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RESEARCH ARTICLES

Early career nurses' self-reported influences and drawbacks for undertaking a rural graduate nursing program

AUTHORS

ELYCE GREEN RN, PhD[1]
CLAIRE ELLEN SEAMAN PhD[1]
REBECCA BARRY MSocialWk[2]
JAYNE LAWRENCE RN, RM, MMid[3]
ANNIE SKIPWORTH RN, MN[4]
MELISSA SINCLAIR RN, GC(CritCare), MHSM[4]

1 Three Rivers University Department of Rural Health, Charles Sturt University, Wagga Wagga, NSW, Australia
2 Three Rivers University Department of Rural Health, Charles Sturt University, Griffith, NSW, Australia
3 School of Nursing, Paramedicine and Healthcare Sciences, Charles Sturt University, Port Macquarie, NSW, Australia
4 Nursing and Midwifery Directorate, Murrumbidgee Local Health District, Wagga Wagga, NSW, Australia

CORRESPONDING AUTHOR

ELYCE GREEN Three Rivers University Department of Rural Health, Charles Sturt University, Locked Bag 588, Wagga Wagga NSW, Australia 2678 Email: elgreen@csu.edu.au

ABSTRACT

Objective: To identify self-reported influences and drawbacks for early career nurses to work in a rural location.

Background: The international shortage of rural nursing workforce is increasing. As a result, evidence that focuses on mechanisms to recruit early career nurses to these areas is important. This research focuses on the influences and drawbacks for early career nurses to undertake a rural graduate nursing program, aimed at providing evidence that can inform the design of rural nurse recruitment programs.

Study design and methods: Manifest content analysis of open-ended questions in a cross-sectional survey that was administered in two rural Local Health Districts (LHDs) in New South Wales, Australia. Early career nurses commencing employment in either of the research locations in 2019 and 2020 were eligible to complete the survey. In two open-text questions, respondents were asked to respectively describe what the most influential factor was in their decision to commence employment in their location, and what were the drawbacks of this location, if any.

Results: Of the 175 early career nurses invited to complete the survey, 165 (94.29%) returned a completed survey. Four themes were identified as influencing rural early career nurse employment; proximity to social and/or familial ties, being attracted to rural clinical practice, taking advantage of a job offer in a limited market, and wanting a rural lifestyle. Where drawbacks were described, themes referred to distance from social and/or familial ties, rural lifestyle factors, resource challenges, and a perception of less professional opportunity.

Discussion: There may be an opportunity to attract and retain rural nurses through targeted social initiatives and creating community ties, particularly among those early career nurses who have no close friends and family nearby. This reflects other literature and the growing understanding of the importance of social connection, familial ties and life course in early career nurse decision making.

Conclusion: The results of this research demonstrate that proximity to social and/or familial ties is both the biggest influence and drawback for early career nurses to accept employment in a rural location.

Implications for research, policy, and practice: Strategies that capitalise on practical ways to integrate social connection and life course approaches in early career nurse onboarding in rural areas should be explored in future research with a view to creating guidance for rural health organisations and policy makers.

What is already known about the topic?
- Australia is facing a significant and growing deficit in the number of nurses choosing to practice rurally.
- Rural origin and rural placements influence rural practice intention.
- Early career nurse programs are an initiative aimed to support the transition of nurses into practice from undergraduate study and can act as a pathway for nurses to enter rural careers.

What this paper adds:
- Family and social ties are the most influential reasons for choosing a rural location for early career nurses.
- Commensurate with this is the greatest drawback for choosing a rural location for early career employment was being away from family and/or friends.
- Future research should explore practical strategies that capitalise on the importance of social connections, familial ties, and life course for rural nurse career decisions.

Keywords: employment; nurse; rural health; social determinants of health; work location; workforce

INTRODUCTION

For almost 20 years, both federal and state Australian governments have attempted to address the issue of rural health workforce shortages through policy and program initiatives.[1] Despite reports of some improvements, significant shortages continue to exist across the rural health workforce in Australia.[2] These shortages are predicted to increase for the nursing workforce as approximately 40% of nurses are aged over 50 years and demand for nurses is growing beyond supply.[1] With a global shortage of nurses, nursing students have potentially abundant opportunities for graduate employment, making it imperative to emphasise the importance of working in areas with critical workforce shortages.[3]

This research focused on early career nurses commencing employment in two rural Local Health Districts (LHDs) in New South Wales, Australia. At the commencement of their employment in these rural locations, the nurses completed a survey that collected biographical, social, and professional information. This article presents the findings of a manifest content analysis conducted on the open-ended responses to questions about the main influences and drawbacks for working as an early career nurse in a rural location. The findings are used to reflect on current initiatives to attract early career nurses to rural areas, with recommendations made for future research and policy that acknowledges the importance of social connection, familial ties, and life course on health workforce location.

BACKGROUND

Internationally, the nursing workforce is facing significant shortages.[4] This issue has been acknowledged in rural Australia for decades and, as a result, there has been work undertaken to understand what attracts and retains nurses in rural locations.[5-7] For the purpose of this research, rural is defined as areas considered regional, rural or remote using the Modified Monash Model (MM2-7).[8] In Australia, concerns around rural nurse recruitment and retention are complicated by the increasing juniority of the nursing workforce due to growth in graduate numbers aimed at filling workforce gaps.[9] This creates a situation in which early career nurses form a large proportion of the nursing workforce and have limited access to senior nurses for support. There is also a changing health organisation and policy landscape in Australia in which most early career nurses are offered short-term contracts and thus may not view their position as a long-term role.[9,10] Research has been undertaken to examine influences on recruitment of early career nurses to rural areas, with a particular focus on rural origin and rural placement experiences.[10-15] Despite this growing body of evidence, the rural nursing workforce deficit remains. There is a need to further explore factors that may influence the practice locations of early career nurses, so that policy initiatives can capitalise on factors that can influence recruitment and retention.

This research sought to contribute to the growing discussion of what influences early career nurses in Australia to choose a rural practice location. These results form part of a larger mixed methods study that explored the relationship between biographical factors, rural experience, and the attractiveness of rural practice for early career nurses commencing employment in a rural area. The purpose of presenting the content analysis of open-ended responses as the first part of the findings is to commence discussion around the importance of social connection, familial ties and life course on early career nurses' decision making, and to compare this to current initiatives to recruit rural nurses.

OBJECTIVE

The research questions addressed in this paper are:

1. What do early career nurses report as the most influential factor for commencing a position in a rural location in New South Wales, Australia?
2. What do early career nurses report as drawbacks for commencing a position in a rural location in New South Wales, Australia?

METHODS

STUDY DESIGN

A manifest content-analysis was conducted using open-ended survey responses that formed part of a larger, mixed methods study. The mixed methods study employed a sequential explanatory design (cross-sectional survey followed by semi-structured interviews) to explore the relationship between biographical factors, rural experience, and the attractiveness of rural practice for early career nurses commencing employment in a rural area. The survey aimed to capture the demographic qualities, care responsibilities, perceptions of practice location, influential factors in choosing the rural site, and intentions for the type and location of future practice. Two open-ended questions were included in the survey:

1) 'For your situation, what factor was the most influential on you taking your nursing position in this Local Health District?', and
2) 'For your situation, what are the drawbacks (if any) of living and working in a non-metropolitan area, like [name] Local Health District?'.

DATA COLLECTION

Nurses commencing employment at two rural LHDs were invited to participate in the survey. Recruitment was conducted at each iteration of the early career nurses' orientation sessions held in the two rural LHDs during 2019 and 2020. During the orientation, one of the researchers (EG) explained the project to the potential respondents and answered any questions, then handed out paper copies of the survey, before leaving the room along with all managerial and educational staff. The nurses were given time to complete the surveys. All early career nurses present at the rural LHD orientation sessions in 2019 and 2020 were eligible to participate in the research. Consent for the surveys was implied by the participants filling them out and returning them.

DATA ANALYSIS

Manifest content analysis was used to analyse the results of the open-ended survey responses due to the nature of the data. The open-ended responses were generally presented as dot points or one-two sentence summaries and thus the researchers did not attempt to discern deep meaning from the data but rather count the times certain concepts were mentioned. Some responses were coded across multiple categories. The survey responses were analysed by two researchers (EG & CS) using the stages suggested by Bengtsson (2016) including[16]:

1) Decontextualization: Two researchers (EG & CS) read the responses in full and became familiarised with the data. Individual responses were used as meaning units and codes were inductively developed by the first researcher (EG), then checked by the second researcher (CS). Any discrepancies were discussed until consensus was reached between the two researchers.
2) Recontextualization: After agreement on codes, the first researcher (EG) revisited all responses to identify any omitted text.
3) Categorisation: Codes were amalgamated into categories and each response was re-checked to determine its contribution to the understanding of that category.
4) Compilation: In line with manifest analysis, original meanings were captured through exemplification of the categories using the respondents' words. The categories were combined to create themes and counts were used to determine how many responses fell into each theme.

ETHICAL APPROVAL

This research was granted human research ethics approval by the Greater Western Human Research Ethics Committee, approval number 2019/ETH00108.

RESULTS

Of the 175 early career nurses invited to complete the survey, 165 (94.29%) returned a completed survey. A descriptive summary of the respondents is provided in Table 1. The respondents were mostly female (87.88%) and had a mean (SD) age of 28.09 (8.56). Respondents were evenly split between the LHDs, with 84 (50.91%) from LHD 1 and 81 (49.09%) from LHD 2.

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TABLE 1. DESCRIPTIVE SUMMARY OF SURVEY RESPONDENTS

Variable	Valid *n*	Category	%
LHD	165	LHD 1	50.91
		LHD 2	49.09
Gender	165	Male	12.12
		Female	87.88
Has ever lived in a rural area	165	No	27.88
		Yes	72.12
Whether moved for this position	164	No	33.94
		Yes – from a city area	38.18
		Yes – from another rural area	27.88
Age	164	20–22 years	28.66
		23–25 years	29.27
		26–30 years	16.46
		31–40 years	13.41
		41–59 years	12.20
Married or in de facto relationship	165	No	60.00
		Yes	40.00
Has dependent children or other care responsibilities	165	No	71.52
		Yes	28.48

REPORTED INFLUENCES FOR CHOOSING A RURAL GRADUATE PRACTICE LOCATION

There were 162 valid responses (three respondents left this question blank) to the question, 'what factor was most influential on you taking your nursing position in this Local Health District?'. Following coding, 12 categories were used and later amalgamated into four themes.

Example responses allocated to each theme related to influences for choosing rural practice can be found in Table 2. The participants stated the greatest influence on their uptake of the nursing position was 'proximity to social and/or familial ties', which comprised the first theme in the content analysis. This factor was coded in 79 (49%) of the 162 responses and generally denoted family reasons such as care giving or partner considerations, being from the area, or having local social connections.

The second most common category in the content analysis was 'being attracted to rural clinical practice' (or metropolitan practice being unattractive). This was coded in 65 (40%) of the 162 responses. The respondents identified the attractiveness of the increased breadth of rural clinical practice, diverse experiences and a 'hands on' approach as influential. In addition to the career factors that influenced the participants, the support they perceived would be provided to them in the rural area was important and, for some, had already been demonstrated during the recruitment process.

The third theme reflected comments from respondents who came to this location because they were 'taking advantage of a job offer in a limited market'. For some, this was the only job offer they received while others noted that it was important to take a job when it was offered. This category was coded in 25 (15%) of the 162 responses.

'Wanting a rural lifestyle' was the fourth theme identified and was coded in 24 (15%) of the 162 responses.

REPORTED DRAWBACKS FOR CHOOSING A RURAL GRADUATE PRACTICE LOCATION

There were 138 responses to the question, 'what are the drawbacks (if any) of living and working in a non-metropolitan area, like [name] Local Health District?'. Twenty-seven respondents stated there were no drawbacks. The remaining 111 valid responses were coded and allocated to 13 categories that were used to create four themes. Example drawbacks identified in relation to being in the current rural location are shown in Table 3.

The most cited drawback of living and working in a rural area was 'distance from social and/or familial ties'. Responses were allocated to this theme if the respondents identified the lack of local family/friends and/or the distance to travel to them as a drawback. This theme was coded in 74 (67%) of the 111 survey responses.

The second most common drawback of living and working in a rural area was 'rural lifestyle factors' which was coded in 33 (30%) of the 111 responses and referred to less access to leisure activities, commute distance and road safety, and being unfamiliar with the local culture.

'Resource challenges' were identified in 24 (22%) of the 111 survey responses. The respondents identified cost of living (largely due to moving out of home), lack of access to a vehicle, difficulty finding accommodation and access to goods and services as their primary concerns.

Finally, 16 (14%) of the 111 responses were coded for 'less professional opportunity' which identified a lack of exposure to specialty care and decreased access to resources for career advancement and professional education.

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TABLE 2. SUMMARY OF CONTENT ANALYSIS OF INFLUENCES ON RURAL GRADUATE PRACTICE LOCATION CHOICE

Theme	Category	Example respondent quotes coded to this category
Proximity to social and/or familial ties	Family reasons	"My responsibilities to my family especially my children's school and care management." "My children and partner's needs for school and work determined my reasoning for the area I am working." "Partner & our future together as his family is on the land around the area."
	From local area	"Giving back to the area of NSW that I was raised in." "Moving back to my hometown of [name], so [location] was a good opportunity within a good driving distance - close to family and partner."
	Social connections	"Close to support networks." "Being a local member of the community, family and friends, community."
Attracted to rural clinical practice (or metropolitan practice being unattractive)	Increase breadth of clinical role and experience	"I think I will get more exposure to clinical skills and can nourish my nursing knowledge. Fresh evidence practice." "Larger range of clinical experience."
	More 'hands on' approach to nursing	"More hands on & diverse nursing." "I can get a more diverse and hands-on nursing experience as well as be involved in a community."
	More career opportunities	"Good career opportunity and growth." "Opportunity to understand more about rural health issues and progress my career."
	Increased support	"Rural area will allow me to learn in a smaller facility and feel more supported." "I have a more diverse learning opportunity and more support."
Wanting a rural lifestyle	An opportunity to try something new	"… new experience, different cultural awareness, become part of a community and make a difference, job grant, helps attaining PR." "Needed a "tree change" and wanting rural experience as would like to travel in rural/remote areas and work." "More experience opportunities keen to try something & somewhere new."
	Desire to be part of the community	"Become part of a community and make a difference." "It was where I was offered a job, I love [town] and the quieter lifestyle and pace of life and friendly community."
Taking advantage of a job offer in a limited market	Perception of limited positions	"New grad programme spots are very limited, you accept what you are offered." "The fact that I was offered a position at all was most influential."
	Accepting the first offer available	"Honestly at first I accepted this offer due to it being available to me and not having any responsibilities holding me back."
	Unable to secure other employment	"I missed out on a [location] new grad position and got offered one at [town] so took it in fear of not having a job." "[I] was unsuccessful in gaining a position at my preferred location."

TABLE 3. SUMMARY OF CONTENT ANALYSIS OF DRAWBACKS ON RURAL GRADUATE PRACTICE LOCATION CHOICE

Theme	Categories	Example respondent quotes coded to this category
Distance from social and/or familial ties	Distance from family and/or friends	"Moving out. Moving away from family (including elderly grandparent) and friends." "…most importantly and stressfully, I don't have family support to help care for my children. This is by far my BIGGEST stressor in completing this grad start program."
	Distance from hometown	"Far from home…" "Far away from close friends, potential for social isolation"
	Travel required to see family and/or friends	"Being far away from family, friends and loved ones. Having a long travel distance." "More difficult to travel interstate to see family e.g. Grandparents"
Resource challenges	Concerns around lack of public transport or access to a vehicle	"Having to get a car and budgeting for it." "Lack of public transport = necessity of a car"
	Access to stores or grocery items	"Variety of goods available - not bad just different."
	Difficulty finding appropriate accommodation	"I will be separated from my children due to no accommodation supports." "[I] am on my own to find accommodation and not much time between change over locations."
	Expenses related to moving	"It was expensive and stressful to move here."
Less professional opportunity	Limited exposure to specialty practice	"Whilst clinical experience is diverse in some regards, not exposed to a lot e.g. theatre, surgical, specialists etc." "Not a lot of chance to work in specialist areas."
	Less access to career advancement opportunities	"Not a lot of career advancement opportunities." "Lack of certain specialties. Scared that may limit career in long run."
	Less access to educational opportunities	"Reduced educational support." "Limited opportunities to gain skills due to workload and staffing."
Rural lifestyle factors	Less access to leisure activities such as sports teams, beach	"Less events for young people." "Limited opportunities in area, sporting teams etc." "I left the beach."
	Commute distance and road safety	"Driving to work with wildlife & minimal people on the road." "180km trip one-way to work."
	Unfamiliar with local culture	"…unfamiliar living in a rural environment, adjusting to new living conditions." "…everything is so different, it's a lot to get used to." "You are a common acquaintance to most patients and colleagues." "New placement, don't know the local secrets." "I feel lost and sense of non-belonging to this area."

DISCUSSION

The results of this research demonstrate that for this sample of early career nurses proximity to social and/or familial ties is both the biggest influence and drawback in selecting an early career nursing location. The influence of familial and social ties on employment location has previously been identified in the professions of medicine,[17] nursing,[18] and allied health,[18,19] while a study of first-year paramedics has found that a spouse or partner's career opportunities were the most influential factor for work location.[20] Furthermore, close social ties are not just a factor in taking up employment in a rural area but are also key to the decision to stay there.[21,22] Using social gatherings as a means to enhance connection has been suggested by early career nurses as a strategy to improve their job satisfaction and retention.[5] Considering this evidence and the results of our study, there may be an opportunity to attract and retain nurses through targeted social initiatives and creating community ties, particularly among those early career nurses who have no close friends and family nearby.

Much of the existing literature on early career nurses' transition to practice has focused on how programs such as orientation can ease the transition into the workplace and potentially influence staff retention.[23] Orientation and transition programs may affect several of the influences and drawbacks noted by the early career nurses in this study, including their attraction to rural clinical practice and their perception of educational supports,[24,25] however, these programs often do not account for the largest influence and drawback noted by the nurses in this study – the desire to be

close to friends and family. This was noted in a systematic review conducted by Edwards et al. which focused on programs that aimed to support new nurses to transition into the workplace.[24] When examining the effect of these programs on nurse retention, the authors acknowledged that "all studies agree however, that many factors affect retention that could not be controlled, such as family relocation, changes in health status, family responsibilities, or other personal or family issues".[24(p.1266)] This suggests there is an opportunity to increase the attractiveness of rural practice locations by capitalising on opportunities that extend beyond the clinical environment and create social ties. These ties are particularly important considering the nurses who have moved for early career employment are less likely to have social support and more likely to experience resource stress associated with relocation. This is likely to apply to early career nurses from a non-rural background and those with a rural background who are moving to location in which they have no historical ties.

The emphasis the nurses placed on close social and familial ties may be partly reflective of the demographic characteristics of the study sample, including that they are predominately female (88%), with 40% married or in a de facto relationship and more one-quarter with dependent children or other care responsibilities. The sample of nurses in this research reflects the widespread and persistent predominance of women in nursing professions which uniquely characterises nursing from dentistry, medicine, and many allied health professions.[22,26-29] Embedding health organisations with structures and processes that recognise the familial care responsibilities and time demands of their staff may be crucial for increasing the recruitment and retention of rural nurses.

The way that nurses in this research described perceived professional opportunities as both an influencing factor and drawback provides evidence for informing recruitment and retention strategies. Specifically, the results indicate recruitment efforts should emphasise the ways in which the unique diversity and breadth of rural nursing practice can benefit early career nurses professionally. Conversely, the lack of specialisation and fears around the depth of knowledge and experience for career advancement described as drawbacks show that the provision of substantial educational and other specialist practice opportunities are likely to be integral for ongoing retention; and that this might require innovative solutions in the rural context.

Examining the results of this study in the context of current initiatives to attract nurses to rural areas, there are several implications for organisations looking to recruit early career nurses. In line with the World Health Organization's recommendations to improve attraction, recruitment, and retention of health workers in remote and rural areas,[27] many organisations and policy makers have focused on education strategies, regulatory change, financial incentives, and personal and professional support for rural nurses.[28-30] These initiatives are important however may not fully realise the importance of societal and familial connection to an area, as has been argued by Cosgrave (2020).[31] Cosgrave's 'Whole-of-Person' Retention Improvement Framework gives equal weighting to three domains: community/place, role/career and workplace/organisational - where the community/place domain is influenced by "feeling settled in, being socially connected and having a sense of belonging".[31(p.3)] Colbran et al. (2022) add to this concept the importance of a person's life stage on the likelihood they will be recruited and retained in rural locations.[32] Like Cosgrave, they argue the importance of considering a person's societal and familial ties within the context of their life course.[31,32] These approaches add a layer of depth to the financial and policy initiatives currently used in Australia to enhance recruitment and retention of rural nurses.[33,34]

Some literature has considered social and familial approaches to recruitment and retention and suggested strategies such as using colleagues to reduce social isolation,[35] management practices that encourage community engagement,[35] and facilitating friendships and support networks.[36] The provision of support that extends to the health workers' families has also been discussed in the literature and suggested strategies include tailored financial incentives, psychological support and 'time out',[37] childcare supports,[38] marketing a location as a good place to raise children,[39] and assisting with employment opportunities for partners.[39] These strategies should be explored in future research with a view to creating practical guidance for rural health organisations and policy makers to capitalise on social and community connections when onboarding early career nurses. This work will be integral in shaping future recruitment and retention strategies for the rural nursing workforce.

LIMITATIONS

The recruitment method and use of a survey for this study enabled a high participation rate, however, a cross-sectional survey does not support in-depth assessment of early career nurse decision-making and future intentions. This paper presented descriptive results of open-ended survey questions that explored the perspectives of early career nurses at one point in time. As such, the results of the research may not be generalisable to the broader rural health workforce and should be viewed as a platform for further research to be conducted. It should also be noted that as these nurses had already accepted a rural position the drawbacks and influences do not represent factors that may affect the cohort of nurses who elected to work in other areas (i.e. those who chose metropolitan locations).

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CONCLUSION

The results of this research demonstrate that proximity to social and/or familial ties is both the biggest influence and drawback for early career nurses to accept employment in a rural location. This reflects other literature and the growing understanding of the importance of social connection, familial ties and life course in early career nurse decision making. There has been movement in the literature to conceptualise the importance of social and familial ties in employment decision-making, but further work is required to translate this information into practical guidance for rural health organisations.

IMPLICATIONS FOR RESEARCH, POLICY AND PRACTICE

This research has highlighted the need to now understand and trial what strategies can be employed to create and capitalise on social and familial ties to rural locations. Strategies that take advantage of practical ways to integrate social connection and life course approaches in early career nurse onboarding in rural areas should be explored in future research with a view to creating guidance for rural health organisations and policy makers.

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RESEARCH ARTICLES

Impact of breathing exercises in patients who had open heart operation on respiratory function and exercise tolerance

AUTHORS

SELİN BURGAZ KINAS, BN[1]
ŞEBNEM BİLGİÇ PhD[2]

1 Health Sciences Institute, Nursing Department, Trakya University, Edirne, Turkey
2 Faculty of Health Sciences, Fundamentals of Nursing Department, Trakya University, Edirne, Turkey

CORRESPONDING AUTHOR

ŞEBNEM BİLGİÇ, Trakya University, Faculty of Health Science, Nursing Department, Edirne, Turkey.
Trakya Üniversitesi Sağlık Bilimleri Fakültesi Dekanlığı Balkan Yerleşkesi 22030 Edirne/ Turkey.
E: sebnembilgic@trakya.edu.tr

ABSTRACT

Objective: This study aims to determine the effect of deep breathing and coughing exercise training before surgery on respiratory functions and exercise tolerance in patients with open-heart surgery in the postoperative period.

Background: The decrease in respiratory functions and activity tolerance of patients after open heart surgeries reveals the need to improve this situation with effective interventions.

Methods: The quasi-experimental study was conducted with 80 patients undergoing open-heart surgery. Data were collected using the patient information form and the patient follow-up form. The patients were taught deep breathing and coughing exercises before the open-heart surgery and were supported in exercising regularly before and after the surgery. The patients' respiratory functions and exercise tolerance were measured and recorded via the patient follow-up form.

Results: It was determined that the respiratory capacity, distance, time, and walking speed of the patients in the experimental group during the postoperative period were significantly higher than the control group.

Conclusion: Substantially, deep breathing and coughing exercise training administered before surgery to patients undergoing open heart surgery improved respiratory functions and exercise tolerance in the postoperative period. It is recommended that nurses working in open-heart surgery clinics should plan deep breathing and coughing exercise training in the preoperative period and administer them regularly to the patients.

Implications for research, policy, and practice: Patients who will undergo open heart surgery should be trained by nurses in the preoperative period. Nurses should teach these patients deep breathing and coughing exercises. In the postoperative period, it should be checked regularly whether the patients do exercises or not.

What is already known about the topic?

- It is important to teach and practice breathing exercises in patients who will have open heart surgery.
- Respiratory training given by nurses in the preoperative period contributes to the management of the postoperative process.

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What this paper adds:

- This article demonstrates the importance of preoperative education for patients undergoing open heart surgery.
- In this study, it is shown that open heart surgery has a negative effect on the respiratory capacity and exercise tolerance of the patients.
- In addition, in this study, it is shown that the respiratory capacity and exercise tolerance of the patients who were taught preoperative breathing exercises and who performed the exercises in the postoperative period increased in the postoperative period.

Keywords: breathing exercises, exercise tolerance, open heart operation, respiratory function

INTRODUCTION

Coronary artery disease is among the leading causes of disability and death worldwide.[1] Coronary artery bypass grafting (CABG) is an important surgical procedure that improves symptoms, survival, and quality of life for patients with coronary artery disease.[2] The aim of CABG surgery is to bypass the blocked coronary arteries of the heart and restore normal blood flow.[3] However, sternotomy, anaesthesia, and analgesia applied during this surgery may reduce the lung volume of the patients and cause pulmonary complications.[4] The most common pulmonary complications include chest infections, pneumonia, respiratory failure, acute respiratory distress syndrome, and the need for postoperative mechanical ventilation.[5] These postoperative pulmonary complications lead to a decrease in the respiratory capacity of the patients, deterioration in muscle oxygen transmission, worsening exercise tolerance,[6] and increased costs associated with postoperative hospitalisation, morbidity, and even mortality.[7] Therefore, it is extremely important to provide effective care to improve the lung function of patients who will undergo heart surgery.[8]

Existing literature reports that deep breathing and coughing exercises balance body and brain functions, consciousness status, and sympathetic-parasympathetic system functions, prevent secretion accumulation, facilitate oxygen transfer to cells, and thus are effective in reducing lung problems that may occur in the postoperative period.[9] Thus, interventions such as breathing exercises, effective coughing techniques, and inspiratory muscle training in patients undergoing cardiac surgery are recommended to prevent reductions in lung volume and atelectasis, increase oxygenation,[10,11] improve respiratory performance, decrease hospital stay,[12] and increase functional capacity.[13]

Impairment in respiratory functions in patients undergoing cardiac surgery causes a decrease in patients' recovery capacity and independence besides a reduction in their physical activities and, consequently, exercise tolerance.[14] In these patients, 6MWT (6-Minute Walk Test), an easy-to-apply and well-tolerated test, is used to evaluate functional capacity and recovery in the preoperative and postoperative periods.[6,15-17] Previous works have reported that applying breathing exercises increases the 6MWT walking distance and enables patients to show higher performance.[17] In a study, it was determined that patients who received inspiratory muscle training had significant improvements in 6MWT, maximum inspiratory pressure, and quality of life.[18] It was also found that respiratory exercises increased the distance walked and oxygen saturations at 6MWT and showed positive results on heart rate, mechanical ventilation time, dependence on oxygen therapy, and postoperative hospital stay.[18]

Nurses have a vital role in providing necessary training to patients about the care and recovery process in the preoperative and postoperative periods.[19] Discernibly, the training given before the surgery helps to minimize minimise the development of possible complications by providing health-related information and preparing the patients for the surgery.[20] However, in a study conducted, it was concluded that nurses do not regularly perform patient training.[21] Similarly, in the study of Unver et al., (2018) it was reported that surgical patients did not receive adequate training on deep breathing exercises before the surgery, and most of them received this training only after their surgery.[20] However, especially considering the adverse effects of heart surgeries on the lungs, it is important to teach and apply effective interventions such as breathing exercises in the preoperative period. This helps prevent pulmonary complications that patients may encounter and improve pulmonary functions.[22-23] Therefore, it is inevitable that breathing and coughing exercises, which are included in nursing care, should be taught and applied in the preoperative period. Consistent with all this information, this study aims to determine the effect of deep breathing and coughing exercise training given before surgery on respiratory functions and exercise tolerance in the postoperative period in patients who underwent open-heart surgery.

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METHODS

DESIGN

The research is a quasi-experimental study with experimental and control group design. The research questions are as follows:

1. Is there a difference in respiratory capacity between patients who are assisted with deep breathing and coughing exercise training as opposed to those who are not?
2. Is there a difference in exercise tolerance between patients who are assisted with deep breathing and coughing exercise training as opposed to those who are not?

SETTING AND SAMPLE

The research was carried out in a public hospital's cardiovascular surgery intensive care unit and cardiovascular surgery clinic between October 2019 and April 2020. The power analysis method was used to determine the study's sample size. The data from a previous similar study was used as the basis of the analysis. In this study, the pre-test 6-MWD mean score for patients in the experimental group was 516.0 ± 114.8, while the post-test mean score was 502.4 ± 112.8.[23] As a result of power analysis, at 0.95 test power, 95% confidence (1-α), and 0.87 effect level, the sufficient sample size was determined as 72 patients, 36 in the experimental and 36 in the control group. Due to anticipated attrition, the sample size was expanded by 10%, with 40 patients in each group recruited. Within the scope of the research, eighty patients, aged 18 years and over, open to communication and cooperation, whose cognitive abilities were not impaired, and who volunteered to participate in the study and were hospitalised in the cardiovascular surgery clinic for open-heart surgery were included in the study.

DATA COLLECTION TOOLS

The study data were collected using the patient information form and the patient follow-up form.

Patient Information Form

The form included sociodemographic characteristics of the patients, such as age, gender, educational status, marital status, employment status, BMI, and surgery-related information such as duration of anaesthesia and intubation and discharge time.

Patient Follow-up Form

The form included the patients' preoperative, postoperative first, and third day follow-ups. These follow-ups consisted of measurements of vital signs, respiratory functions, and 6MWT.

MEASURED OUTCOMES

The primary result of this study is to determine the effect of breathing exercises on respiratory functions of patients undergoing open-heart surgery. Literature indicates that patients often endure severe pain in the initial day following CABG, gradually subsiding within two to three days.[24] It is known that this pain experienced in the postoperative period restricts the patient's activity, especially by causing reflex muscle tension, and thus can cause shortness of breath, decreased respiratory capacity, as well as atelectasis, pneumonia, pleural effusion and pneumothorax.[25-26] It has also been reported in the literature that the use of nursing interventions such as the use of intensive spirometer (IS) and deep breathing and coughing exercises, especially during this period, are effective in reducing and preventing pulmonary complications.[27] In the literature, the pain and postoperative fear felt intensely, especially in the first 48-72 hours, due to the change in lung mechanics as a result of CABG, affect regular deep inspiration and effective coughing, causing alveolar collapse and deterioration in gas exchange.[26] For these reasons, the study focused on the first three days postoperative. There are studies in the literature focusing on the first two to three days postoperative.[26,28-30] In this study, we focused on the first three postoperative days when there was severe pain. Therefore, in the study, patients were taught preoperative deep breathing and coughing exercises and the use of triflow, and their practices were provided in the preoperative and postoperative periods. Respiratory functions of the patients were measured with a spirometer.

The secondary aim of this study is to assess the impact of breathing exercises on exercise tolerance in patients undergoing open-heart surgery. Literature suggests that respiratory function issues following heart surgery can lead to reduced physical activity and subsequently affect exercise tolerance.[14] Consequently, patients underwent evaluation using the 6MWT in both preoperative and postoperative phases.

DATA COLLECTION PROCEDURE

Research data were collected after obtaining the necessary institutional and ethical permissions. Patients hospitalised for open-heart surgery and who met the criteria for inclusion in the study were interviewed at least 24-48 hours before the operation and informed about the study's purpose, scope, duration, and method. Written consent was obtained from the participants. In the implementation of the study, first, data were collected from the patients in the control group to prevent the experimental and control group patients from being influenced by each other. Therefore, the first 40 patients who agreed to participate in the study were included in the control group, and the next 40 patients were included in the experimental group. Before open heart surgery (before 24-48 Hours), the patients in both groups were asked to fill out the Patient Information Form. Patient

vital signs were initially recorded, followed by the assessment of their respiratory functions through spirometry, and the execution of the 6MWT. Patients in the experimental group received instructions on deep breathing and coughing exercises as well as guidance on using triflow. Further, it was ensured that the patients performed them correctly. Patients were instructed to perform deep breathing and coughing exercises, as well as use triflow, 10-15 times a day until the time of surgery. In the control group, only the service routine was applied. Service routines consist of echocardiography, respiratory function tests, chest radiography, laboratory results, anaesthesia consultation, and taking vital signs.

In the postoperative period, after waking up in the intensive care unit, the patients in the experimental group were allowed to continue their triflow work with 15-20 deep breathing and coughing exercises at 2-hour intervals. Each patient was followed up individually and encouraged to do the exercises, and the routine practices in the unit continued. In the control group, standard hospital procedures were followed. Nurses from the unit conducted routine practices which involved mobilising patients three times in the morning and evening, applying tapotement before mobilisation, and administering triflow ten times per hour. This situation did not make it entirely possible to exclude patients in the control group from these exercises. However, these routine exercises were not administered to the control group patients in a regular and controlled manner. It was not ethically appropriate to refrain from implementing the hospital routine on patients in the control group. Thus, the study enabled the teaching and implementation of respiratory and coughing exercises to the experimental group patients in a controlled and consistent manner, which they would not have received under normal circumstances. In addition, this situation provided an opportunity to assess the effectiveness of the interventions. In addition to routine practices, vital signs for patients in both groups were assessed on the 1st and 3rd postoperative days, followed by respiratory function evaluations using IS and the 6MWT.

Deep breathing and coughing exercise intervention

For the deep breathing exercise, patients were asked to place one hand on their chest and the other hand on their abdomen while in a sitting position. Then, the patients were asked to take a slow and deep breath through their nose, hold it for two or three seconds, and then exhale slowly by pursing their lips. For the coughing exercise: The patient was asked to hold his breath for two to three seconds after taking their fifth breath and then cough twice in a row.

Measurement of vital signs

Blood pressure was measured using a calibrated manual sphygmomanometer in accordance with the guidelines of the World Health Organization. For this purpose, measurements were made using a blood pressure monitor of appropriate size for the patient while the patient was in bed and their arm was at heart level. A pulse oximeter device was used to measure pulse rate and oxygen saturation. The respiratory rate was determined by observing the patient's chest movements.

Intensive Spirometry (IS) intervention

A portable volume-focused spirometer (peak flow meter) was used to measure respiratory capacity. Peak Expiratory Flow Rate (PEF) of the patients was measured. The respiratory capacities of the patients were measured preoperative and postoperative on the first and third day. A disposable mouthpiece was attached to the device for measurement. The patient was asked to breathe normally and then take a deep breath and exhale quickly and forcefully into the mouthpiece. The test was terminated when the patient breathed again. The test was performed three times in a row, and the best result was recorded.

6-Minute Walk Test (6MWT) intervention

6MWT was administered to the patients on preoperative, postoperative day one, and day three by the researcher, who also worked as a nurse. In the cardiovascular surgery service, the corridor length of 30 meters served as the designated walking track. However, in the intensive care unit, the distance between the nurse's desk and the unit wall, approximately 21 meters, was used as the track length. Each of these walking tracks was marked and numbered every three meters, and the starting and finishing points were clearly indicated. As a result, in the cardiovascular surgery service, a full lap was considered to be a total walking distance of 60 meters, encompassing 30 meters out and 30 meters back. In the intensive care unit, a complete lap was defined as a total walking distance of 42 meters, comprising 21 meters out and 21 meters back. Furthermore, a chair was positioned in the corridor where the test took place, providing patients with the option to sit if necessary. Before commencing the test, it was ensured that patients had rested for a minimum of ten minutes, were dressed in comfortable attire and shoes. Walking commenced once the patient was prepared, with the allowance for the patient to stop or slow down at their discretion, and they were encouraged to resume walking as soon as they felt able. The test duration was set for 6 minutes; however, it was necessary to prematurely terminate the test for patients exhibiting symptoms such as sweating, pallor, chest pain, or a notable decrease in oxygen levels. The 6MWT results were calculated based on the recorded distance walked and the time taken. Vital signs and the patients' PO_2 values were measured both before and after the walk to ensure the safe administration of the 6MWT. A portable finger pulse oximeter was used for the assessment of oxygen saturation.

DATA ANALYSIS

The data obtained from the research were analysed using the SPSS 22.0 package program. Descriptive statistics such as number, percentage, mean, and standard deviation were used to evaluate demographic data. In evaluating the similarity of the two groups, Student's t-test was used for continuous variables, and the chi-square test and Fisher Exact test were used for nominal variables. The Friedman Test and Wilcoxon Signed Rank Test were used to compare the repeated measurements within the group, while the Mann-Whitney U test was utilised to compare the patient measurements between groups. Statistical significance $p < 0.05$. was accepted as a breakpoint.

ETHICAL CONSIDERATION

Ethics committee permission (TUTF-BAEK 2019/294, decision number: 15/22) obtained from the Scientific Research Ethics Committee whereas the necessary institutional permission was received from the public hospital. The patients were informed about the research, and written permission was obtained from them before data collection.

RESULTS

The mean age of the patients participating in the study was 63.08±8.20 years. 70% of the patients were male, 68.8% were primary school graduates, 87.5% were married, 53.8% were retired, and 46.2% were overweight. The mean duration of anaesthesia of the patients participating in the study was 258.10±42.42 minutes, the mean intubation time was 711.13±165.45 minutes, and the mean postoperative discharge time was 7.12±1.17 days. There was no statistically significant difference between the patients in the experimental and control groups in terms of individual characteristics and surgical characteristics ($p>0.05$), except for the mean age. When the mean age of the patients was compared, it was determined that the mean age of the patients in the experimental group was significantly higher ($p<0.05$; Table 1).

When the measurements of the patients' vital signs (systolic, diastolic blood pressure, pulse, and respiratory rate) and PO_2 (partial oxygen pressure) values were compared between the groups, no statistically significant difference between the experimental and control group patients was found ($p>0.05$) (Table 2).

TABLE 1. INDIVIDUAL AND SURGICAL CHARACTERISTICS OF THE PATIENTS (N=80)

Characteristics	Experimental Group (n=40) n(%) / X±SD	Control Group (n=40) n(%) / X±SD	Total (N=80) n(%) / X±SD	*p*
Age (year)	64.94±7.55	61.20±8.48	63.08±8.20	**0.039***
Gender				
Female	15 (37.5)	9 (22.5)	24 (30.0)	0.143**
Male	25 (62.5)	31 (77.5)	56 (70.0)	
Education				
Primary school	29 (72.5)	26 (65.0)	55 (68.8)	0.687‡
Middle school	3 (7.5)	6 (15.0)	9 (11.2)	
High school and above	8 (20.0)	8 (20.0)	16 (20.0)	
Marital status				
Married	34 (85.0)	36 (90.0)	70 (87.5)	0.499**
Single/divorced	6 (15.0)	4 (10.0)	10 (12.5)	
Working status				
Employee	6 (15.0)	13 (32.5)	19 (23.8)	0.100**
Retired	22 (55.0)	21 (52.5)	43 (53.8)	
Housewife	12 (30.0)	6 (15.0)	18 (22.4)	
Body Mass Index				
Normal (18-24)	7 (17.5)	6 (15.0)	13 (16.3)	0.377**
Overweight (25-29)	21 (52.5)	16 (40.0)	37 (46.2)	
Obesity (>30)	12 (30.0)	18 (45.0)	30 (37.5)	
Anesthesia time (minute)	251.62±42.30	264.57±42.07	258.10±42.42	0.280*
Intubation time (minute)	731.25±199.75	691.02±121.32	711.13±165.45	0.908*
Post-op discharge time (day)	7.12±0.99	7.12±1.34	7.12±1.17	0.562*

* Student T Test, **Pearson Chi-square Test, ‡Fisher Exact Test. Statistically significant values ($p<0.05$) are shown in bold.

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TABLE 2. REPEATED MEASUREMENTS OF THE VITAL SIGNS AND PO2 VALUES OF THE PATIENTS

Characteristics	Pre-op[1] X±SD	Post-op First Day[2] X±SD	Post-op Third Day[3] X±SD	*p*
Systolic Blood Pressure (mm/Hg)				
Experimental Group	123.75±18.35	117.85±16.27	123.30±15.08	0.194*
Control Group	122.50±14.09	117.05±14.63	118.85±16.37	0.246*
p	0.765¥	0.900¥	0.104¥	
Diastolic Blood Pressure (mm/Hg)				
Experimental Group	72.25±10.97	65.17±10.50	73.10±8.04	**0.000*** 2<1 ve 3**
Control Group	72.50±9.54	67.32±11.46	70.60±9.19	0.064*
p	0.864¥	0.488¥	0.234¥	
Pulse (minute)				
Experimental Group	74.67±12.89	97.40±13.24	96.80±11.28	**0.000*** 1<3 ve 2 **
Control Group	79.30±13.73	95.90±14.41	93.12±15.30	**0.000*** 1<3<2**
p	0.105¥	0.516¥	0.170¥	
Respiratory rate (minute)				
Experimental Group	21.37±1.71	23.27±3.28	22.65±2.39	**0.019*** 1< 3 ve 2**
Control Group	20.85±2.51	23.17±3.60	22.50±3.06	**0.030*** 1< 3 ve 2 **
p	0.234¥	0.771¥	0.380¥	
PO_2				
Experimental Group	97.07±1.32	95.70±2.98	95.27±2.28	**0.007*** 1>3 ve 2 **
Control Group	96.82±1.29	95.17±3.16	94.72±2.95	**0.013*** 1>3 ve 2 **
p	0.335¥	0.473¥	0.584¥	

Notes: PO_2 = Partial Oxygen Pressure, *Friedman Test, ** Wilcoxon Signed Ranks Test, ¥Mann Whitney U Test.
Statistically significant values (p<0.05) are shown in bold.

TABLE 3. COMPARISON OF THE PFT AND 6 MWT RESULTS OF THE PATIENTS

	Pre-op[1] X±SD	Post-op First Day[2] X±SD	Post-op Third Day[3] X±SD	*p*
PFT				
Experimental Group	328.75±104.64	153.25±66.23	245.50±89.98	**0.000*** 1>3>2**
Control Group	385.50±136.62	140.75±55.34	209.00±81.13	**0.000*** 1>3>2**
p	**0.031¥**	0.463¥	**0.034¥**	
6MWT (distance)				
Experimental Group	315.55±89.88	122.92±50.52	203.62±80.28	**0.000*** 1>3>2**
Control Group	370.35±148.23	94.37±36.56	163.65±55.85	**0.000*** 1>3>2**
p	0.095¥	**0.018¥**	**0.021¥**	
6MWT (time)				
Experimental Group	350.42±24.68	336.70±49.70	355.07±23.42	**0.018*** 2<3**
Control Group	351.47±35.26	304.00±75.88	341.10±49.01	**0.000*** 2<1 ve 3**
p	0.326¥	**0.016¥**	0.082¥	
Walking Speed				
Experimental Group	0.89±0.23	0.36±0.14	0.57±0.21	**0.000*** 1>3>2**
Control Group	1.05±0.43	0.31±0.10	0.47±0.13	**0.000*** 1>3>2**
p	0.109¥	0.196¥¥	**0.039¥**	

Note: PFT = Pulmonary Function Test, *Friedman Test, 6 MWT = 6-Minute Walk Test, ** Wilcoxon Signed Ranks Test, ¥ Mann Whitney U test.
Statistically significant values (*p*<0.05) are shown in bold.

When the repeated measurements of the patients' vital signs (systolic, diastolic blood pressure, pulse, and respiratory rate) and PO_2 values were compared within the group; it was determined that there was a significant difference in the experimental group in terms of diastolic blood pressure. It was determined that the patients in the experimental group had the lowest diastolic blood pressure on the first postoperative day. In addition, there was a significant difference in the repeated measurements of both the experimental and control groups in terms of pulse, respiratory rate, and PO_2 ($p<0.05$). An examination of the results revealed that the pulse and respiratory rate values of the patients were the lowest in the preoperative period, and the PO_2 value was the highest in the preoperative period (Table 2).

In the comparison of the mean PFT (pulmonary function test), 6MWT (time, distance), and walking speed of the patients between the groups, it was determined that the PFT values of the patients in the control group were higher in the preoperative period, and the PFT values of the patients in the experimental group were higher on the postoperative third day. In addition, the 6MWT distance value of the experimental group patients was higher on the postoperative first and third day, the 6MWT time value was higher on the postoperative first day, and their walking speed on the postoperative third day was higher than the values of the control group ($p<0.05$ Table 3).

In the group comparison of the intra-group repeated measurements of the patients' PFT, 6MWT (time, distance), and walking speed averages; it was determined that the change in the mean of PFT, 6MWT distance, 6MWT time, and walking speed of the patients in both the experimental and control groups were statistically significant ($p<0.05$). Furthermore, patients in both the experimental and control groups had the highest mean in the preoperative period in terms of PFT, 6MWT distance, and walking speed, followed by the postoperative on the third and first day, respectively ($p<0.05$). In terms of the 6MWT average time, the patients in the experimental group walked less on the postoperative first day than on the postoperative third day, while the patients in the control group walked the least on the first postoperative day (Table 3).

DISCUSSION

After CABG surgery, lung infections such as atelectasis, pneumonia, and bronchitis, as well as postoperative pulmonary complications like pleural effusion, pulmonary edema, and respiratory failure, frequently occur.[26] These complications cause deterioration in muscle oxygen transmission by reducing the respiratory capacity of the patients, thus worsening the exercise tolerance of the patients[6,31] and even causing death.[8] Contrarily, it has been reported that pulmonary rehabilitation significantly improves respiratory muscle strength and lung function in patients undergoing CABG surgery and improves exercise tolerance, activities of daily living, and the quality of life of patients.[8-32] Therefore, it is important to teach pulmonary physiotherapy in preoperative and postoperative care to prevent pulmonary complications in patients undergoing cardiac surgery, present a better prognosis for the patient, and provide positive contributions to treatment.[8] Correspondingly, this study aimed to determine the effect of deep breathing and coughing exercise training taught in the preoperative period on respiratory functions and exercise tolerance in patients with open-heart surgery.

When the individual and surgical characteristics of the patients included in the study were compared, it was found that there was no statistically significant difference between the groups except the mean age, and both groups had similar characteristics in terms of these individual characteristics. Notably, there was no difference between these findings regarding individual characteristics in the study which shows that conjugation was achieved between the experimental and control group patients. When the mean age was examined, it was observed that the mean age of the patients in the experimental group was higher. Studies have reported that advanced age is an important risk factor for CABG surgery and that older patients have higher postoperative outcomes and mortality risks.[33-36] In this study, it was thought that the fact that the older patients were in the experimental group in which the intervention was performed showed that these patients were at higher risk in terms of surgery and postoperative complications but would not adversely affect the results of the study.

Stress and pain that occur in patients after cardiac surgeries stimulate the sympathetic system, causing blood pressure, pulse, and respiratory rate to increase, become superficial, hypothermia, and decrease tissue perfusion. This increases the body's need for oxygen and puts pressure on the heart muscle.[37-38] In addition, failure to control blood pressure during this period is an important risk factor for cardiac, renal, cerebral, and metabolic dysfunction.[39] Adequate oxygenation of tissues and organs and regular heart rhythm are important in balancing the cardiovascular system in the postoperative period.[40] Thus, in heart surgeries, basic vital signs are important in monitoring the patient's condition, risk of complication development, and recovery. Moreover, it is necessary to measure, evaluate, follow up regularly, and record patients' vital signs.[41] In the study, it was determined that there was no statistically significant difference between the groups in the recurrent vital signs and SPO_2 values of the patients in all three measurements. However, there were differences in the changes within the group. In addition, diastolic pressure was the lowest on the postoperative first day, pulse and respiratory rate were the lowest in the preoperative period, and PO_2 was the highest in the preoperative period. Although these findings are compatible

with the physiological changes expected to occur in the patients after CABG surgery, they also appear to be within the normal range of values.

Although developments in surgical techniques and care given to cardiac surgeries improve the condition of patients, morbidity and mortality rates due to the development of pulmonary complications are high.[15] Intubation and sedation, especially during CABG surgery, and the presence of chest tubes cause incision pain and the inability to breathe adequately and effectively in the postoperative period leading to pulmonary complications by negatively affecting the patient's lung functions.[42] It is very important to have patients do deep breathing and coughing exercises to prevent these complications.[43-44] Chen et al. (2019) reported that inspiratory muscle training reduces the rate of pulmonary complications and length of hospital stay.[45] Khosravive et al. (2023) stated in their study that breathing exercises improve respiratory functions.[46] In the systematic review and meta-analysis study conducted by Cordeiro et al. (2023), it was determined that inspiratory muscle training improved respiratory muscle strength, tidal volume, peak expiratory flow, and reduced hospital stay.[47] Matheus et al. (2012) determined that breathing exercises effectively restored the tidal volume and vital capacity values of the patients.[48] In another similar study, it was determined that deep breathing and coughing exercises prevent postoperative respiratory complications such as atelectasis and pneumonia and therefore are important for early discharge from the hospital.[49] This finding is similar to preliminary literature and revealed that deep breathing and coughing exercises effectively increase the respiratory capacity of patients who have undergone open-heart surgery.

Nursing care for CABG patients covers the preoperative, intraoperative, and postoperative phases.[41] In this process, nurses can continuously monitor patients compared to other health professionals, allowing them to observe any early-stage changes. Respiratory problems are among the most significant changes that may occur in patients undergoing CABG. Nurses are skilled in implementing interventions like deep breathing exercises, coughing techniques, and the use of Incentive Spirometry (IS) to address potential respiratory issues in patients undergoing CABG.[8] These nurse-led interventions are both easy to implement and effective in preventing postoperative complications.[50] Literature indicates that providing deep breathing and cough exercise training to patients before CABG surgery is crucial for enhancing respiratory activity, expediting patient recovery, and reducing potential respiratory complications.[30] In their study, Hashim et al. (2021) stated that structured deep breathing exercise training performed by nurses positively affected postoperative results.[29] In the study conducted by Su et al. (2022) it was reported that IS training given to patients by nurses reduced the incidence of postoperative complications. Moreover, there is an emphasis on the necessity of preoperative education for improved postoperative outcomes.[51] The findings of this study highlight the effectiveness of nursing care in improving patient outcomes by demonstrating the positive effects of respiratory exercises, coughing techniques, and IS training on postoperative respiratory functions.

Postoperative respiratory muscle weakness in patients undergoing open-heart surgery causes shortness of breath, inability to exercise, and a decrease in functional capacity. As a result, the patient's exercise tolerance worsens.[17] Existing literature states that breathing exercises increase the walking distance of patients and thus have a positive effect on 6MWT results.[17,23] In addition, there is a relationship between lung functions and functional capacities of patients, and it is appropriate for patients to receive inspiratory muscle training during the rehabilitation process.[17] Similarly, in the study conducted by Dos Santos et al. (2021) on patients who had undergone CABG surgery, it was stated that the short-term respiratory rehabilitation program positively affected the walking distance of the patients.[52] In the study of Mohammed et al. (2019) it was reported that nursing interventions such as deep breathing, coughing, encouraging the use of spirometry, and early movement led to an increase in the walking distance of patients after cardiac surgery.[53] In addition, adequate levels of breathing exercises by patients are effective in improving lung function, restoring respiratory muscle strength, improving coughing ability, and improving activity capacity.[54] Girgin et al. (2021) revealed that pulmonary rehabilitation is effective for patients to regain their functional capacities faster.[8] In a study, patients were given IS use, diaphragmatic breathing, and coughing exercises, and, it was determined that the oxygen saturation and functional capacity of the patients were better, and they performed better in the postoperative 6MWT.[18] Another study reported that respiratory exercises and the use of spirometry in patients undergoing CABG surgery improved the pulmonary function values and functional capacities of the patients, increasing the 6MWT value in the patients.[15] In this study, it is thought that the differences in intragroup measurements are due to the effect of the surgery on the body. The intergroup comparisons determined that the patients in the experimental group recorded higher in terms of walking distance, time, and speed. In this context, the study's finding, consistent with previous literature, reveals that deep breathing and coughing exercises are effective in increasing the activity tolerance of patients with open-heart surgery.

CONCLUSION

It is known that the respiratory functions and activities of patients undergoing open-heart surgery are adversely affected. However, it is an undeniable fact that the contribution of the nursing care given during the surgery process to patient recovery is of great importance. As a

result of this study, it was determined that teaching and applying breathing and coughing exercises to patients, starting from the preoperative period, increased the patients' respiratory capacity and walking distance, time, and speed. These findings are important in terms of showing that breathing and coughing exercises contribute positively to the respiratory functions and activities of the patients. It is predicted that especially administering these exercises in the preoperative period contributes to the patients' learning of the exercises, ensuring permanence, and ensuring recovery by continuing the exercises effectively in the postoperative period. Subsequently, it is recommended that nurses train patients on subjects such as deep breathing and coughing exercises, starting from the preoperative period.

LIMITATIONS

The limitations of the study include the inability to implement randomisation. Due to the inability to prevent interactions among patients in the clinic where the study was conducted, data from the control group were collected first, followed by data from the intervention group, which prevented randomisation. Additionally, it was not ethically possible not to administer any respiratory or coughing exercises to patients in the control group. Another limitation is the presentation of data limited to the first three days postoperative, reflecting only early postoperative results. Furthermore, the inability to generalise the results is due to the study being conducted in a single institution.

RECOMMENDATIONS

In future studies, ensuring randomisation and following patients even after discharge, including the post-discharge period, is recommended. To strengthen the evidence, there is a need for increased sample sizes and more advanced studies conducted in larger populations. Considering the significance of nursing care on patient outcomes, it is suggested that clinical nurses regularly provide patients with training on deep breathing and coughing exercises and subsequently track their progress in this regard. Institutions are advised to regularly provide in-service training on the importance of training nurses to enhance their education rate in the subject matter.

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RESEARCH ARTICLES

Qualitative research into study preparation recommendations to facilitate role adaptation as a student nurse

AUTHORS

ANGELA D SHEEDY (BHSc (Nursing); GCUTL; MPH)[1]

1 Senior Research Officer, CDU Menzies School of Medicine, Darwin, Northern Territory, Australia

CORRESPONDING AUTHOR

ANGELA D SHEEDY. Charles Darwin University, Blue Building 1, Ellengowan Drive, Brinkin, Darwin, NT 0810.
E: Angela.Sheedy@cdu.edu.au

ABSTRACT

Objective: Investigate and identify preparatory academic skills and resources required for individuals preparing to commence undergraduate online nursing studies.

Background: There is much research available on the transition of student nurse to graduate nurse, however the transitional pedagogical journey into a student nurse role has been less explored. This project aimed to identify the skills and knowledge which would benefit the individual commencing their online nursing studies to inform study preparation resources and facilitate role adaptation into a profession requiring registration at the student level with the Australian Health Practitioner Regulation Agency. Focus groups with student nurses and an online survey for academics were implemented to identify challenges for students and core areas to inform preparation for practice resources.

Methods: The project applied a qualitative grounded theory study design, implementing an academic staff survey and student focus groups. Results were thematically analysed to identify dominant study challenges and resource recommendations.

Results: A total of 26 academics participated identifying student course challenges attributed to: unrealistic expectations and understanding of the nursing role; poor academic skills; clinical practice demands; imbalance of work, family, life and studies and; an unsupportive university system. The student focus group included 43 participants across all year levels and identified the main challenges as clinical requirements and academic skills and support. Focus areas to prioritise for a study preparation resource are summarised as: building academic skills, time management (and prioritisation), introduction to the nursing role and course expectations, and introducing a peer support pathway (through use of social media).

Conclusion: An online study preparation resource for student nurses to access when they receive their acceptance into a nursing course presents a step with potential for a more successful course progression. For the university, this has potential to impact course retention and satisfaction. For the student it presents a supportive process which can lead to improved academic skills and an early understanding of the professional role and responsibilities of being a nurse.

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Implications for research, policy and practice: Acknowledging the need to adapt to the role of nursing student for the individual commencing their nursing studies and providing support at the point of course acceptance will ultimately facilitate a more successful student journey.

Access to contextualised study preparation resources prior to commencing nursing studies has the potential to reduce attrition rates, increase grades and improve role adaptation.

What is already known about this topic?

- The first year of nursing studies has higher attrition rates often due to lack of understanding of the professional nursing role and an inability to manage personal and academic expectations.
- There is much research on the transition of student nurse to graduate nurse, however this is lacking for the individual transitioning into the student nurse role.

What this project adds:

- This project recognises challenges to role adaptation can occur as the individual commences their nursing studies and becomes part of a regulated health profession.
- The provision of contextualised academic and nursing resources on acceptance into a nursing program can better prepare students for the integration into academia and the nursing role.

Keywords: academics, nursing education, role adaptation, study preparation, undergraduate student nurse

INTRODUCTION

The transition for the student into a graduate nurse role has been well researched and strategised, however there could be more on supporting the individual entering undergraduate nursing studies. This project focused on the transition step into a student nurse role with the aim of identifying the challenges new student nurses faced in this course. The primary aim is to present focus areas to inform study preparation resources and ultimately improve student success and retention. It is proposed that these resources be presented to students with their university Bachelor of Nursing (BN) course acceptance letter. This is recognised as a time when they are likely curious and excited about entering their studies and motivated to interact with nursing-focused academic and professional support resources.

BACKGROUND

Registered nursing in Australia is currently at a nexus of workforce shortages and burned-out nurses creating a period of upheaval for the healthcare industry.[1] These circumstances have been exacerbated by the COVID-19 pandemic, a workforce that is often supported by recently graduated nurses, and an ageing population who is living longer despite the prevalence of high acuity comorbidities and chronic disease.[2,3] The nurse has become more visible and vital than ever with Australian communities understanding the importance of maintaining this workforce.

Preparing nurses to enter this dynamic and demanding work setting requires a supportive undergraduate course environment that is understanding of the unique challenges within this curriculum. For a commencing student nurse, adaptation into this regulated student role can in its own way be aligned with transition shock also referred to as reality shock. For the student nurse this can be related to the sudden onset of academic expectations, professional responsibility and liability associated with nursing registration and practice.[4] We often associate transition shock with the newly graduated nurse independently entering the health workforce however in Australia, student nurses are registered by their universities with the Australian Health Practitioners Regulation Agency, Nursing and Midwifery Board in the interest of public safety.[5] Student nursing registration can be viewed as a life-changing event with the student nurse bound by the same registration standards as a registered nurse.

These new student nurses can be reported for being a risk to the public and have to voluntarily provide any information regarding health issues which may impair their practice, as well as criminal activities. With many student nurses entering the health workforce early in their studies (increasingly so during the COVID-19 pandemic), role adaptation support and resources need to be provided early in the student journey.[6]

Undergraduate nursing courses undergo double accreditation being reviewed both by the Australian Nursing and Midwifery Accreditation Council (ANMAC) and university approval aligned with the Australian Qualifications Framework (AQF).[7,8] It was anticipated the introduction of national accreditation by ANMAC in 2010 would ensure a level of quality across all program delivery and improve the skills and knowledge of the graduating nurses.[9] The Bachelor of Nursing are demanding courses which are mandated to include complex science units

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with a focus on anatomy and physiology, pathophysiology, pharmacology, medical surgical nursing, and incorporate over 800 hours of clinical placements. Students have pre-clinical requirements to meet regarding basic life support, manual handling and they must be fully vaccinated in accordance with Australian clinical requirements. To succeed in this course, students need to be motivated and ready for academic and practical challenges.

This journey for the novice student involves many different preconceptions of what they expect their learning journey to be and this can include periods of doubting and questioning whether they have made the right career choice.[10] Tertiary studies present a very different learning environment to that of secondary/high school studies and there are demands on nursing students personal life due to registration standards and intensive course and clinical placement requirements. It is recommended that the adaptation into this role for individuals is seriously considered. This is especially relevant with the increased utilisation of student nurses into the health workforce during the COVID-19 pandemic.[6,11]

Nursing can be described as a tactile profession and delivery of an online course is challenging, particularly with consideration to capturing the human interaction which is expected with the nursing role. Quality online teaching today relies on academics who in addition to their teaching skills are apt at managing a balance of the administrative duties and accommodate the widely varied background of the students who enter their units. They are required to have an ability to constantly assess their own values and teaching expectations whilst producing high quality learning environments.[12,13] It is also important to look at how and what is being taught from the students' perspective and to be receptive to student feedback. The university needs to meld to the students' lives and needs and not just the students mastering the university environment.

Attrition rates in first year nursing have long been recognised as problematic and this has been attributed to factors such as personal influences (self-esteem, work, study, life balances, sense of belonging), academic and financial challenges.[14-17] This is exacerbated by the pressures faced by nursing students with the additional demands of registration, understanding the professional role of the nurse and complex course expectations as previously highlighted.

The project for undergraduate nursing study preparation aimed to identify those factors which presented as a challenge to students successfully completing their course with focus on the very first moments they accept a place offering. With the implementation of a grounded theory methodology, this project aimed to build recommendations to focus study preparation and reduce shock in adapting to the student nurse role through the exploration of both academics and students views. It proposes these study resources be available to student nurses when they are first accepted into a course, prior to commencing their studies.

METHODS

The Bachelor of Nursing (BN) course in which these students and academic are involved was offered by a regional university located in the Northern Territory, Australia. Student enrolment numbers approximated around 1,500 students at the time of the project. Of note, the course is delivered as a fully online BN with face-to-face internal classes available at three different campus sites. The majority of students studied in an external mode, were considered to be mature-aged, and included an international student cohort.

This project implemented a qualitative research method using a grounded theory approach and purposive sampling. Cited as a method to identify and construct theories as data and information is explored, the grounded theory approach to this research compared and aligned the outcomes from both staff and student perspectives to identify those aspects beneficial to student nurse study preparation.[18] A project team workshop with four nursing academics and two education technologists was conducted to identify academic survey and focus group questions.

A total of 30 academics directly involved in undergraduate nursing unit delivery and student support were emailed an invitation to complete an anonymous online survey (using Qualtrics) with an opt-out approach. The academics were from a variety of roles within the nursing program, and all directly contributed to the student nurse journey. These academic positions spanned from nursing program management, unit delivery and clinical coordination, teaching, and supervision. Bachelor of Nursing administration staff were omitted from the survey. This survey focussed on what the academic considered would help new students have a more successful academic journey with a mix of seven closed and open response questions. A first question requested academics to identify their years of teaching experience with undergraduate nursing students moving into three question sets focussing on the academic's perspective of:

1. Why students were unsuccessful in their first year.
2. What study preparation resources would facilitate student success.
3. How these resources should be presented to students.

The initial question set (1) requested an open answer response to present factors that may contribute to student nurses being unsuccessful in their first year of study. The term "unsuccessful" refers to failing to pass units or withdrawing from studies. Question set two presented eighteen study preparation resources for academics to identify the top five for new students with an open answer opportunity for other suggestions. Question set three provided fourteen different methods to present study resources to students with a follow up open response to suggest other options. The final open answer question was *Do you have any other suggestions to contribute to the development of a study preparation resource for undergraduate nurses.*

Focus groups were run with students across all year levels asking students to remember what it was like when they first started their nursing degree and look at the biggest challenges, identifying information they thought would benefit nursing students before commencing their studies. A flyer was circulated for students coming on campus (from both local and interstate) to attend their clinical teaching blocks inviting them to reflect on what it was like when they first started their degree, and what they thought new nursing students needed to know to succeed. There were four leading questions to keep discussion on track.

1. Did you complete any background preparation to prepare you for your studies, before you started the course- such as look at the university library site, find out more about nursing in Australia?
2. Could you tell us what the biggest challenges were for you when you started your Bachelor of Nursing course?
3. What sort of additional information would have helped you early in your course?
4. What advice would you give students who are about to commence the Bachelor of Nursing to help them be prepared?

In alignment with a grounded theory approach, results of each cohort were thematically analysed separately and then compared to identify dominant study challenges and resource recommendations. In addition, the top choices for the academic's survey response were identified in the closed response questions. These approaches aimed to present a set of principles to base study preparation resources for student nurses. This project received approval from the Charles Darwin University, Human Research Ethics Committee (reference number H17136).

RESULTS

ACADEMIC STAFF SURVEY

A total of 26 academics responded with between one to ten years plus teaching experience. In the responses presented by academics, there were five dominant themes identified for the first question set exploring why they believed students were unsuccessful in their first year.

1: Unrealistic expectations and understanding of the nursing role.

2: Poor academic and health literacy skills- inclusive of understanding and having the ability to navigate the Australian health system and academically related to poor time management and prioritisation skills and lack of understanding of university study expectations.

3: Challenges with clinical practice- knowledge and time lapse between learning skills and applying skills.

4: Inability to balance work, family, life and studies.

5: Academic/university downfall- system or staff not supporting students.

In the second question set, which focussed on what should be prioritised in a study preparation resource for new students, a resulting six core factors were identified. Those areas which were either deemed as less important (as per the academic's responses) or which received no nominations were: the university and college structure and hierarchies, the Australian Nursing & Midwifery Boards' role and regulations (noting the professional role of the nurse was identified), and university governance documents. Those areas identified as priorities for nursing student support have been aligned with the core student challenges (factors contributing to unsuccessful course progress) and are presented in Table 1.

The final question set focused on the way a study preparation resource should be presented, revealed the top five suggestions as:

1. A help-yourself module presenting a number of different resources students can choose to complete.
2. Creation of reusable learning objects (these are short learning modules using multimedia and which are usually in the form of quizzes or question/answers).
3. A student journey/ story of a nursing student's journey.
4. Learning materials with quizzes.
5. Top 10 study tips.

TABLE 1: ACADEMIC VIEWPOINT ON CHALLENGES FOR STUDENTS COMMENCING THEIR BACHELOR OF NURSING STUDIES AND THE ADDITIONAL RESOURCES REQUIRED TO SUPPORT NEW STUDENTS

Challenges to student success	Priority study preparation resources	Extra resource focus areas
Unrealistic expectations and understanding of the nursing role	• Critical thinking and clinical reasoning in nursing	• The professional role of the nurse • Reflection and reflective practice • Australian health system
Poor academic and health literacy skills, poor time management and prioritisation skills, lack of understanding of university study expectations	• Referencing skills • Research skills • Reading and note-taking	• Academic integrity • Communication skills
Challenges with clinical practice, knowledge and time lapse between learning skills and applying skills	• Foundations of nursing, medical and health terminology	• Evidence-guided nursing practice
Inability to balance work, family, life and studies	• Time and self-management	• Staying healthy while studying
Unsupportive university system or staff	• Introduction to online learning platform	• University culture

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The academics have collectively recommended online resources which are interactive and implement a variation of information presentation (to suit different learning styles). Additional recommendations included: traditional lectures (face to face interaction), and online quizzes using gamification tools.

STUDENT FOCUS GROUPS

The student focus groups were held with four groups, one in each of first year (6 participants) and third year (15 participants) and two with second year groups (22 participants) totalling 43 students. Of significance, all participants agreed that they would explore a nursing study resource if this was presented when they were first accepted into the course. According to the focus groups their exploration of the nursing course had been limited prior to commencing their studies, mainly looking at study plans, clinical requirements and talking to friends. However, this does imply they were on the university website and curious about their course. The main point of difference between the student focus group responses was the first years' attention on challenges with academic work, particularly with referencing and navigating the university and unit websites as demonstrated in the following comments:

> *Navigating the webpages/ online units information and assessment information* (First Year Student 1)
>
> *I found the number of exams hard to cope with* (First Year Student 2)
>
> *The hard units such as pathophysiology and pharmacology* (First Year Student 3)
>
> *Coping with all the reading and learning a new referencing, how to reference like the teachers wanted* (First Year Student 4)

The second and third year students were more focussed on challenges related to professional nursing and clinical placement requirements as was evident in their comments:

> *Factor in additional costs and time to meet pre-clinical requirements such as vaccinations and basic life support certificate* (Second Year Student 1)
>
> *Placement information and getting your placement allocated and getting no response* (Second Year Student 2)
>
> *Being an international student and holdups with placements meaning extending visas* (Third Year Student 1)
>
> *Be realistic about how long it will take to complete the course given holdups with clinical placements* (Third Year Student 2)

All the focus groups responses to the leading questions were thematically analysed with dominant themes presented in Table 2. An interesting aspect from the student's perspective was the reference to seeking peer support. This was evident with focus group feedback for new students to meet with past students and/or join the student Facebook pages. At this university, student groups had created their own Facebook pages associated with each unit they enrolled in, administration of these were handed on to the next group of students each semester. These sites were not part of the official university social media sites, unmonitored by the academics and demonstrated how the student nurse cohort were creating their own peer support networks.

TABLE 2: UNDERGRADUATE NURSING STUDENTS FOCUS GROUP OUTCOMES FOR STUDY CHALLENGES AND PREPARATION FOR NEW STUDENTS

Question Focus	Focus Themes	Description
Students preparation for studies prior to their commencing	• Study plans • Clinical requirements • Peer support	• Part and full-time study plans • Simulation blocks and placements • Pre-clinical requirements • Spoke to friends enrolled in the course
Challenges commencing Bachelor of Nursing studies	• Academic skills • Time management • Clinical requirements • Finances	• Difficult units (such as anatomy and physiology, pathophysiology and pharmacology) • Pre-clinical requirements • Multiple submissions • Navigating the study plan, university webpages and online unit information. • Academic reading, writing and referencing skills • Costs of units, pre-clinical requirements, taking time off work. • Isolation of external enrolment & time differences between States/Territories • Being an international student (different systems and cultures)
Additional information which would have helped early in the course	• Time management • Prioritization • Academic skills • Clinical requirements • Peer support	• Library skills • Organising assessments and unit requirements • Study plan • More theory before practical • Collaborating with current students
Advice for students commencing Bachelor of Nursing studies	• Peer support • Clinical requirements • Communication • Course delays • Resource access • Self-care • Realistic expectations	• Collaborate with fellow students & staff • Social media sites for students (external to university control) • Clinical placement delays • Access library and academic support • Organise assessment dates and readings • Actively look after yourself • Consider part-time if working

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DISCUSSION

It is recognised that there will be differences between the life experience and preconceptions students bring to their studies and the expectations of the academics providing and facilitating this education. Collaboratively exploring their perspectives, experiences and recommendations for the preparation of the BN student journey can inform an evidence-based study preparation resource. Current programs generally have an approach which connects students to support and resources to enhance their academic skills and resilience once they have commenced their studies (start of the academic semester). Other study preparation options are Massive Open Online Courses (MOOC) to provide a course taster, tertiary enabling programs to provide a course entry pathway for students who may not have an Australian Tertiary Admission Rank (ATAR), with some universities offering free introductory subjects for students.[19-21]

The approach proposed by the project team is to present a set of contextualised preparation resources for the BN course prior to the student commencing their studies, when they accept their course position. This is supported by the student focus group responses, demonstrating students were accessing the university site to find out more about their course prior to their actual commencement. Students are generally motivated and excited when they are first offered a university place and this presents an opportunity to tap into this motivation starting students early with resources directly relevant to their course and personal requirements. It is anticipated that this will aid the students course progression and satisfaction, and improve retention rates. Figure 1 presents the variations in these approaches.

The research results identified the points of difference between academics and students in what was required for these resources as the student's identification of financial burdens, need for peer support, and the isolation felt by external students. The areas both groups prioritised were around academic challenges specifically with assessments, time management and prioritisation of tasks and library skills (associated with referencing and navigating the library systems). These align with previous research into nursing student attrition rates which identifies contributing factors relating to clinical placement, stress and nursing role expectations with an additional aspect (not identified in this project) of pre-enrolment criteria.[22]

The principle areas therefore recommended for the development of study preparation resources are identified as:

- Academic skills and navigation of university systems.
- Introduction to being a nurse (professional role expectations), clinical preparation, medical terminologies, critical thinking and reflective practice.
- Self-care, time management and prioritisation of tasks, with peer support.

Although parts of these focus areas may resonate with other health courses the point of difference is contextualising these for the nursing profession. For example, academic skills development would direct how to conduct an article search using nursing literature. This also resonates with the 'whole-of-course curriculum design' recommendations to ensure students are aware of foundational course expectations, leading to a more quality program.[9]

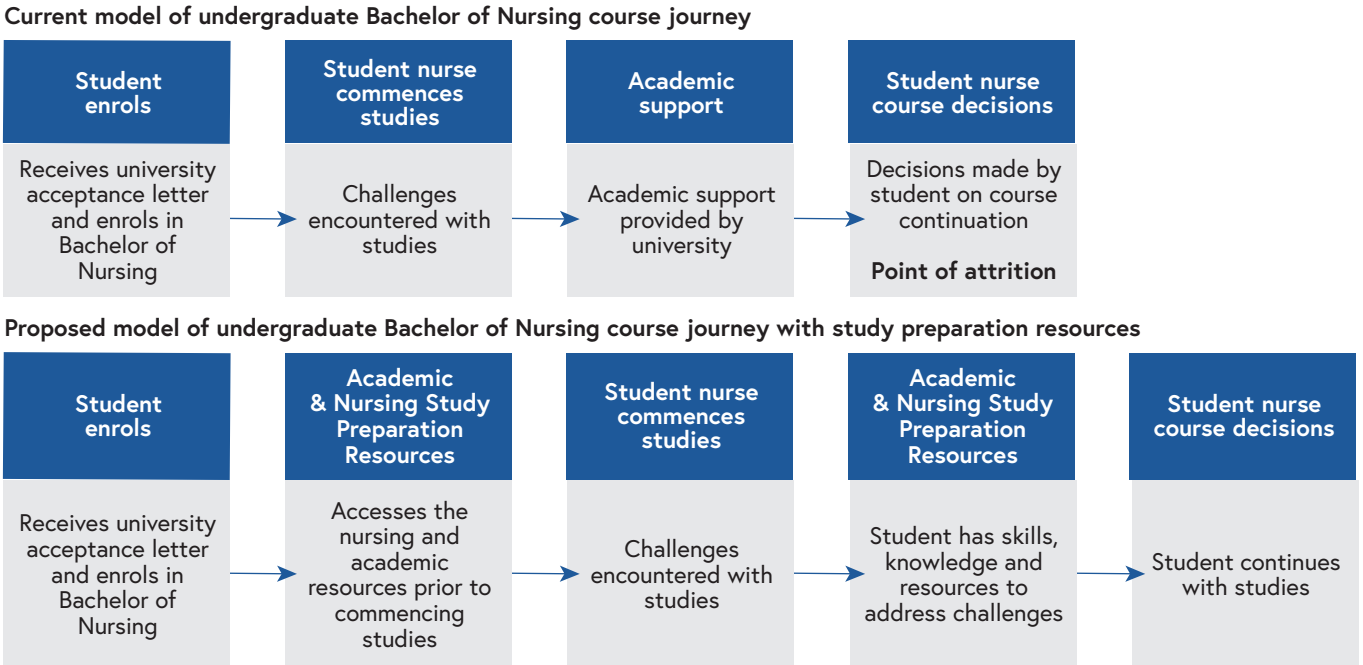

FIGURE 1: COMPARISON OF CURRENT AND PROPOSED MODELS OF STUDENT SUPPORT

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Universities have teams capable of developing interactive and engaging online resources, and social media sites such as Facebook are easy to establish and well received by students as a peer support environment, meaning this is an achievable investment for institutions.[23,24] During COVID-19 the entry of tertiary studies into the online environment escalated thus presenting this form of resources as keeping with this momentum, adding another layer of student preparation and support.[25]

PEDAGOGICAL APPROACHES TO DESIGN STUDY PREPARATION RESOURCES

To increase student retention within the first year of BN study and ultimately boost the Australian nursing workforce new strategies are required, particularly with so many courses now being delivered in online environments. Nurses are identified as active learners and have better learning experiences when they are interacting with their materials.[24] The learning styles of student nurses are an important consideration for the design of these online resources, with research demonstrating that learning style and academic achievements are linked.[27-29] Therefore, aligning these study preparation resources with the student nurses recognised as active learners the concept of constructivism is recommended. This acknowledges learners are not passive in the learning cycle but instead are actively constructing their learning experience as presented by Biggs and Tang in the following statement.[30]

Constructivism emphasizes what students have to do to construct knowledge, which in turn suggests the sorts of activities that teachers need to encourage in order to lead students to achieve the desired outcomes.[30(p.22)]

Both the first-year nursing students and academics flagged academic skills and navigation of university systems as important for the new student. This collectively incorporated referencing, research, reading and note taking skills, organising assessments, study plans and online learning/course platforms. Using constructivism would incorporate some form of group work or peer platform to allow students to learn from each other. To design academic resources using this framework the materials around the academic skills need to be engaging and encourage active thinking. Using a co-design approach with these materials would be recommended as this incorporates the student voice, however recent research has also indicated that altering BN courses to meet student satisfaction (based on student course satisfaction surveys) can also negatively impact the course quality.[31]

In relation to the nurse role and professionalism, this project's findings recommend early incorporation of clinical preparation (and requirements), introduction to medical terminologies and aspects of critical thinking and reflective practice. Another consideration is ensuring student nurses begin to grow their confidence to advocate for patients in alignment with the concept of moral courage.[32] Materials for this skill set could take a cognitive dissonance approach which incorporates presenting contextualised foundational nursing challenges for the student to navigate with access to meaningful feedback.

An additional recommendation is to ensure student nurses have access to and understand their student nurse registration requirements on enrolment, particularly as they are often supporting clinical areas as students.[10] Understanding nursing students are active learners who will gain much of their knowledge through actions and reflection approaches should further direct the design of professional practice resources. This can aid their professional growth and development. An example would be an early introduction of a critical decision making framework or critical thinking skills used in nursing practice.

The importance of self-care cannot be underestimated for nursing students when many are balancing work, study, financial demands, children and other everyday essentials of life. Clinical placements in Australia are unpaid, this is stipulated by the Australian Federal Government, Fair Work Ombudsman, deeming nursing placements as vocational and therefore legally unpaid.[33] Pressures such as requiring time off work to attend placements and meet the associated travel and accommodation expenses places students under a lot of pressure.

Student nurses are entering a profession where they will be caring for people and to do this, they also need to care for themselves. The student focus group highlighted this point for new students and their suggestions of access to peer support would be a positive pathway to facilitate this for students. This resonates with a social constructivism paradigm which identifies that learning occurs through collaborations with other students and peers.[34] It is noteworthy that they referred to social media as the best method of connecting students.

The project outcomes also identify areas requiring further investigation, which includes how aware student nurses are of the professional (and legal) obligations of being a registered student nurse at the point of course enrolment. Further exploration is needed of the potential existence of transition shock for students entering a BN course, and linking this to those student nurses who are entering the workforce during their studies. The next step for this research project is to investigate student nurses who have access to contextualised study preparation resources and provide a comparison of course satisfaction and attrition with those who do not have such access. It would also be advantageous for nursing curriculums to understand how student nurses use social media within their student groups for peer support. This would further highlight potential issues they are encountering as they progress through their studies and inform a reactive cycle by the university to counteract these.

CONCLUSION

This project identifies a number of study preparation resources for the individual transitioning into nursing studies. With the majority of research and resources focused on the transition from student nurse to graduate nurse, it needs to be recognised that there is potential for challenges to role adaptation as individuals move into a profession that is both regulated at the student level and academically challenging. Students agreed that providing access to study preparation resources as soon as they received their university acceptance letter presents a supportive step in preparing the new student nurse for course challenges.

The project presents several relevant challenges for students new to an undergraduate nursing course aligned from both the academic and student perspective. The identified challenges primarily focussed on clinical requirements and academic skills, supporting these as areas that early student preparation would benefit. One main point of difference identified by students (in comparison to academics) was the benefit of connection to peer support groups using social media. This project suggests that time management and prioritisation of tasks, building academic skills, introduction to the nursing role and course expectations with a peer support pathway using social media will ultimately facilitate a more successful student journey.

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Peta Harbour, Australian Catholic University, Australia
peta.harbour@acu.edu.au

Renjith Hari, Edith Cowan University, Australia
r.hari@ecu.edu.au

Paul Irving, Charles Darwin University
Paul.Irving@cdu.edu.au

Rupa Khadka, Torrens University Australia
khadkarupa@gmail.com

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RESEARCH ARTICLES

Developing as a person: How international educational programs transform nurses and midwives

AUTHORS

JACQUELINE JOHNSTON, RN, MN,[1]
PROFESSOR LISA MCKENNA, RN/RM, PhD[1]
DR GULZAR MALIK, RN, PhD[1]
DR SONIA REISENHOFER, RN, PhD[1,2]

1 School of Nursing & Midwifery, La Trobe University, Melbourne, Victoria, Australia
2 Bairnsdale Regional Health Service, Bairnsdale, Victoria, Australia

CORRESPONDING AUTHOR

JACQUELINE JOHNSTON. PhD Candidate. School of Nursing & Midwifery, La Trobe University, Melbourne, Victoria, Australia. E: Jacqueline.Johnston@latrobe.edu.au

ABSTRACT

Objective: To determine impact of undertaking an international educational program during a nurse's or midwife's pre-registration program on subsequent practice, focusing on how nurses and midwives were transformed personally through participation in such programs.

Background: Participation in international educational programs has been reported to enhance nursing and midwifery students' personal and professional development, however long-term impacts remain unclear. This paper presents findings drawn from a larger grounded theory study.

Study design and Methods: Charmaz's grounded theory methodology was used to elicit experiences from 13 general nurses, two mental health nurses, three midwives and four dual qualified nurse/midwives across eight different countries. Data analysis led to the creation of three categories, with this paper reporting on the category of *Developing as a Person*.

Findings: Participation in international educational programs can be transformative for nurses and midwives with long-lasting impacts, contributing positively to their personal growth and development.

Discussion: The study findings underscore significant long-term impacts of international educational programs for nurses and midwives. These outcomes highlight the importance of incorporating international experiences into healthcare education.

Conclusion: By providing opportunities for healthcare professionals to engage with diverse settings and populations, organisations and educational institutions can foster the development of well-rounded and globally competent practitioners.

Implications for research, policy, and practice:

The study's findings hold significant implications for research, policy, and practice in healthcare education. To deepen our understandings, additional longitudinal research across diverse countries is warranted. Policymakers have an opportunity to acknowledge the positive impact of these programs on the personal growth and development of nurses and midwives, potentially leading to the integration of global competency requirements into licensure programs. In order to provide comprehensive education, educational institutions should consider the inclusion of study abroad opportunities, cultural exchanges, and global clinical placements within nursing and midwifery curricula.

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What is already known about the topic?
- International educational programs are widely used as a way of developing nursing and midwifery students' cultural understandings.
- Previous studies have reported on short-term impacts of international educational programs.

What this paper adds:
- Long-term impacts of participation in an international educational program on nurses and midwives are described.
- Personal development and subsequent transformations occur for nurses and midwives as a result of participation in international educational programs.

Keywords international educational program, global learning, grounded theory, midwife, nurse, transformative learning

INTRODUCTION

For the purpose of this study, the term 'international educational program' is adopted as the overarching descriptor for all types of international programs catering to nursing and midwifery students and includes international clinical placements, exchanges, service learning and short-term programs. International education programs have been used in higher education curricula for many years to immerse participants in different cultures, explore different professional contexts, and gain cultural awareness, cultural humility and global citizenship attributes.[1,2] Particular to nursing and midwifery, research has reported short-term benefits of participation in these programs during a nurse's or midwife's pre-registration education including increased confidence, challenging own beliefs and personal growth,[2–5] However, recent reviews indicate that most existing research reports short-term outcomes and identified a need to investigate long-term outcomes on students' personal development and future professional practice.[3,5]

BACKGROUND

Nursing and midwifery education is pivotal in preparing students for future practice, requiring them to be personally and professionally competent and ready to care for increasingly multicultural and global patient populations[6]. Transformative learning experiences in different cultures may expedite this process and can have long lasting benefits related to non-technical skills important for nursing and midwifery practice, such as resilience, confidence, and empathy. Transformative learning is described by founding theorist Mezirow as "a disorienting dilemma that begins the process of transformation".[7(p168)] It can result from experiences that challenge the individual to understand different cultures that contradict and challenge current ways of thinking, requiring new ways to approach or resolve situations.[7–10] Transformative learning is important in nursing and midwifery education as it encourages students to examine commonly held beliefs of health care professionals, including organisational policies and procedures, learning how to challenge traditions and conventions and advocating for diverse and marginalised communities.[10] Critical reflection is a core element of transformative learning and involves critical review of one's beliefs and perceptions, where learners must experience change in ways of thinking.[9,11] 'Disorientating dilemmas', as described by Mezirow,[7] may arise from international cultural experiences, such as study abroad, service-learning programs or exchange programs within nursing and midwifery undergraduate curricula,[12] where participants may experience different health care systems,[13] have clinical experience in low-resourced countries,[14] experience language barriers and have exposure to different cultures and environments.[15-17] These experiences may begin the process of transformative learning.[18] Students who participate in international education programs should be supported with critical reflection and given opportunities to gain new perspectives and arouse their social consciousness.[19–21] Walters et al believe participation in international educational programs would better prepare students to deliver health care more effectively to diverse patient populations, with the likelihood that they become leaders in patient advocacy and healthcare when they are nurses.[9] Past studies on international education programs for nursing and midwifery have mostly focused on students' viewpoints, and many of them only examined short-term effects.[22–25] Few studies have explored and reported on long-term outcomes,[3] highlighting the gap in the literature. The current study addressed this gap in the literature and aimed to determine the impact of an international educational program during a nurse's or midwife's pre-registration program on their subsequent nursing and/or midwifery practice. By exploring how these programs impact on the subsequent nursing and midwifery practice of participants, this current study provides insight into lasting effects of such programs on personal development.

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METHODS

This paper reports nurses' and midwives' personal transformation through participation in international educational programs. It forms part of a larger study aiming to explore how undertaking international mobility in a nurse or midwife's pre-registration program impacts on their subsequent practice. Grounded theory methodology with a constructivist approach was employed to explore processes and influences of undertaking such programs during nurses' and midwives' pre-registration education on their later professional practice. Informed by Charmaz and underpinned by symbolic interactionism, the design enabled the researcher and participants to work together to construct meanings.[26,27]

DATA COLLECTION

Following ethics approval (HEC 20053) from La Trobe University Human Research Ethics Committee, data were collected through semi-structured interviews. Purposive sampling was used to recruit participants through advertisement on LinkedIn and Facebook nursing and midwifery groups, followed by snowball sampling.[28] Potential participants expressed interest by directly contacting the researcher. The absence of coercion was evident in the voluntary nature of participants' engagement with the study and no participant was known to the researcher prior to the interview. Eligibility criteria required participants to be nurses and/or midwives who had participated in an international educational program during their pre-registration degree and who had completed at least one year of practice. Participants were recruited from eight countries: Australia, England, Scotland, Sweden, Canada, America, Indonesia and Japan. The research team developed an interview guide specifically for this study, which comprised of open-ended questions aiming to explore participants' experiences of participating in international educational programs and how these affected their current nursing/midwifery practice. To ensure that participants whose first language might not be English could understand the questions easily, the interview guide was written in plain and simple English. After providing written informed consent, a total of 22 participants were interviewed virtually via Zoom Video Communications Inc (Zoom) technology for an average of 54 minutes each. Participants included 13 general nurses, two mental health nurses, three midwives and four dual qualified nurse/midwives. Interviews took place between September 2020 and July 2022 during the COVID-19 pandemic, and the primary researcher conducted them from their home office as at that time, work and study from home was mandatory in Victoria, Australia. With participants' permission, interviews were recorded, later transcribed verbatim and to support trustworthiness and credibility of the data, were sent back to participants for member checking. All transcripts were verified by participants as accurate accounts of their interviews. To ensure data security, Zoom interview recordings and interview transcripts were securely stored on the university's OneDrive accessible solely through the researcher's login. Additionally, hard copies of memos and journal were stored in a locked filing cabinet at the researcher's office at La Trobe University.

ANALYSIS

Data were manually analysed following Charmaz's grounded theory approach of open, focused and theoretical coding,[26] occurring alongside data collection until categories were saturated. Each transcript was read multiple times to generate initial open codes and then further explored to develop focused codes. These were compared with new emerging data to develop initial categories and refined as interviews continued and new data arose. From this process of coding, sub-categories emerged which were then raised to a higher level of theoretical categories.[26,27] In keeping with grounded theory methodology, memoing occurred throughout data collection and together with keeping a reflective diary, assisted the researcher in making sense of the data. Keeping memos and a reflective journal is a key component of grounded theory methodology and is helpful for the researcher to process their thoughts and understandings during both data collection and analysis, especially as this occurs simultaneously in grounded theory.[26,27] This process of analysis resulted in three categories being constructed, which describe outcomes across professional, cultural, and personal domains; *Informing and developing professional practice*, *Recognising and adapting to cultural differences* and *Developing as a person*. To ensure depth of reporting, the three categories are discussed separately. With all participants' voices represented, this paper focuses on the category, *Developing as a person*.

FINDINGS

Twenty-two individuals from eight countries of origin and 17 different destination countries participated. The duration between the participants' international educational programs and interviews varied from two to 26 years, with an average of nine years. The programs in which they participated also varied, with eight being practical programs, eight were clinical placement programs, five were observational programs, and another five were theoretical programs. The category, *Developing as a person*, describes the process of learning and participants' development related to their personal learning and growth as a result of participation in programs. This category is further conceptualised through two sub-categories: *Connecting and forming relations* and *Developing and growing personally*.

CONNECTING AND FORMING RELATIONS

The sub-category, *Connecting and forming relations,* refers to verbal and non-verbal communication skills attained as well as social aspects of the programs, as participants developed friendships with peers and improved their social skills overall in the long-term. Communicating with others was an integral part of each program. Being able to communicate with peers, academic leaders, patients, nurses and midwives from host communities and others from multidisciplinary healthcare teams was described as important and led to improved confidence and strengthening of relationships in the long-term. During her Bachelor of Nursing program, a Canadian nurse participated in a student exchange program to Sweden. She reflected on how the experience had a lasting influence on her ability to communicate effectively with colleagues from diverse linguistic backgrounds. Despite encountering a language barrier during her international exchange, the participant described feeling more confident in conversing with non-English speaking colleagues.

> *I began to feel more comfortable communicating with multidisciplinary team, especially being in a multicultural environment with a language barrier.* (Participant 5)

Similarly, an Australian nurse who participated in a student exchange program to Sweden during the second year of the Bachelor of Nursing program noted an increase in communication skills that ultimately facilitated her transition to professional practice. Through the exchange program she gained confidence in communicating with others, which had a positive impact in the long-term.

> *I felt more confident in my graduate year to approach other health care professionals to discuss a patient or chat informally.* (Participant 2)

An Australian nurse whose participation in a short-term program to Northern Thailand during her undergraduate degree described it having a long-lasting impact on her nursing practice. Specifically, the experience helped her develop important communication skills that had been valuable in her nursing practice, especially when communicating with patients from diverse linguistic backgrounds. The participant highlighted the importance of thinking about how to phrase questions before speaking, as well as the use of rephrasing and clarification to ensure that patients could understand her. This demonstrates that the skills learned during the program continued to be useful, even after more than 20 years had passed.

> *You had to really think about how we're going to say things and the questions that we asked, you really had to rephrase or try these things appropriately. . .seeking clarification that they're understanding what's going on. I'm probably more mindful about my communication and making sure that they understand what's going on. . .It really does challenge you in so many ways when you're over there with communication and your delivery and your touch.* (Participant 8)

In the case of an English mental health nurse who undertook a two-week observational placement in Belgium, the program had a lasting impact on her communication skills with patients who did not speak the same language. This experience informed her practice and helped her to better understand the importance of effective communication in mental health nursing. She reported that she became more attentive to patients' non-verbal cues, which improved her ability to establish rapport with patients and provide quality care.

> *Quite regularly we have patients who cannot speak English and, you know, it's sort of knowing that you can still, in a way, get through to them on a certain level. . .having that experience has helped. Paying attention to patients' non-verbal cues is important, especially when caring for those with mental health illnesses.* (Participant 14)

Despite participants' difficulties when trying to communicate when others did not speak the same language, non-verbal communication skills were strengthened. A nurse who travelled from Canada to Sweden on semester exchange during final year of an undergraduate nursing degree found that in the long term, non-verbal communication was improved and important for showing compassion to patients under her care.

> *. . .being a foreigner was the most eye-opening and it made me realise how to communicate to other people effectively. If you don't speak the same language, then nonverbal communication I think got a lot stronger. . .a lot of nonverbal cues, like holding their hand, things like that that are universal. . .can really go a long way with someone who does not speak your language.* (Participant 5)

During the second year of the Bachelor of Nursing program, another Australian nurse participated in a student exchange program to Sweden where she gained her first exposure to non-verbal communication with patients under her care. The nurse reflected on the significance of such skills in her professional nursing practice with the importance of being able to communicate effectively with patients through various means.

> *It was the first time as a student nurse that I was able to just interact with people in a non-verbal way. So just using physical touch, holding someone's hand, like putting your hand on their back, you sort of had to do that. And just your facial expressions and that sort of interaction because with some of them, there was no other way to interact.* (Participant 2)

Other non-technical skills were developed during participants' international educational programs which contributed to personal development. An Australian midwife who participated in a two-week community engagement program to Uganda believed the program contributed to her personal and professional development in the long-term.

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> *As far as my own professional behaviour, the experience gave flexibility, fluidity and really just not being judgemental.* (Participant 3)

Forming connections and friendships was discussed by many participants, with some maintaining those friendships for decades after their programs concluded.

> *I formed connections for life with other midwifery students.* (Participant 3)

> *There's lots of friends that I still have from my exchange program…around the world, which is amazing.* (Participant 5)

> *I still have friends in Canada that I met, and 30 years later, we are still good friends.* (Participant 12)

Some participants reflected on socialisation aspects of participating in international programs and felt this also contributed to their personal growth. A nurse who travelled from Canada to Sweden on four-month nursing exchange program detailed living arrangements and how these informed how to maintain positive relations into the future.

> *Even outside the hospital, learning to live with people from all over the world and learning to travel with them and live very, very, very closely in a scuzzy little dorm [dormitory]… you realise the importance of building yourself a positive environment and then maintaining it.* (Participant 7)

The social aspect of exchange was a highlight for some. An Australian nurse who participated in an exchange program to Canada highlighted differences in university life between the two countries and how, as an introverted person, this assisted widening her social circle.

> *I certainly would not have got that at home (social aspect of exchange), not in the slightest, because people at home just go to uni, you only mix with a few people.* (Participant 12)

DEVELOPING AND GROWING PERSONALLY

Most participants spoke of personal journeys of growth and development occurring during and continuing after participation in international educational programs. Most felt their confidence had increased, were more resilient and independent. For some, the long-term impact was transformational as they felt changed as people and programs presented once in a lifetime experiences. This sub-category was contextualised as *Developing and growing personally*.

A Canadian nurse's experience of growing confidence during her semester exchange in Sweden had a long-term impact on her personally, and subsequently her nursing practice. She described feeling more prepared to start her nursing career as she had already overcome barriers and obstacles during her international experience. Additionally, the participant's ability to step out of her comfort zone and having new experiences during the program may have contributed to her willingness to later take on new challenges and opportunities.

> *I felt more ready to leap into my career because I felt like I'd already overcome any barriers and obstacles in that one semester as opposed to staying at home and being in a comfort zone… I felt much more confident in my abilities.* (Participant 5)

An international exchange program, as described by an Australian nurse who went to Sweden for a semester, helped her develop a greater sense of self-esteem, adaptability, and confidence as she navigated new environments and was challenged to step out of her comfort zone. The gains in confidence, self-esteem, and resilience that she experienced during her exchange program had lasting impacts on her personal and professional life.

> *It is the personal growth that you will go on, and which I got on exchange, because you have a great time, but there's also so many challenges, both personal challenges, and operational challenges of the exchange. It was a little bit stressful at times as well, but those personal skills that I gained, things like confidence, self-esteem and resilience…the exchange was a good grounding for subsequent clinical situations, I felt more confident, so when new situations arise it's not the first time something has been different or unusual.* (Participant 2)

Before participating in a four-month nursing exchange program to Sweden, a Canadian nurse described herself as timid. However, the experience helped her gain confidence socially, which she found beneficial in the long-term.

> *I was a very timid nursing student, and it was a really good experience to help bring me out of my shell a little bit, which definitely helped that. That alone was probably the biggest thing I gained from the whole experience, including the clinical placement was just like coming out of your shell a little bit and feeling more comfortable.* (Participant 7)

Building confidence was also significant and lifechanging for a midwife from England who participated in a program to America during her degree. Following graduation, it influenced her decision to live and work internationally.

> *It had probably given me a bit more confidence to go 'yeah, I could move to another country', so then I got a job and moved halfway around the world.* (Participant 13)

Similarly, a nurse from the United Kingdom who participated in a four-week program to South Africa found her confidence increased because of the program.

> *It gave me confidence in myself, confidence in me as a person.* (Participant 19)

After participating in an exchange program to Sweden during the second year of her Bachelor of Nursing degree, a nurse from Australia reported that the experience helped her strengthen her resilience and tolerance. This development of personal qualities had positive long-term impacts, enhancing her ability to adapt to challenging situations and work collaboratively with individuals from diverse backgrounds.

> *Nursing is incredibly hard and (you) have to be so resilient. You need tolerance, resilience; that was strengthened through time overseas. I do feel very resilient at work that I can, no matter what I'm feeling, maybe on the inside, I can push past that, and I can just be professional at work, whereas I see a lot of other nurses, especially younger junior nurses have trouble with that. I think that personal growth on exchange definitely contributed to that.* (Participant 2)

For some participants in exchange programs, the need to live away from home for the duration of the program was an opportunity for them to become more independent and increase their confidence. Without their usual support networks, they had to rely on their own abilities, which in turn led to feelings of empowerment and self-assurance that persisted long after the programs ended. This newfound sense of independence and confidence not only benefitted participants in their personal lives but also in their professional careers, as they were better equipped to take on new challenges and navigate unfamiliar situations with courage and determination.

> *It has given me more courage, it is very empowering to go abroad because it's very scary and very far from home and after doing it, you feel proud of yourself. I would say it's something I would always carry with me; it made me more confident.* (Participant 18)

> *It's a point of difference, you get to stand on your own two feet.* (Participant 12)

Participating in international educational programs had a profound and transformative impact on many participants, with several describing their experiences as life changing. For some, the program was a catalyst for personal growth, leading them to feel changed as people in the long term. This transformation affected their personal beliefs, values, and worldview. By broadening their horizons and exposing them to new cultures and perspectives, the program equipped participants with deeper understandings and appreciation of diversity, ultimately fostering their personal development in ways that persisted long after the program ended.

> *It did change me…I don't think I'd be the nurse I am today if I didn't get to experience these things…and it changed my life. It really did. It just it was such a profound type of experience and so many things that you got to experience, and you come back, and you just say, 'wow.'* (Participant 8)

> *I think possibly the experience could shape the rest of your life and your career…you end up becoming a different person. I felt like I definitely changed as a result of that…I'd do it again in a heartbeat…I had this life experience which is probably the most exciting thing I've ever done. That is something that will stay with me. I think it makes me more interesting, because I feel like I've experienced something more than just an ordinary day to day life. It makes me happy thinking about it…that was the first experience of being away from home.* (Participant 19)

Most participants demonstrated personal growth through their participation in programs, with some expressing the long-term outcome of gaining independence by moving out of their homes and living independently.

> *When I started studying, I was living at home, living with mom and dad and then I went to being fully fledged independent abroad, taking care of myself. So, I had a lot of personal growth.* (Participant 5)

> *Before I went on exchange, I lived at home, so this was way out there for me and absolutely made me want to continue to be more independent. I came home in the December, graduated six months later in June and by September, I had bought my own house and was out on my own. So, I had catapulted…that kind of trajectory.* (Participant 7)

Gaining awareness and empathy were positive outcomes reported by an Australian nurse who participated in a short-term program to Northern Thailand during her undergraduate degree. These outcomes of increased awareness and empathy contributed to personal transformation in the long-term.

> *It is as if you come back and you, I don't know what it is, you're grateful for the experience and you're thankful, but you're so grateful to be home. And I know I can never forget. You never forget. I've talked to other nurses that have done their own volunteer experience and it's changed them, and you see it with them as well and they just have this. It's a different awareness and empathy.* (Participant 8)

Similarly, a nurse, who travelled from Australia to Vanuatu on a short-term program during undergraduate nursing studies, found they gained perspective in an emotional sense.

> *I have a better perspective on not just nursing but how to care for patients – not in a skill sense, but in an emotional and well-being sense.* (Participant 4)

Some participants reported that participating in international educational programs contributed to their personal growth and development, leading to becoming well-rounded individuals and building maturity that continued to positively impact their lives in the long term.

> *I came back as a more sort of, well rounded person.* (Participant 2)

> *That practise at adulting outside of your normal environment was probably really helpful. Sort of helps you rack up that sort of maturity.* (Participant 13)

DISCUSSION

This study sought to explain how nurses and midwives were transformed through participation in international educational programs. The category, *Developing as a Person*, which was further conceptualised through two sub-categories, *Connecting and forming relations* and Developing and growing personally, described the process of transformative learning and participants' development in relation to personal life skills.

The sub-category *Connecting and forming relations* described participants' experiences of improved communication, both verbal and non-verbal, in multicultural settings. In addition, participants made connections and friendships with others that were often long-lasting. Previous studies have only reported short-term outcomes of a similar nature. Phillips et al.[29] interviewed nursing students before and after a two-week program to Ghana and described positive relationships and connections students developed with host communities, which were unanticipated program outcomes. Relationships and teamwork were also reported outcomes by Baldacchino who analysed students' reflective journals and conducted focus group interviews one week after students returned from programs in Lourdes.[30] Teamwork was described by Baldacchino specifically as team building and sense of belonging as students felt welcome by a large group of volunteers.[30] Additionally, Gilliland et al described short-term outcomes for nursing students, pharmacy students, and two students from other health care majors who participated in an elective to either China or India as attainment of personal life skills, including increased maturation and being able to build relationships and collaborate with others.[31] These studies reported outcomes immediately after participating in study abroad programs, however the current study indicates there are also long-term outcomes from experiences and demonstrates outcomes were maintained and continued to develop over time.

The sub-category, *Developing and growing personally*, described participants' attainment of various life skills, including increased confidence and resilience, but also deeper processes of change or transformation for some. These findings resonate with a recent review reporting outcomes of nursing and midwifery students participating in international educational programs during pre-registration education that found a majority of included studies reported outcomes relating to students' personal growth.[3] All 56 studies described outcomes for students on a personal level after participating in mobility programs, described in varying ways and often as processes of change. Personal transformation was described by Carter et al as an outcome, with some students revealing that "I'll never be the same" feeling they had been forever changed by their experiences, seeing the world through new eyes and gaining new life skills.[22(p 186)] Baernholdt et al and Morgan similarly found outcomes for students included change and transformation,[32,33] with participants in Baernholdt's study describing life-altering experiences being able to receive part of their education in other countries.[32] Most studies in Johnston et al.'s review, explored short-term outcomes with data collected within six months post-program,[3] and only one study surveying participants up to ten years post-experience,[34] demonstrating a scarcity of studies exploring long-term outcomes. Anand et al evaluated study abroad programs across several disciplines, finding that several factors impacted transformative learning for students including extent of cultural differences, length of travel, level of engagement in visited countries, and opportunities for unstructured learning.[18] Specific to health and medical students, Anand et al found challenging students' worldviews and providing opportunities for informal discussion positively impacted transformative learning, in addition to the development of empathy in healthcare professionals as a result of using transformation learning theory.[18]

As part of a larger grounded theory study, this paper reported on one of three categories that emerged from the data. Other categories included *Informing and developing professional practice*, describing the process of learning and participants' development in relation to their professional nursing and/or midwifery practice. Category two, *Recognising and adapting to cultural differences*, described the process and participants' applications of their cultural learning in professional nursing and/or midwifery practice. Together the three categories relate to each other and will be further conceptualised to develop a theory grounded in the data that can explain the process nurses and midwives undergo, resulting from participation in international educational programs during their pre-registration education.

The experience of studying and working in a foreign country can be a transformative and eye-opening experience that challenges individuals to step out of their comfort zones, adapt to new environments and cultures, and develop new skills and perspectives. The present study highlights the lasting impact of international educational programs, resulting in significant personal growth and development for nurses and midwives. The findings reveal how the benefits of these programs endure over time, continuing to shape and enhance one's personal life skills many years after completion. Some participants in this study reported ongoing benefits for themselves and their professional practice, even two decades or more post-program. This highlights the critical role that international education programs can play in undergraduate nursing and midwifery education, not only in the short term but also in the long term, by promoting ongoing personal self-improvement and growth. The findings may be useful for educators and healthcare employers in designing and implementing effective international educational programs, as well as for individuals considering participating in these programs. Ultimately, understanding the long-term outcomes of

international educational programs can contribute to the overall improvement of nursing and midwifery practice on a global scale and potentially, across other disciplines.[35] This study sheds light on ways in which international educational programs can contribute to personal development of nurses and midwives, ultimately helping to prepare them for the challenges of a global and multicultural healthcare environment. It is likely that these findings could be applied across other healthcare professions and beyond, particularly in fields such as education and emergency services, where non-technical skills such as communication, empathy, resilience and self-awareness are essential.

LIMITATIONS

Grounded theory methodology was employed and therefore findings cannot be generalised. However, given participants came from eight countries and undertook programs in 17 destinations, providing diverse perspectives, it is likely that experiences resonate with other nurses and midwives, and potentially, beyond these professions. Due to language barriers, only nurses and midwives who could speak and understand English were interviewed, so views from non-English speaking nurses and midwives may be different. Additionally, it is possible that participants may have selectively reported on positive aspects of their experience, potentially bias the findings.

CONCLUSION

As part of a larger study exploring impacts of an international educational program during a nurse's or midwife's pre-registration program on subsequent practice, this paper has described how nurses and midwives were transformed on a personal level through participation. Key findings revealed long-lasting benefits on a personal level, which in turn, contributed positively to professional practice. International educational programs were found to assist in improving communication skills, forming and maintaining connections, promoted growth and development and provided transformative learning.

Implications of this study support the ongoing need for institutions to provide nursing and midwifery students with opportunities to participate in such programs during pre-registration education. It is important to ensure that transformative learning is possible through well designed programs that include critical reflection. Personal growth and development gained are beneficial to nurses and midwives who undertake the programs, but also to patients they subsequently care for by promoting culturally safe, quality care. It is recommended that healthcare employers acknowledge the significant and long-lasting positive impact of these international educational programs on the personal and professional growth of nurse and midwife employees. Such recognition is essential for effective workforce planning as these individuals are likely to possess valuable non-technical skills and be reflective practitioners, making them highly sought after in the industry.

Future research is warranted to gain insights from non-English speaking nurses and midwives, as well as those from diverse global regions, who engage in international educational programs during their pre-registration studies. In addition, it is recommended to conduct follow-up studies with employers to assess the implementation of learnings from these programs among staff and explore strategies for optimising their application in clinical practice settings.

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REVIEWS AND DISCUSSION PAPERS

Barriers and facilitators to the professional integration of internationally qualified nurses in Australia: a mixed methods systematic review

AUTHORS

MARCELA CORREA-BETANCOUR[1] RN, M.Ed.
KANCHAN MARCUS[2] PhD BHlthSci (Hons 1)
MADHAN BALASUBRAMANIAN[2,3] BDS., MHSM (Hons), PhD., AFCHSM., FICD
STEPHANIE D. SHORT[4] Dip Phty BA MSc PhD

CORRESPONDING AUTHOR

MARCELA CORREA-BETANCOUR
The University of Sydney
Email: marcela.correabetancour@sydney.edu.au

1 Faculty of Medicine and Health, The University of Sydney, Sydney, New South Wales, Australia. Faculty of Medicine, Nursing Department, University of Chile, Santiago, Chile
2 Faculty of Medicine and Health, Menzies Centre for Health Policy and Economics, School of Public Health, The University of Sydney, Sydney, New South Wales, Australia
3 Health Care Management, College of Business, Government and Law, Flinders University, Adelaide, South Australia, Australia
4 Faculty of Medicine and Health, The University of Sydney, Sydney, New South Wales, Australia

ABSTRACT

Objective: This review aimed to better understand barriers to and facilitators of the professional integration of internationally qualified nurses (IQNs) in Australia.

Background: Nursing shortages are a critical global issue, including developed countries such as Australia, where about 20% of the nursing workforce has been trained overseas. IQNs face many challenges associated with the migration process itself; and their professional integration is crucial in retaining them in the workforce and in maintaining the quality of nursing care in Australia.

Study design and methods: This review followed the JBI methodology for mixed methods systematic review. Web of Sciences, Scopus, Informit, ProQuest, Ovid, and Cinahl databases were searched from inception. Qualitative, quantitative, and mixed methods original studies, published in English, were considered. Screening, data extraction and quality assessment were conducted independently by two reviewers. The assessment of methodological quality used the JBI Qualitative Checklist and Checklist for Analytical Cross-Sectional studies, and the data were extracted using the JBI data extraction tool. Disagreements were resolved by a third researcher and the synthesis used a convergent integrated approach.

Results: From an initial 110 studies, eight studies were included. Individual and social factors emerged as the main themes. The first theme was analysed in terms of two sub-themes: psychological adaptation plus communication and language. Social factors were analysed in terms of three sub-themes:
a) cultural differences in the nursing role;
b) support, mentoring and appreciation and
c) discrimination and racism.

Discussion: psychological adaptation and language proficiency are linked to personal factors. Cultural differences in the nursing role should be addressed with strong support and mentoring programs.

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Recognition of previous experience and appreciation of pre-existing skills are important facilitators. Discriminatory and racist behaviours continue in the work setting, yet are rarely reported.

Conclusion: Discrimination and racism from colleagues, co-workers, and patients should be addressed with a more direct approach than is currently in place. Training of locally and internationally qualified nurses in intraprofessional cultural competence may improve interaction and communication, reduce racism and discriminatory practices, and increase quality of care.

Implications for research, policy, and practice:

This research may be of interest to policy makers, healthcare educators, healthcare workforce planners and healthcare institutions. This study contributes to our understanding of the phenomena of nurse migration, retention, and professional integration, especially in high income countries. It is also a call to address the persistence of discriminatory and racist practices in the Australian context, as well as the education in intraprofessional cultural competence of some local nurses who work with IQNs.

What is already known about the topic?

- High-income countries like Australia rely on the attraction and retention of IQNs to meet their health outcomes.
- Personal characteristics, language proficiency, support and mentoring programs are strong facilitators for IQNs' professional integration.
- The persistence of discriminatory and racist practices are barriers to integration of IQNs in Australia.

What this paper adds:

- In Australia discrimination and racism continue to be dominant barriers to IQNs' professional integration.
- It is crucial to improve the reporting of situations involving discrimination and racism and discuss further consequences for patients, visitors, and co-workers.
- It is essential to promote training programs in intraprofessional cultural competence, and to focus on working with IQNs, as well as caring for patients from culturally and linguistically diverse (CALD) backgrounds.

Keywords: Australia, experience, foreign educated nurses, internationally qualified nurses, intra-professional cultural competence, professional integration, systematic review.

INTRODUCTION

The migration of nurses has been studied globally, particularly in the last 20 years.[1-3] The phenomenon has attracted significant attention, due to its consequences for both source and destination countries, in terms of health care coverage and ethical concerns regarding brain drain, brain gain and brain circulation.[3-5] The shortage of nurses has been a growing concern among experts, governments, and stakeholders in recent years and has become a common challenge for low, medium, and high-income countries worldwide.[6]

This situation was magnified during the COVID-19 pandemic, due to the prolonged exposure of nurses to stressful and difficult working conditions. Emergency and work conditions increased sick leave, burnout, and turnover globally.[6] A relevant report from the Nursing and Midwifery Council UK showed that, between the years 2019 and 2022, a growing proportion of nurses left their employment and changed their careers; for instance, over 25,000 nurses left the permanent register in 2022.[7]

The shortage of nurses is a challenge in developed countries more generally, where factors such as the ageing of the population, the increase in life expectancy, improvements in quality and safety standards, and the growth in the number of nursing hours required per patient have increased the demand for registered nurses. The International Council of Nurses (ICN) (2022) has made an urgent call for countries to plan and monitor their nursing workforce, in order to meet health care quality standards, especially in developed countries. Most of these nations rely on the attraction and retention of IQNs to meet the requirements of their health care systems.[8,9] As an example, nearly 40,000 registered nurse vacancies were reported in September 2021 in England and the need for 69,000 more nurses was projected by 2024-2025; 150,000 new nurses will be needed in Germany by 2025 and 65,000 nurses required in Switzerland by 2030.[6] Some of these high-income countries are known to adopt strongly competitive approaches to deal with nurse shortages and are making efforts to attract and retain IQNs. This situation will only intensify the demand for IQNs in countries such as Australia.

BACKGROUND

Australia, along with other high-income countries, such as Israel, Switzerland, Luxemburg, Ireland, Canada, the USA, and the UK, is heavily dependent on the employment of IQNs.[10,11] According to the Australian Government Department of Health (2022), the migration of IQNs has gradually increased over the last 20 years. IQNs now represent about 20% of the nursing workforce in Australia.[12, 13] Moreover, in sectors such as

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aged care, this percentage has reached 35% of the workforce.[14] In addition, a shortfall of nurses is projected by 2025 and it has been estimated that the nursing workforce must increase by 27% after that year.[15] Furthermore, it is expected that 20% of the Australian population will be over 65 years of age by 2031. This situation is magnified by the fact of Australia's high life expectancy: 85 years of age for women and 81 for men.[16] This is projected to increase the number of nursing hours required per patient. In 2022, the Australian Government announced that nurses would be employed twenty-four hours a day in each aged care home from July 2023, following the recommendation of the Aged Care Royal Commission.[17] All these factors indicate that the Australian health system would require the recruitment and retention of IQNs to be able to have sufficient numbers to ensure a high quality of nursing care, patient safety and responsive, humane care.

Social integration involves a wide range of challenges, which are experienced differently, depending on personal and external factors and may affect individuals independently of their educational or socioeconomic background. Social integration is said to have advantages for the improvement of mental and emotional health, interpersonal skills, and cross-cultural communication.[18] This is particularly important in the context of migration, since migration, which has been considered to be a social determinant of health in its own right, may constitute a risk to physical or psychological health.[19]

Professional integration into the workplace introduces a new range of challenges that can facilitate or interfere with the adaptation and retention of nurses in the selected workplace. Professional integration is a complex and multifactorial phenomenon, understood differently within different countries and institutions. In Canada, sociologists Neiterman and Bourgeault (2015) have defined 'professional integration' not only as the socialisation among professionals, but also as the active process of learning and understanding a work culture. This is a process that requires both adaptation to a new workplace setting and learning new skills, new responsibilities, and a new role.[20]

Despite the professional experiences of IQNs before migrating, there may be substantial differences in the scope of practice, the division and organisation of work and the nursing roles in a new country. In other words, professional integration is a process that comprises the acquisition of universal aspects of a new work environment, in this case, the Australian healthcare culture, and specific aspects of professional nursing practice linked to the professional ethos and professional identity of Australian nursing. Some of the issues most commonly listed by IQNs in developed countries relate to language and communication barriers,[21-23] social isolation,[21,23,24] discrimination and racism,[23,25] lack of recognition of nursing qualifications, lack of support and mentoring,[21, 23] underestimation of their skills by supervisors and colleagues,[23] and differences in nursing roles and professional responsibilities, compared to their country of origin.[22-24]

Some IQNs successfully overcome these difficulties, but a considerable proportion might leave Australia to find another destination country, return to their country of origin, choose a less qualified occupation, or work in a different field.[26] This situation of 'skills wastage' may be addressed by understanding these issues and generating policies, plans and processes to increase IQNs' retention and hence improve quality of care through improved staffing.

Three pertinent studies have illuminated the experiences of IQNs in Australia by systematising findings; the first in 2006,[26] and two in 2018.[28,29] These studies encompassed the years 1985 to 2003, 2007 to 2016 and up to and including 2016. These valuable studies emphasised the importance of orientation programs centred on individual needs, the necessity for an organisational approach and budgets that support nurse leaders and Australian nurses to integrate IQNs, to recognise their previous experiences and value differences, and to address the differences in expectations, especially regarding scope of practice. Finally, all three studies recognised the existence of normalised racial prejudice and exclusion from supervisors, co-workers, patients and visitors and identified how informal interactions with local nurses were difficult to establish in the workplace. These studies agreed on the importance of researching and understanding the phenomenon, in order to improve the social and professional integration processes for IQNs. The significance of this current review relies on three important points; the first is that this systematic review will focus on the studies published between 2016 to 2022. This timeframe means that none of the selected studies for this review were analysed in the three preceding reviews. Secondly, as stated earlier, the COVID-19 pandemic ignited a crisis in the nursing sector within the global context, increasing the demand for nurses, while many nurses in clinical roles have resigned. Thirdly, the Australian healthcare system currently needs to fill a wide range of nursing vacancies, for instance in the aged care sector. Thus, this review seeks to understand barriers and facilitators to the professional integration of IQNs in Australia in this particular context to contribute to understanding and addressing these phenomena.

This current review has been conducted following the COVID-19 pandemic, amidst pressing workforce shortages. The review seeks to expose and understand contemporary challenges for IQNs entering the workforce, with the aim of enabling more effective approaches to professional integration, in the interests of providing sustainable, high-quality, nursing care in Australia.

AIM

The aim of this systematic review was to synthesise evidence of the barriers to and facilitators for the professional integration of IQNs in Australia between 2016 to 2022.

REVIEW QUESTIONS

The main question for this systematic review was: what are the current barriers and facilitators to the professional integration of IQNs in Australia?

INCLUSION CRITERIA

This systematic review considered studies between 2016 to 2022 that explored barriers and facilitators to the professional integration of IQNs working in Australia. The population for this study was IQNs working in Australia. The studies were not limited to the country of origin or language spoken by the nurses, the number of years living in Australia or their area of expertise. The phenomena of interest related to their professional integration. The context was not limited to any specific location in Australia, nor any clinical setting. The types of studies that this systematic review considered were original research published in the English language. There was no restriction of methodology imposed and the search included quantitative, qualitative, and mixed methods studies. Studies exploring experiences of both nurses and midwifes were excluded, as well as those studies analysing locally and internationally qualified nurses together.

METHODS

The review design followed the Joanna Briggs Institute (JBI) Mixed Methods Systematic Review process.[30] The PRISMA reporting guidelines were used to prepare this manuscript (Appendix 1).[31] The study protocol is available online,[32] and the data were synthetised using a convergent integrated approach. In the convergent integrated approach, the data from quantitative and qualitative research can be analysed and combined simultaneously to allow data transformation.[30,33] Synthesis of study results will be presented in narrative form.

SEARCH STRATEGY

A search was conducted between March and July 2022 in six electronic databases: Web of Science, Scopus, Informit, ProQuest, Ovid and CINAHL. As the most recent reviews relevant to this study covered the timespan up to 2016,[27-29] this review covered the timespan from 2016 to 30th June 2022. We limited the language requirements to studies published in English. We used Boolean operators to identify keywords and truncation symbols (*) to identify variations in root words. Some of the keywords used for the search were "*international** trained *nurs**", 'internationally qualified nurs *', "overseas trained *nurs **", "*foreign educated nurs**", "*migran** *nur**", *integration**, *adaptation**, *adjustment**, *transition**, *experienc**, "*job satisfaction**", "*career aspiration**", *retention**, *discrimination**. The search strategy is available in Appendix 2. The reference lists of selected articles were also screened for additional publications that met the inclusion criteria.

INFORMATION SOURCES

The databases that were searched included: Web of Science, Scopus, Informit, ProQuest, Ovid and CINAHL.

STUDY SELECTION

After finishing the search, the results were gathered, organised, and uploaded into COVIDENCE and Mendeley Reference Manager. Duplicates were removed and two researchers independently screened their abstracts and titles against the inclusion criteria for the review. The full texts of those studies that met the inclusion criteria were retrieved and assessed in detail against the inclusion criteria by two independent reviewers.

There was no disagreement amongst reviewers. However, a third reviewer was available in case of disagreement. Appendix 3 shows the search outcome table. The list of articles not selected and the reasons for their exclusion are available in appendix 4.

ASSESSMENT OF METHODOLOGICAL QUALITY

The Jonna Briggs Institute (JBI) Qualitative Checklist and Checklist for Analytical Cross-Sectional studies were used for critical appraisal of the studies that met the inclusion criteria (Appendix 5).[31] For the appraisal of the papers the options yes, no, or unclear were used. The option "Yes" indicated that the article contains a clear statement that directly responds to the question. The option "No", showed that the paper gave a negative response to the query and the option "unclear" showed that there was either confusing information offered in the research or no clear statement in the paper that answered the issue. Each study received a score between 0 and 1 indicating the proportion of "yes" scores overall in the JBI critical appraisal checklist (see details in Table 1 listed by date of publication).

TABLE 1. QUALITY APPRAISAL SCORES BY REVIEWERS LISTED BY DATE OF PUBLICATION

Studies (Author, Year)	Quality appraisal score	
	Reviewer 1	Reviewer 2
Crawford et al, 2016	0.6	0.6
Vafeas and Joyce, 2018	0.9	0.9
Mapedzahama et al, 2018	1	1
Philip, Woodward-Kron, Manias, et al., 2019	0.9	0.9
Philip, Woodward-Kron, & Manias, 2019	1	0.9
Dywili, O'Brien and Anderson, 2021	1	1
Zanjani et al, 2021 *	0.87	0.88
Joseph et al, 2022	1	0.8

* JBI critical appraisal checklist for analytical cross-sectional studies.

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DATA EXTRACTION

Qualitative and quantitative data were extracted from included studies by the first author using the JBI data extraction tool (Appendix 6).

The data were extracted using Excel under the following headings: author; title; barriers; facilitators; methods and design; sample setting; context, results (barriers and facilitators) and conclusions. Then results were organised around barriers and facilitators using a convergent approach and then main themes were identified.[34] None of the authors were contacted for missing information or additional data.

DATA TRANSFORMATION

Data from quantitative studies were transformed into narrative interpretation to facilitate the integration with data extracted from qualitative studies, using a convergent integrated synthesis approach and to answer the review question.[30]

DATA SYNTHESIS AND INTEGRATION

A convergent integrated approach was applied, according to the JBI methodology for mixed methods systematic review.[30] Convergent synthesis combines results from different sources of evidence, such as quantitative and qualitative, and compares and combines them to create a comprehensive summary of the evidence and to provide a more complete understanding of a research question.[30,35] Data were then categorised and grouped based on similarities to generate and integrate them in a narrative format.[30,35,36].

RESULTS

STUDY INCLUSION

The review search resulted in n=175 studies. Sixty duplicates were removed, and 115 abstract and title studies were screened by MC and KM. Nine studies were screened for full-text assessment, which resulted in seven studies being selected, based on inclusion criteria. One additional study was retrieved from the bibliography of the selected studies. In total n=8 studies were included for this systematic review. The quality appraisal applied shows a high quality of the included studies and a solid level of coincidence between the researchers. Figure 1 illustrates the search process of this systematic review.

METHODOLOGICAL QUALITY

The selected studies were analysed by two independent reviewers using The JBI Qualitative Checklist and Checklist for Analytical Cross-Sectional studies, as was explained in the Assessment of Methodological quality section. The appraisal used the terms Yes, No or Unclear. Papers were not excluded based on the score. The detail about the score of each reviewer can be found in appendix 7. The high-quality score obtained by most of the included studies impacted positively on the results.

CHARACTERISTICS OF INCLUDED STUDIES

Overall, eight studies met the inclusion criteria. Most of them relied on qualitative methods (n=7), such as semi-structured interviews, focus group interviews, participant observation and journals, and one study adopted a quantitative approach in a cross-sectional survey. There were no mixed method studies in the search. A summary of the included studies can be found in Table 2.

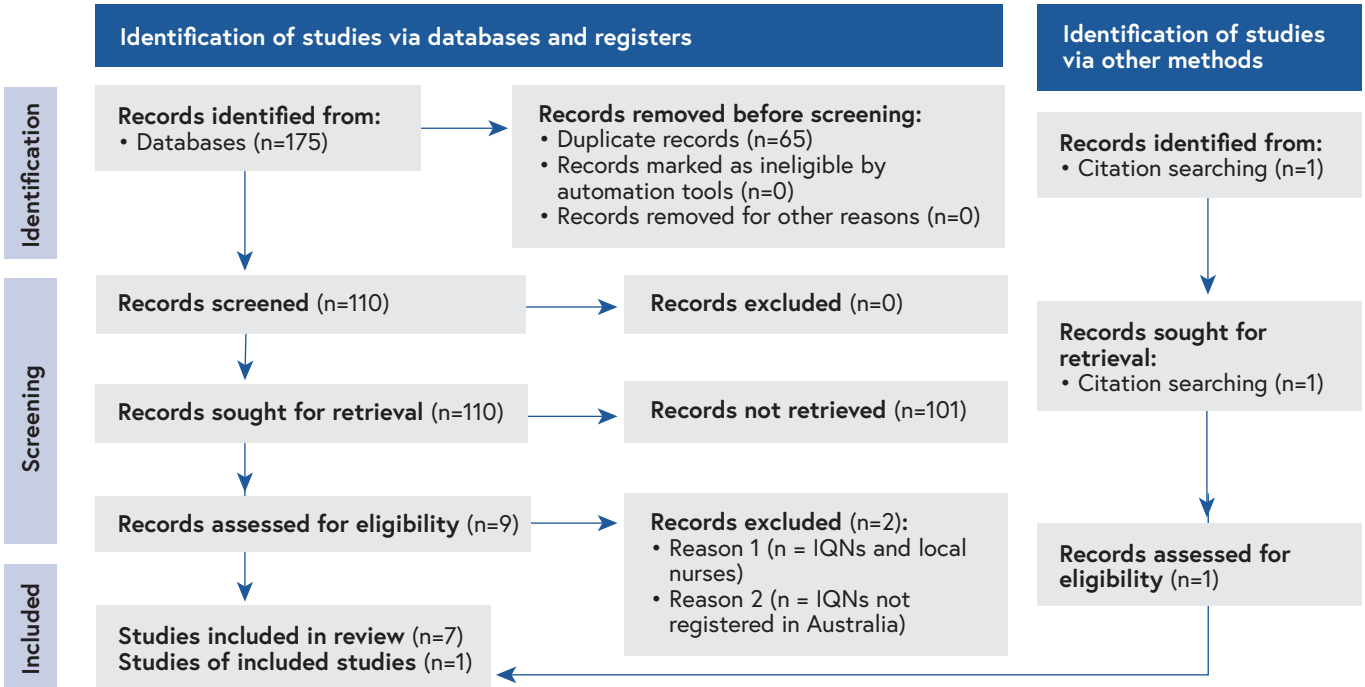

FIGURE 1. PRISMA 2020 FLOW DIAGRAM

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TABLE 2. SUMMARY OF INCLUDED STUDIES LISTED BY DATE OF PUBLICATION AND DESIGN

First author and year	Aim or objectives	Study type	Methodology	Sample size	Sample characteristic	Setting	Location	Main findings
Crawford et al, 2016	This study explores IQNs' experiences and perceptions of communicating with patients	Qualitative	Semi structured interviews And the use of a researcher journal	4	IQNs from 4 different countries (Zimbabwe, China, Iran and Philippines)	A 183-bed private acute care hospital in Sydney	Sydney, Australia	The findings were organised in one central theme called 'adjustment' which was connected to the other 4 themes: (1) professional experiences with communication (2) ways of showing respect (3) displaying empathy and (4) experiencing vulnerability.
Vafeas et al 2018	This study aimed to find similarities in the migration journeys of IQNs from the UK	Qualitative	Heuristic inquiry. It used snowball and purposive sample. Data collection was made through focus group interviews, individual semi-structured interviews, and an author journal.	21	IQNs from the UK	IQNs working in different clinical settings in Perth	Perth, Australia	There were three main findings as coping strategies. First the development of resilience; second, defining a new professional identity and third, the capacity of adaptation to the new reality. To achieve a successful experience, the feeling of belonging was key. Developing new friendships and finding a substitute family were considered significant priorities by the participants.
Mapedzahama et al, 2018	The goal was to fill a research gap by utilising the idea of "systemic ignorance" with the concepts of structural violence and faciality to interpret the experiences of black African IQNs who reported instances of racialisation and racial discrimination.	Qualitative	Unstructured conversational style, interviewee-guided interviews	14	IQNs from African countries who migrated to Australia under the skilled temporary visa (457).	It used personal networks and snowball sampling to recruit 14 black, 13 females, 1 male. The study was carried out in different clinical settings.	A large Australian metropolitan city in Australia	The lack of knowledge that black African IQNs have about their work environment is established, sustained, and replicated through actions such as holding complete and crucial information about the workplace, underestimating their expertise, maintaining organisational secrecy and racial stereotypes. Systemic ignorance is perpetuated by creating a perception of IQNs as both ignorant and untrustworthy. Consequently, IQNs are seen as incompetent and requiring constant monitoring. These perceptions result in the underutilisation of the skills of black IQNs and reinforce institutional racism. Simultaneously its undermining the economic advantages of migration and detracting from the rationale for enlisting black African IQNs in Australia's nursing workforce.

First author and year	Aim or objectives	Study type	Methodology	Sample size	Sample characteristic	Setting	Location	Main findings
Philip, Woodward-Kron, Manias, et al., 2019	Investigated the factors that facilitate or impede clinical communication among IQNs using a community of practice perspective	Qualitative	Exploratory qualitative study. Semi -structured interviews. For the analysis open coding was used.	21	IQNs (4 males, 17 females) from non-English-speaking countries. Their ages ranged between 25 and 50 years of age. They had between 7 months to 20 years of nursing experience in Australia.	A semi- acute clinical setting at a major hospital in Melbourne.	Melbourne, Australia	The analysis produced two primary themes. The first theme encompassed the inherent characteristics of the individual, which acted as both impediments and facilitators. This theme had sub-themes of adaptability in language and preparedness. The second theme was centred on interactions with colleagues and patients, and had sub-themes of expectations, adjustment, and career advancement. Viewed through the lens of a Community of Practice, these themes had a relational aspect, with the IQNs' interactions with co-workers and patients having an effect on their growth in an unfamiliar healthcare setting.
Philip, Woodward-Kron, & Manias, 2019	The aim is to comprehend how overseas qualified nurses communicate within and between healthcare teams as they collaborate to provide patient care in Australian hospitals	Qualitative	This study used qualitative participant observation and discourse analysis. Data was collected through observation in periods ranging from 2.5-3 hours. Analysis was made using inductive an analytical framework from the data.	13	IQNs from India (n = 6), the Philippines (n = 6) and Nigeria (n = 1) participated.	An acute, subacute, and interventional cardiology settings in a Melbourne metropolitan hospital.	Melbourne, Australia	This study, based on genre analysis and observations, discovered that intra- and interprofessional communication was more frequently observed during the coordination of patient care and less often during the facilitation of interventions. Communication techniques ranged from structured interactions with the use of communication tools to spontaneous, unplanned interactions. An examination of the discourse patterns demonstrated that the efficacy of these interactions was influenced by hesitation, a lack of assertiveness, and a limited number of strategies to handle inadequate or aggressive communication from other team members. Additionally, suboptimal clinical communication with peers was not always attributable to IQNs from non-English-speaking backgrounds. Positive interpersonal interactions, including laughter, switching languages, and casual conversation, were apparent in conversations with nurses from comparable cultural backgrounds, but were infrequent with local colleagues.
Dywili et al, 2020	The study focused on the accounts of black sub-Saharan nurses who have worked in rural Australia and reported instances of racial discrimination	Qualitative	Qualitative hermeneutical phenomenological approach. Data were collected through face-to-face interviews and focus groups	18	IQNs from sub–Saharan Africa who migrated to Australia with the general skilled visa (457)	Different clinical settings	Rural New South Wales, Australia	Through the exploration of the experiences of these IQNs, issues related to race and skin colour emerged in the interactions between them and both their colleagues and patients. IQNs experienced instances of discrimination based on their race and skin colour, which made them feel unwelcome, untrusted, and undervalued. As a result, they adopted a range of coping mechanisms to adapt to being perceived differently.

First author and year	Aim or objectives	Study type	Methodology	Sample size	Sample characteristic	Setting	Location	Main findings
Joseph et al, 2021.	The goal of this study was to investigate the experience of transition for Indian-trained nurses who are working in mental health settings in Australia	Qualitative	Hermeneutic phenomenological methodological approach. Purposive sampling. Data were collected through in-depth interviews and analysed with thematic analysis.	16	IQNs from India	Mental health setting across Australia	Australia	The results identified four themes. First, the experience of living in two cultures simultaneously; second, feelings of isolation and loneliness; third, experience discrimination, and finally, a sense of feeling incomplete.
Zanjani et al, 2021	The primary focus of this study was to investigate the factors that contribute to the sociocultural adaptation of IQNs to the Australian healthcare system. A secondary objective was to determine if there was a relationship between IQNs' sociocultural adaptation and their physical and mental wellbeing	Quantitative	Cross-sectional survey. Random sampling Plus 250 questionnaires sent to a target group, plus 50 questionnaires to personal contacts. Analysis was made using linear regression analysis	200	IQNs from countries where English was not their first language, and had completed bridging courses in Australia prior to registration	Online questionnaire	Australia	The questionnaire was completed by 200 participants. In the adjusted multivariate linear regression, job satisfaction (β=0.24,95%CI0.13to0.36), current work environment (β=0.27,95%CI0.05to0.49) and feeling at home (β=0.32,95%CI0.13to0.50) were positively associated with sociocultural adaptation. This association was independent. There was a negative association between Sociocultural adaptation and Perceived Stress Scale (r=−0.14,β=−0.16,p=0.04) and GHQ12(r=−0.36,p<0.001,β=−0.59). The most significant factors that impact IQNs' successful adaptation to the Australian healthcare system are job satisfaction and a sense of workplace support.

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FINDINGS OF THE REVIEW: INDIVIDUAL AND SOCIAL FACTORS.

Our synthesis was organised into two main themes relevant to the professional integration of IQNs in Australia: individual factors and social factors. Individual factors referred to those aspects of personality and life experience that affect IQNs' professional integration and was further divided into two subthemes: psychological adaptation and communication and language. The second theme, social factors, analysed the extent to which the nursing culture in Australia may affect IQNs' professional integration. It was divided into three sub-themes:

a) cultural differences in the nursing role;

b) support, mentoring and appreciation; and

c) racism and discrimination.

Figure 2 provides a graphic illustration of these main findings.

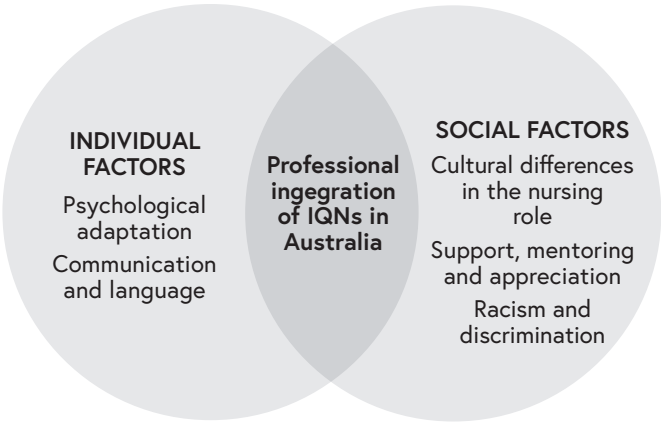

FIGURE 2. BARRIERS AND FACILITATORS TO THE PROFESSIONAL INTEGRATION OF IQNS IN AUSTRALIA

1. INDIVIDUAL FACTORS

a) Psychological adaptation

The studies identified that the IQNs had individual characteristics such as personalities and life histories that influenced the process of psychological adaptation. Characteristics included resilience, flexibility, and the ability to adjust to changing situations. IQNs had to adapt to the Australian culture,[37-41] to the hospital setting,[42,43] the Australian accent,[42] colloquialisms,[40, 42] and other foreign accents,[42,43] without their usual social support networks.

To be resilient to adapt to a new way of life, IQNs developed coping strategies such as to be flexible,[42,43] remain optimistic,[39] to make deliberate efforts to fit in socially and to be accepted.[37,39,40] Overall, IQNs had a positive view about life in Australia. They enjoyed living in the country, they felt safe, found places to practise their religion and were able to make new friends from other countries.[38,40] However, some of them felt themselves to be outsiders, had no sense of belonging or felt incomplete.[37,40] These feelings were stronger in the early stages of immigration and were softened as they became more adapted to the new location and could develop new social connections.[40] For others, they remained as an issue until they found a balance between living in two cultures.[37]

Loneliness is a common feeling experienced by IQNs. Families back in their home countries played an important role in supporting newly arrived IQNs and helped them to deal with isolation, especially for those who came from non-Western cultures.[37,38] Then, the studies reveal that IQNs utilised a range of strategies to cope with loneliness: for instance, to engage in hobbies, to make new friends, to make deliberate efforts to talk to colleagues and initiate social relationships or by having or making friends from the same country of origin, the diaspora. The last one positively contributed to feeling optimistic about living in Australia.[38]

Personal and professional identity are also modified in the migration process. One study found that IQNs had to re-build their personal identity, when they arrived in Australia, as part of the psychological adaptation in a new country.[40] Also, they had to re-build their professional identity once they entered the Australian healthcare setting. They had to gain respect from co-workers by demonstrating their knowledge and expertise in nursing, and this was independent of their qualifications and previous professional experience.[38,40]

Finally, the capacity to deal with stress influenced how IQNs displayed empathy, built therapeutic relationships, and provided emotional care.[42,43] The studies mentioned that working under pressure or having a high patient-to-nurse ratio, were situations that increased stress and negative perceptions about the nursing role and their capacity to deal with it. Other situations that increased stress, tension, or personal discomfort in non-English-speaking IQNs were linked to their foreign accents, mispronunciation, or rapid speech of patients, during extended verbal exchanges. In those situations, some patients reacted by showing frustration, intolerance, or even racist behaviours. Consequently, IQNs felt vulnerable and unable to provide adequate emotional care. Sociocultural adaptation was inversely proportional to stress level and directly proportional to reported better general health.[38]

b) Communication and language

Communication was a common issue in the studies, especially but not exclusively, for IQNs who came from non-English-speaking countries. The Australian accent,[43] the use of Australian colloquialisms,[40,43] patterns of communication in the hospital setting and strong accents of individuals from different nationalities,[42,43] were mentioned by native and non-native English speakers as barriers to fluent communication. The English proficiency levels described in the studies were variable, ranging from proficient or advanced to intermediate. In some cases, language barriers remained high, despite a reasonable length of time living in the country.[44]

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Communication and language barriers could negatively affect the interaction with patients and co-workers. Some participants mentioned that the differences in the tone of voice and the pattern of language used in the Australian clinical settings affected their understanding during interactions.[38,43] These situations caused feelings such as vulnerability and stress, and led them to avoid communicating with patients, as the patients tended to ask more questions and look for longer interactions. Such situations even brought up the idea of going home and giving up.[42] Communication was also affected when the IQNs did not feel well-adjusted into the workplace or when they felt concerned about their language fluency. For instance, the inability or the delay in finding the right word in a conversation generated tension with co-workers, increased concerns about their English proficiency and created self-doubt about their preparedness to work in Australia.[43] However, it has been suggested the poor communication with co-workers, including locally qualified nurses, were not always the sole responsibility of IQNs.[44]

IQNs utilised multiple strategies in attempting to improve language and communication. Some of them tried to adopt local communication patterns, slang, or colloquialism in general conversations, also they adopted the use of non-verbal communications and smiles or seeking clarification and paraphrasing.[43] Adjusting and improving their patterns of communication empowered IQNs to become more active members of the team. However, four studies revealed that local nurses tended to be reluctant to engage in social conversations with IQNs, regardless of whether they came from English or non-English-speaking backgrounds.[39,41,42,44] Interprofessional interactions tended to follow a communication protocol to minimise risks and avoid misinformation.[44] In those situations, the interaction between locally educated nurses and IQNs was minimal and limited to dealing with specific responsibilities. Only one study mentioned that being bilingual or multilingual worked as an enabling factor in gaining acceptance.[42]

The relative lack of hierarchy, and straightforward communication, in the Australian healthcare setting also required cultural adaptation from some IQNs.[42,43] Initially they interpreted it as rude and confronting but, after adjusting to this direct approach, they saw some benefits. The adaptation required the use of a range of strategies to develop self-awareness and made them conscious of barriers in communication and ways of overcoming them.[40,42,43]

2. SOCIAL FACTORS

a) Cultural differences in the nursing role

An IQN's cultural background (not only the language or foreign accent) influenced interaction with co-workers and patients, producing confusion and highlighting the importance of strong cultural orientation programs.[38,43,44] Studies described, for example, cultural differences in how to demonstrate respect and communicate with elder patients, co-workers, and supervisors, for instance by avoiding eye contact.[43] Also, there are cultural differences in establishing social and professional relationships. As an example of this, some cultures consider it inappropriate to argue with others or defend themselves, in order to avoid conflict and to demonstrate respect for hierarchy. Such situations make it challenging for IQNs to stand up for or even express themselves in the Australian work setting.

Finally, a recent study found that clinical encounters were different in their host countries, increasing confusion during the first stages of nursing practice in Australia.[42]

b) Support, mentoring and appreciation

Adequate team members support,[39, 42] comprehensive orientation programs and effective communication channels were facilitators to IQNs' professional integration.[38, 39, 41, 42] From a positive perspective, most IQNs believed that their working conditions were good and safe, and that their salaries were equivalent to their colleagues. They described their nursing roles as professionally rewarding and said that working in Australia provided them with opportunities to develop their nursing knowledge. As one participant said "*I still miss the UK but I'm happy now and I love the work here and the rest of the family are so happy here*".[40]

Lack of appreciation or trust,[39, 42, 43] loss of autonomy,[39, 40] and lack of recognition of previous knowledge and experiences were the concerns most frequently mentioned by IQNs regarding their professional integration.[39- 41] Numerous studies found that IQNs perceived that they were not trusted and suffered a loss of autonomy in activities in which they had extensive experience prior to migrating. They also reported they felt more respected in their home countries and strongly believed that their expertise and knowledge was not being fully utilised by their employers. These situations produced disillusionment and professional dissonance, making the adjustment harder. For instance, one participant reported having changed jobs three times in a year until they found a place where their capabilities were valued.[40] Only one study found that their nursing experience prior to migration was positively welcomed by their managers, yet they still felt unwelcome and untrusted by co-workers and patients.[39] The sense of belonging increased when participants felt appreciated and, combined with the creation of new support networks, resulted in higher retention in the work setting and, in the country.[38, 40]

c) Discrimination and racism

Discrimination and racism were the most frequently cited barriers affecting professional integration, referred to in six of the eight studies.[37-39,41,42,44]

Discrimination and racism were expressed in different ways: these included direct confrontation, insubordination from staff, hostile interactions with colleagues, lack of professional development opportunities, and non-inclusive behaviours. Also, patients reported discomfort about being nursed by IQNs, especially black nurses,[39,41] and those who came from non-English-speaking countries.[37,42,44] Two studies found that everyday racism in the work environment was naturalised and socially accepted.[39,41] In these studies, IQNs reported discrimination and racism from nursing colleagues, staff members, patients and visitors based on their skin colour, as they came from Africa. In one study, patients feared "the black nurse in charge of their care", and subordinates tended to be disrespectful or did not follow directions given by them.[39]

IQNs reacted differently to adjusting to situations involving discrimination and racism. Some of the strategies used were rationalisation of the experience offering an alternative nurse to oversee the care, avoiding exposure to abusive situations, focusing their minds on their migration goals, reciprocating with a similarly negative approach, or blocking negative attitudes.[37,39] Resilience, fortitude, and self-determination played important roles in overcoming these challenging situations. Sadly, in two studies those incidents involving discrimination or racism were not reported to supervisors.[39,43]

The consequences of discriminatory and racist behaviours had a direct negative impact on the mental health of IQNs.[37-39,41,42] In one study, a shocking 27% of the IQNs in the study experienced explicit racism within the workplace.[38]

DISCUSSION

This study has identified the elements that act as **barriers and facilitators** to the professional integration of IQNs in the provision of nursing care in Australia. In the previous section the findings retrieved from the studies are organised and explained in a narrative form. In this section, these results are interpreted, and it is established whether each of them is a barrier or a facilitator to professional integration.

PERSONAL FACTORS

Our findings are consistent with what the previous literature has revealed about immigrants' **psychological adaptation**. Previous studies in the field indicated that immigrants in general tend to display higher levels of anxiety and depressive symptoms as part of the psychological adaption in the host country: this phenomenon has been called acculturative stress.[45-47] The findings of this review suggest that the capacity to overcome acculturative stress relies on the personal attributes of IQNs, such as personality, life experiences, and family and social support. This is consistent with the extant literature.

The findings show that a significant barrier to professional integration is the lack of English language proficiency. An interesting finding is that this barrier, **communication and language,** is not exclusive to non-native English speakers, although it may be harder for them. Language proficiency is required to a successful transition to a new social context, and it is also required to adjust into the professional nursing setting.[48,49] This is particularly important when the results showed that IQNs made deliberate efforts to expand their communication skills, but some local nurses were not willing to improve mutual communication and understanding. There is evidence of accent discrimination in multicultural work settings where diverse languages are spoken[50]; similarly, some of these situations have been documented in the New South Wales healthcare settings.[51] We return to this issue further in analysing the barriers of racism and discrimination. Conversely, language proficiency becomes a facilitator for professional integration since it is directly related to social and economic achievements of immigrants.[48,49]

SOCIAL FACTORS

We turn now to focus on social factors relevant to the professional integration of IQNs in Australia. Some of the barriers that emerged regarding **cultural differences in the nursing role** were the influence of the culture of origin in daily-life interactions and the differences in clinical encounters. There are several similarities in the nursing role within the global context. However, there are also key differences that could be mentioned, such as the legal and professional responsibilities, and the scope of practice[52]. More specifically in the Australian context there were differences in the expectations regarding the behaviour of patients and families, the Australian approach to end-of-life care and medication management and pain thresholds of patients.[53] Consequently, a valuable facilitator would be to carry out comprehensive professional and cultural orientation programs for the IQNs. In addition, improving intra-professional cultural competence among locally trained nurses could be a crucial facilitator to professional integration. It is anticipated that this might increase the willingness of local nurses to communicate with and value IQNs, despite their accents or other barriers to communication. This in turn might avoid any form of accent discrimination.

Cultural competence is described as the ability to work effectively in situations when cultures play a role. Cultural competence has been defined as "a set of congruent behaviours, attitudes and policies that come together in a system, agency or among professionals that enable that system, agency or professions to work effectively in cross-cultural situations".[54] Even though cultural safety and

cultural competence have been part of the curriculum for locally educated Registered Nurses (RNs) in Australia, the main focus for cultural competence knowledge has been to support the indigenous and culturally and linguistically diverse (CALD) communities they care for, rather than their colleagues. However, this review identifies a poor application of cultural competence in the intra-professional relationships between nurses, especially where IQNs are involved. The Code of Conduct for Nurses of the Nursing and Midwifery Board of Australia (NMBA) (Principle 3) says that "Nurses engage with people as individuals in a culturally safe and respectful way, foster open, honest and compassionate **professional relationships** and adhere to their obligations about privacy and confidentiality" and the Australian Nursing and Midwifery Accreditation Council (ANMAC) requires cultural competence to be part of the BN curriculum.[55,56] Such requirements illustrate the expectation that Australian educated RNs will be able to recognise, avoid and report any form of racism and discrimination in the Australian work setting. Consequently, the focus of research and actions should be placed on understanding how this content is taught to Australian educated RNs and how they implement such requirements.

This emphasis on cultural competence is consistent with the findings of the three previous reviews conducted in Australia.[27-29] The Nursing and Midwifery Board includes in its program for IQNs seeking registration a two-module "Orientation to the health care in Australia". The first module has to be completed before registration and the second is required within the first six months of registration.[57] However, deeper, and more specifically oriented programs, would be valuable once IQNs enter a specific work setting to reinforce general content, but also to explain organisational, administrative, and cultural aspects of the role. A cultural orientation program would facilitate professional integration and increase awareness about cultural differences, biases.[53] In addition, it might identify implicit ethnocentrism that may be present in daily interactions.

When it comes to **support, mentoring and appreciation**, some of the *barriers* to professional integration identified in this study were the lack of recognition of previous experiences, the lack of autonomy and the perception of not being trusted. These were linked to the lack of support and the absence of mentoring programs. Under-appreciation and lack of recognition of previous IQNs' experience has been documented in Australia and in other countries such as the USA, Canada and the UK.[53,58]

The existence of a support programs or the guidance of a more experienced colleague were strong *facilitators* to professional integration. Feeling valued and having appropriate channels to obtain support and mentoring helped IQNs to increase adjustment to their local nursing role, to be more prepared to work independently, thereby increasing the sense of belonging and also retention.[59]

The final, and most significant, sub-theme is **discrimination and racism,** which was referred to in six of the eight studies.[37-39,41,42,44] The persistence of discrimination and racism is serious indeed and is identified as a fundamental barrier to professional integration. It was unearthed in the three previous studies and is (sadly) still present in the Australian nursing workforce setting.[27-29] A recent publication from the NSW Nurses and Midwives' Association (NSWNMA) found that about 25% of the participants had experienced racial discrimination on a monthly basis. However, only 31% of the total of these situations had been reported.[51]

The role that locally educated nurses are reported to play in displaying non-inclusive, discriminatory, and racist behaviour is the main barrier to professional integration identified in this study and therefore it is critical to explore the issue further. Additionally, the tendency to avoid interactions and display a non-inclusive behaviour towards IQNs may affect teamwork and may have negative consequences for patients' safety and quality of care.[60,61] Training in intra-professional cultural competence and improving intercultural skills for locally educated nurses could play a crucial part in a comprehensive approach and may constitute a significant facilitator to professional integration.

The studies have not referred to the consequences of experiencing discrimination or racism in the workplace. However, it is important to mention that, as many of the situations involving racism and discrimination were not reported to superiors, they could not be formally addressed by the institutions. There is an entire body of regulation focused on the control of racism and discrimination, and these concerns are part of the undergraduate programs regulated by ANMAC. As both the regulatory and the educational requirements already exist, it becomes important to improve channels to report them and discuss further consequences that contribute to educating patients, visitors, and co-workers.

This review has reinforced the findings from the previous publications in the field in Australia,[27-29] which used literature published after 2016 and was carried out after the COVID-19 crisis in a global context of higher demand for nurses.[6,7,10,11,17] Additionally, it revealed that acculturation in the workplace is infrequent, and that the integration of IQNs was understood as their own responsibility and was not always seen as a mutual process. Also, there was a lack of appreciation of the potential benefits that IQNs bring into the workplace, due to their different experiences and skills.

This review will hopefully serve to raise awareness about racism and discrimination, in order to encourage nurses to report these incidents and to intensify education to co-workers, patients, and visitors regarding the Nursing and Midwifery Board of Australia and The Australian Charter of Healthcare Rights and Responsibilities. [55,62]

Additionally, the significance of this study highlights the importance of closely examining the training on intra-professional cultural competence for Australian qualified nurses. Whilst it is understood that the curricula are required to focus strongly on cultural competence with indigenous and CALD patient communities, this review suggests there may be a gap in these competencies when it comes to working with IQNs. Thus, the education of Australian qualified nurses needs to focus equally on working with colleagues from culturally and linguistically diverse backgrounds. This is critical in a country where more than 20% of the nursing workforce was trained overseas and more than 29.8% of the population was born overseas.[13,63,64] These results may be useful to understand in the Australian context but might also be valuable in other high-income countries receiving IQNs.

The findings of this systematic review have limitations. Firstly, generalisability and transferability are limited to nurses and do not explore the experience of other healthcare professionals. Secondly, the first author is herself an IQN in Australia, although she has tried to eliminate any bias by having a second and third reviewer to check her interpretation of the findings. Thirdly, the search was conducted only in the English language, hence publications in a different language may have been missed.

CONCLUSION

This systematic review hopes to contribute to updating the scientific literature published since 2016 regarding the professional integration of IQNs in Australia. Its findings reinforce previous publications in the area, but also add new evidence to the field. The importance of professional and cultural orientation programs for IQNs and the need to examine closely the training of locally qualified nurses in cultural competence are the two most significant findings to emerge from this study.

Further research is needed in order to understand barriers and facilitators better, depending on country of origin, clinical setting, or geographical location, and to understand how pathways and requirements for registration prepare IQNs to perform their work and to integrate into the Australian health care setting. It would also be helpful to understand colleagues' and society's views and expectations regarding the performance of IQNs in Australia. Moreover, this study points to the need to conduct further studies into discrimination and racism between colleagues, as a basis for strengthening the safety and quality of nursing care in Australia through the improved professional integration of IQNs into Australian healthcare settings.

IMPLICATIONS FOR RESEARCH, POLICY AND PRACTICE

This research study has the potential to be of interest to a variety of stakeholders in the healthcare industry, including policymakers, healthcare educators, healthcare workforce planners, and healthcare institutions. The findings of this study shed light on the complex and multifaceted issue of nurse migration, retention, and professional integration, particularly in high-income countries where the demand for healthcare professionals is high.

By analysing research on the experiences and perspectives IQNs who migrated to Australia, this review provides important insights into the challenges and opportunities that they face in their new work environments. In doing so, it highlights the need for healthcare organisations to create more inclusive workplaces that support the integration of IQNs into the local healthcare system. This study also serves as a call to address the persistence of discriminatory and racist practices in the Australian context. It underscores the importance of promoting cultural competency education among local nurses who work with IQNs, as this can help to mitigate potential misunderstandings and conflicts in the workplace. By fostering a more culturally competent workforce, healthcare organisations can create a more inclusive and supportive environment for all nurses, regardless of their background or country of origin.

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