	12/104	GENERAL NURSING
Nursing Standard	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Online Journal of Issues in Nursing	Not ranked	N/A	N/A	0.89	16/35	ISSUES, ETHICS AND LEGAL ASPECTS
Plos One	2.766	15/64	MULTIDISCIPLINARY SCIENCES	3.01	16/177 42/186	GENERAL AGRICULTURAL AND BIOLOGICAL SCIENCES GENERAL BIOCHEMISTRY, GENETICS AND MOLECULAR BIOLOGY
Policy Insights from the Behavioral and Brain Sciences	Not ranked	N/A	N/A	Not ranked	N/A	N/A
Policy, Politics, and Nursing Practice	Not ranked	N/A	N/A	1.04	9/29 14/35	LEADERSHIP AND MANAGEMENT ISSUES, ETHICS AND LEGAL ASPECTS
Psychology Learning and Teaching	Not ranked	N/A	N/A	0.31	743/979 149/189	EDUCATION GENERAL PSYCHOLOGY
Public Health Reports	1.605	78/157 106/181	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	1.52	168/478	PUBLIC HEALTH, ENVIRONMENTAL AND OCCUPATIONAL HEALTH
Research in Nursing and Health	Not ranked	N/A	N/A	1.81	10/104	GENERAL NURSING
Sex Education	Not ranked	N/A	N/A	1.77	141/979 42/226	EDUCATION SOCIAL SCIENCES (MISCELLANEOUS)
Sex Roles	2.024	5/42 24/64	WOMENS STUDIES PSYCHOLOGY, SOCIAL	1.95	11/121 68/247	GENDER STUDIES SOCIAL PSYCHOLOGY

Journal title	JCR impact factor[1]	JCR ranking[1]	JCR category[1]	CITE SCORE[2]	CITESCORE Ranking[2]	CITESCORE Category[2]
Social Work Education	1.000	22/42 166/239	SOCIAL WORK EDUCATION & EDUCATIONAL RESEARCH	0.76	469/979 112/226	EDUCATION SOCIAL SCIENCES (MISCELLANEOUS)
Teaching and Learning in Nursing	Not ranked	N/A	N/A	0.49	16/29 7/11	LEADERSHIP AND MANAGEMENT FUNDAMENTALS AND SKILLS FUNDAMENTALS AND SKILLS
The Lancet	53.254	2/155	MEDICINE, GENERAL & INTERNAL	8.60	4/841	GENERAL MEDICINE
Training and Education in Professional Psychology	1.028	47/59	PSYCHOLOGY, EDUCATIONAL	1.24	262/979 81/189	EDUCATION GENERAL PSYCHOLOGY

[1]Journal Citation Reports 2017. Available from InCites Journal Citation Reports website[2]
[2]CiteScore™ 2017. Available from Scopus website[3]
[3]Emerging Sources Citation Index. Available from Clarivate Analytics website[4]

Journal Citation Report (JCR) impact factor

The JCR impact factor shows how often the average article is cited in a given journal, based on a two-year window. JCR impact factor uses Web of Science data.

2017 Journal Impact Factor = (2017 citations to items in 2016 + 2017 citations to items in 2015) / (citable items in 2016 + citable items in 2015).

More information: View the Journal Citation Reports: A Primer on the JCR and Journal Impact Factor (PDF, 344Kb)[5]

CiteScore

CiteScore shows how often the average article is cited in a given journal, based on three-year window. CiteScore uses Scopus data.

2017 CiteScore = Citation count 2017 / Documents published 2014 – through to 2016

More information: Journal Metrics - FAQs website[6]

[2] https://jcr.incites.thomsonreuters.com

[3] https://www-scopus-com.ezproxy.uow.edu.au/sources.uri?zone=TopNavBar&origin=sbrowse

[4] http://mjl.clarivate.com/cgi-bin/jrnlst/jlresults.cgi?PC=EX

[5] https://clarivate.com/wp-content/uploads/2017/10/JCR_Primer.pdf

[6] https://journalmetrics.scopus.com/index.php/Faqs

Glossary of terms

Term	Definition
Australian Health Practitioner Regulation Agency (AHPRA)	The Australian Health Practitioner Regulation Agency (AHPRA) is the organisation responsible for the implementation of the National Registration and Accreditation Scheme (NRAS) for registered health practitioners across Australia, including the Nursing and Midwifery Board of Australia (NMBA). The National Law is the combination of state and territory based legislation for health practitioners. It defines the 'protected titles' for health professionals, for example, 'nurse', 'medical practitioner', 'midwife' etc., and those using the titles must be registered with the corresponding National Board.
Cultural competency	Cultural competency refers to being responsive to the needs, values, experiences and beliefs of different cultural and linguistic diverse communities and Aboriginal and Torres Strait Islander communities. It requires an awareness of one's own values and worldview, and an understanding at organisational as well as interpersonal levels of any 'unconscious bias' that may impact on the ability of diverse communities to participate in mainstream community services, particularly health and education.
Enrolled Nurse (EN)	The enrolled nurse works with the registered nurse as part of the health care team and demonstrates competence in the provision of person-centred care. Core practice generally requires the EN to work under the direct or indirect supervision of the RN. ENs engage in analytical thinking, use information and/or evidence, and skilfully and empathetically communicate with all involved in the provision of care, including the person receiving care and their family and community and health professional colleagues [233]. Also known in other countries as: - Diploma Nurse - Diploma-Prepared Nurse - Licensed Practical Nurse - Licenced Vocational Nurse - Practical Nurse - Registered Practical Nurse
Graduate Entry Nurse (GEN) programs	Graduate Entry Nurse (GEN) programs are designed to attract and retain mature aged students into nursing education programs.
National Registration and Accreditation Scheme (NRAS)	The National Registration and Accreditation Scheme (NRAS) provides the operational framework for the Practitioner Regulation National Law in force in each state and territory. The scheme has a number of objectives: - help keep the public safe by ensuring that only health practitioners who are suitably trained and qualified to practise in a competent and ethical manner are registered - facilitate workforce mobility for health practitioners - facilitate provision of high quality education and training for practitioners - facilitate the assessment of overseas qualified practitioners - facilitate access to services provided by health practitioners, and - enable the continuous development of a flexible Australian health workforce NRAS is underpinned by the Practitioner Regulation National Law ('National Law'), the relevant state and territory based legislation for health practitioners. The National Law defines the 'protected titles' for health professionals, for example, 'nurse', 'medical practitioner', 'midwife' etc., and those using the titles must be registered with the corresponding National Board.

Term	Definition
Nursing and Midwifery Board of Australia (NMBA)	The Nursing and Midwifery Board of Australia (NMBA) is the body responsible for: ■ registering nursing and midwifery practitioners and students, ■ developing standards, codes and guidelines for the nursing and midwifery profession, ■ handling notifications, complaints, investigations and disciplinary hearings, ■ assessing overseas trained practitioners who wish to practise in Australia, ■ approving accreditation standards and accredited courses of study. The NMBA has established State and Territory Boards to support the work of the National Board in the national scheme. The National Board sets policy and professional standards, and the State and Territory Boards make individual notification and registration decisions affecting individual nurses and midwives.
Minority groups in nursing	'Minority groups' is short-hand for those population groups that are currently under-represented in nursing. Generally referring to people from culturally and linguistically diverse (CALD) and Aboriginal and Torres Strait Islander communities, it can also be used to encompass age-specific groups and men.
National Council Licensure Examination (NCLEX)	A nationwide exam for the licensing of nurses in the United States and Canada that is administered by the National Council of State Boards of Nursing.
Pedagogy	Theory, methods and practices of how learning takes place in educational contexts.
Registered Nurse (RN)	Registered Nurse practice is person-centred and evidence-based with preventative, curative, formative, supportive, restorative and palliative elements [234]. Also known in other countries as: ■ Baccalaureate-Prepared Nurse ■ Baccalaureate Nurse
Science, Technology, Engineering and Mathematics (STEM) subjects	Science, technology, engineering and mathematics (STEM) subjects are considered vital to the economy and security of countries, but have experienced significant decline in interest among university students in recent decades. Historically considered more 'masculine' subjects, there has been increasing efforts by government, research and education sectors to develop and retain females within these sectors.