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EDITORIAL

Cervical screening in pregnancy: an opportunity for nurses and midwives to drive equitable cervical cancer elimination

CORRECTION NOTICE - ERRATUM

In the original publication of this article, edits were introduced during the production process. This resulted in the publication of a version of the manuscript that did not represent the authors' writing or position.

The article has been updated to include the correct wording as written and intended by the authors.

The original article, marked with a Correction Notice has been archived and is available upon request from the journal.

The editors and publisher take full responsibility and apologise for this error and any confusion it might have caused.

AUTHORS

JORDAN DIXON MD, ARANZCOG (P), BPharm[1,2]
KATE FLYNN BNurs, MPH[3]

1. University of Melbourne, Melbourne, Victoria, Australia
2. Obstetrics and Gynaecology Department, Monash Health, Clayton, Victoria, Australia
3. Australian Center for the Prevention of Cervical Cancer, Melbourne, Victoria, Australia

CORRESPONDING AUTHOR

JORDAN DIXON University of Melbourne, Melbourne, Victoria, Australia.
E: jordan.dixon@unimelb.edu.au

Language note: We use gendered language throughout this editorial, however, we acknowledge that people who don't identify as women also seek pregnancy care and are at risk of cervical cancer.

CERVICAL CANCER IN AUSTRALIA

Cervical cancer is a disease of inequity, predominantly caused by persistent infection with carcinogenic types of human papillomavirus (HPV) and is almost entirely preventable.[1] Despite long standing cervical screening and HPV vaccination programs in Australia, women continue to die from cervical cancer.[1] Screening remains the cornerstone of prevention in adult women, yet 70% of people diagnosed with cervical cancer are under- or never-screened ('under-screened').[1] When cervical cancer is diagnosed during pregnancy or early parenthood, the consequences are devastating for women and their babies, partners and communities.

In previous decades, cervical screening was a part of routine maternity care but fell out of practice, likely due to changing models of care, increasing demands on practitioners, a shift in mindset about standard care and the movement away from routine pelvic exams.

In 2017, Australia's National Cervical Screening Program (NCSP) shifted from Papanicolaou (Pap) Smears, which examined cervical cells for abnormalities, to primary HPV screening, a more sensitive and effective test that requires less frequent screening.[1] Since July 2022, all eligible women have been able to choose between self-collection (using a small swab inserted into the vagina to collect their own sample) or clinician-collection (clinician inserts a speculum into the vagina to collect a cervical sample).[1] Self-collected vaginal samples are just as accurate for the detection of underlying precancer of the cervix as clinician-collected cervical samples because an infected cervix sheds HPV DNA into the vagina.[2]

Despite the introduction of self-collection, national cervical screening participation has stagnated, with one in four women overdue for screening.[3] With rising cost-of-living pressures, a shortage of (bulk-billing) cervical screening providers, and increasing out-of-pocket fees, barriers to

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participation are growing.[3] When screening is not accessible, systemic inequities deepen, widening disparities in health outcomes, particularly for communities already experiencing structural barriers to engaging with healthcare.

NATIONAL STRATEGY FOR THE ELIMINATION OF CERVICAL CANCER IN AUSTRALIA

In 2023, Australia launched its equity focused national strategy for the elimination of cervical cancer, which outlines strategic objectives across the three pillars of vaccination, screening, and treatment.

Australia's 2030 cervical cancer elimination targets include achieving 90 per cent HPV vaccination uptake for all eligible people, screening every five years for 70 per cent of eligible people, and delivery of optimal treatment for pre-cancer and cancer for 95 per cent of eligible people.[1] Overall, the targets seek to support positive, culturally safe, and inclusive experiences of prevention and care and would mean that by 2035, Australia could be the first country in the world to actively achieve elimination of cervical cancer.[1]

HPV VACCINATION

Catch up HPV vaccination can be promoted before or after pregnancy for patients <26 years. A single catch-up dose is effective in this age group and is provided free for those who missed out at school under the national immunisation program.[1]

SCREENING

Cervical screening is safe and effective at all stages of pregnancy and should not be delayed if due.[4] The traditional model of screening involving a sample from the cervix created significant barriers to implementation in the antenatal setting. Regression of cytological changes in later pregnancy can lead to recommendations to complete screening postpartum.[5] Additionally, the risk of cervical contact bleeding may not be acceptable to women or practitioners.[4] Self-collection provides an acceptable alternative and offers meaningful choice for women.[4]

DIAGNOSTICS AND TREATMENT

If colposcopy (a closer examination of the cervix using a magnifying instrument) is required following an abnormal screening test, midwives should reassure patients that assessment is safe during pregnancy and should not be delayed until the postpartum period.[5] The aim of colposcopy in pregnancy is to exclude invasive cancer and to reassure the patient that their pregnancy will not be affected by an abnormal cervical screening result.[5] Where high-grade lesions are suspected, definitive treatment, except in cases of invasive cancer, can be safely deferred until after pregnancy.[5]

To reach equitable elimination, we need to draw on and strengthen the capacity of our existing resources.[1] One existing resource is maternity care in Australia.

MATERNITY CARE

Women in Australia are giving birth later in life, with the median age now 32 years.[6] This demographic shift overlaps with cervical cancer epidemiology, where the peak incidence occurs between 35 and 49 years,[3] when many women are pregnant or caring for young children.

In 2024, 292,318 babies were born in Australia, within a maternity system provided by midwives, nurses, obstetricians, general practitioners, or a combination of all four.[6] Nurses and midwives are uniquely positioned within this system, with continuity and freedom of movement across community, hospital and home settings.

46% of all models of care now have a midwifery continuity component.[6] As we move toward an expansion of midwifery-led models of care, midwives must be equipped to manage the full breadth of women's reproductive health issues, including cervical dysplasia. In parallel, we need to upskill our medical workforce within the tertiary system so they can champion cervical screening and support midwives and nurses to work at their full scope of their practice.

However, the perception that preventative care, such as cervical screening, does not belong in tertiary settings has shifted responsibility back to primary care. While general practitioners and practice nurses have a fundamental role in cervical screening provision, the growing pressures on primary care call for us to consider how screening and follow-up can be reintegrated into additional areas.

PREGNANCY AS AN EQUITY LEVER

For many under-screened women, antenatal care may be their only consistent engagement with the healthcare system, offering a predictable schedule of appointments, continuity and trusted relationships. Even a single lifetime screening can significantly reduce their risk of cervical cancer.[3]

Importantly, 95% of women will attend more than five antenatal visits, a level of engagement not often seen within the healthcare system.[6] Pregnancy is also a time when external motivation is high; many women engage in preventive health not only for themselves but for the benefit of their baby and family. By embedding cervical screening into routine antenatal care, we can address gaps left by fragmented services and ensure prevention does not fall through the cracks.

The national strategy identifies five populations who are more likely to be under-screened. Efforts to improve access for these populations must be designed and delivered in consultation with the people they aim to benefit.

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For example, initiatives to increase cervical screening through pregnancy care must not be imposed on to First Nations women, but shaped through First Nations leadership, governance and community-driven decision making.

ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE

Colonisation, institutional racism and a lack of culturally safe care has prevented First Nations women from feeling safe in maternity care. With the development of Birthing on Country models, which work to redress these issues, we are returning childbirth services to First Nations communities and First Nations Control.[7] In 2023, First Nations mothers accounted for 5.6% of women who gave birth, with around 70% now accessing antenatal care.[6]

LGBTQ+ PEOPLE AND PEOPLE WHO ARE INTERSEX

People who identify as LGBTQ+ and people who are intersex frequently encounter cisheteronormative assumptions within reproductive health services, leading to inappropriate questions, stigma and a lack of recognition of their reproductive health needs. As a result of systemic barriers, they are less likely to be offered or participate in screening and may find examinations distressing.[8]

WOMEN WITH DISABILITY

Women with disability face multiple, compounding barriers to cervical screening, including inaccessible health services, limited provider training, and family, carer and provider misjudgements around sexual activity.[9] Providers' tendency to prioritise disability-related concerns over preventative health can lead to cervical screening being missed. Pregnancy care can offer a safe context to discuss screening with these women and any hesitant carers or family members.

MIGRANT AND REFUGEE WOMEN - CULTURALLY AND LINGUISTICALLY DIVERSE

Women from migrant and refugee backgrounds now make up a third of women giving birth in Australia and are 50% less likely to have completed cervical screening compared to Australian-born women.[6,10] These women may not have had previous access to HPV vaccination and screening, placing them at higher risk of developing cervical cancer.[10] For many migrant and refugee women, pregnancy care will be their first interaction with the Australian healthcare system.

PEOPLE LIVING IN RURAL AND REMOTE AREAS

People living in rural and remote areas have less access to preventive health due to distance and inconsistent availability of healthcare providers. Upskilling nurses and midwives is strategic in these areas as there are more registered nurses and midwives per 100,000 people working in remote and very remote areas, compared to medical professionals.[11]

Pregnancy creates a unique and natural opportunity to address inequities by providing an inclusive, culturally safe,gender-affirming environment, irrespective of who you are or where you live. In this setting, people can be empowered to make informed decisions about their health, creating an optimal entry point for priority populations not only into cervical screening, but the entire pathway.

Nurses and midwives are well placed to facilitate this access during pregnancy due to their experience and ability to foster trusted relationships with their patients. They regularly provide services for women from diverse backgrounds, many of whom face substantial barriers to accessing traditional medical models of care.

OPPORTUNITIES AND CURRENT RESTRICTIONS: NURSES AND MIDWIVES' ROLE

Cervical screening is within the scope of practice of nurses and midwives, and while many have been providing this service for several years, some still don't see a role for themselves in this area. However, this is starting to change with the introduction of self-collection, which has expanded access for screening participants and opened doors for nurses and midwives to play a greater role in cervical screening. The autonomy inherent in self-collection provides increased flexibility in where and how the test is done and who can facilitate access. With appropriate training, clinical governance and support, nurses and midwives can deliver both screening options to the same quality as doctors, reducing patient wait times and improving patient satisfaction and outcomes.

The national strategy highlights the important role nurses and midwives play in achieving elimination, calling for clear pathways to enable them to "independently request and sign pathology request forms for a cervical screening test (and be eligible for Medicare reimbursement)".[1] Until July 2021, this was standard practice in Victoria, with one pathology service funded to process tests ordered by non-medical providers. Unfortunately, since this agreement lapsed, MBS funding for cervical screening is now restricted to providers with a Medicare Provider Number (MPN), such as doctors, nurse practitioners and endorsed midwives.

These restrictions create system-level barriers to expanding the autonomous screening role of nurses and midwives. In midwifery-led clinics, a MPN provider may not be readily available to co-sign pathology forms, limiting access and provision to cervical screening within maternity models of care.

Additionally, non-medical providers cannot independently access the National Cancer Screening Register (NCSR) to

determine whether a patient is due for screening. Without direct NCSR access, ideally integrated into electronic medical record systems, we are making it harder for nurses and midwives to identify eligible women and provide timely care.

RECOMMENDATIONS FOR POLICY AND PRACTICE

We need to advocate for nurses and midwives to have greater visibility of, and involvement in delivering, the NCSP. This begins with including the national strategy in university curriculums and continues with the upskilling and strengthening of the current workforce nationally. If nurses and midwives find that flexible models aren't in place where they work, they should be supported to implement them.

Nurses and midwives delivering maternity care should feel confident in providing education, checking for symptoms of cervical cancer and offering the choice of self-collected or clinician-collected screening to eligible women. Training pathways to become a cervical screening provider are well established, and flexible delivery models such as nurse-led dysplasia clinics demonstrate the value of enabling providers to practice at their full scope.

Support requires investment in training, professional development, and opportunities for nurses and midwives to maintain and expand their clinical skills. Sustaining this change requires strong system, service and professional leadership to communicate the vision, and champion the role of non-medical providers.

Restrictions on who can order cervical screening tests, and who has direct access to patients' screening histories needs to be reviewed and updated to reflect the evolving nature of nurses and midwives' roles.

Taking the time now to set up flexible models of cervical screening provision during pregnancy will increase screening coverage and build the capacity of an already capable workforce.

ELIMINATING CERVICAL CANCER IS POSSIBLE

WE ALL HAVE A ROLE TO PLAY

Equitable elimination of cervical cancer is bigger than any one profession. Pregnancy is an opportune time to promote, educate, deliver and follow-up to ensure no more mothers or daughters are diagnosed with cervical cancer.

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RESEARCH ARTICLES

Workplace stressors and critical care nurses turnover intentions: Mediating role of emotional intelligence and sense of belonging

AUTHORS

TALAL ALI HUSSEIN ALQALAH, PhD, MSc, BSc, RN[1,2]

1. Department of Medical-Surgical Nursing, College of Nursing, University of Hail, Saudi Arabia
2. Nursing Division, Faculty of Medicine and Health Sciences, Sana'a University, Yemen

CORRESPONDING AUTHOR

TALAL ALI HUSSEIN ALQALAH Department of Medical-Surgical Nursing, College of Nursing, University of Hail, Saudi Arabia. E: alqalahtalal@gmail.com

ABSTRACT

Background: Globally, healthcare systems struggle to retain critical care nurses (CCNs) due to high turnover intentions. The mediating roles of emotional intelligence and sense of belonging in mitigating moral distress, stress, and fatigue are insufficiently explored.

Objective: This study investigates how moral distress, work stress, and fatigue influence CCNs' turnover intentions through the mediating pathways of emotional intelligence and a sense of belonging.

Study design and methods: A multicentre, cross-sectional survey was conducted across eight public and private hospitals. The study enrolled 432 CCNs between May 20 and July 31, 2024. Each participant completed a validated, structured questionnaire that was self-administered and paper based. Descriptive statistics, ANOVA, independent samples t-tests, and path analysis were utilised for data analysis.

Results: CCNs reported high mean scores for fatigue (21.50), moral distress (65.10), and turnover intention (14.75). Path analysis indicated a direct significant positive effect of moral distress on fatigue (β=.69), work stress (β=.38), and indirectly on turnover intention (β=.12). Fatigue further intensified work stress (β=.40). Notably, significant moral distress was inversely associated with emotional intelligence (β=-.24) and positively with sense of belonging (β=.24). In turn, both emotional intelligence (β=-.31) and a sense of belonging (β=-.27) were negatively associated with turnover intentions.

Conclusions: This study elucidates the significant influence of adverse workplace factors, specifically moral distress, fatigue, and work stress, on the CCNs' turnover intentions. Such stressors erode core nursing competencies and present a tangible risk to patient care standards. Importantly, the results underscore the protective functions of emotional intelligence and a strong sense of belonging, which appear to attenuate the negative impact of these occupational stressors.

Implications for research, policy, and practice: By mitigating the impact of moral distress and cultivating a more supportive work environment, healthcare organisations can foster environments that reduce occupational stress, alleviate fatigue, and consequently decrease nurses' turnover intentions. Addressing these detrimental workplace dynamics is essential for enhancing the work environment for nurses and ensuring the provision of optimal patient care within healthcare settings.

What is already known about the topic:

- The demanding nature of the CCN role elevates professionals' susceptibility to adverse health outcomes, psychological distress, and turnover.

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- Emotional intelligence functions as a significant psychological buffer, promoting resilience and attenuating burnout.
- A strong sense of belonging, both within the team and organisations, is positively associated with job satisfaction, retention, and psychological well-being.

What this paper adds:

- This study provides empirical evidence for the mediating roles of emotional intelligence and sense of belonging in mitigating the negative effects of moral distress, work-related stress, and fatigue on CCNs' turnover intentions.
- Emotional intelligence operates dually: as a protective mechanism against psychological strain and as a relational catalyst enhancing sense of belonging.
- The deliberate fostering of emotional intelligence and institutional belonging is essential for maintaining workforce stability in demanding clinical settings.

Keywords: Critical care nurses, emotional intelligence, moral distress, sense of belonging, turnover intentions.

INTRODUCTION

The global healthcare system is grappling with a significant nursing shortage, particularly in critical care settings.[1] A contributing factor to this crisis is the high rate of nurse turnover.[2] Critical care nurses (CCNs), who play a pivotal role in delivering complex, high-acuity care in intensive care units (ICUs) and emergency departments, are subjected to immense physical and emotional demands.[1,3] Such demanding work environments can exacerbate burnout and job dissatisfaction, ultimately leading to increased turnover rates. This shortage and the inherent challenges of CCNs can compromise patient care quality and safety.[4,5]

Moral distress (MD) arises when nurses are aware of the ethically correct course of action but are prevented from implementing it due to institutional or organisational constraints.[6] This distressing psychological state often stems from situations involving poor quality care or medically necessary but potentially harmful procedures.[7] Nurses experiencing MD may grapple with feelings of guilt, frustration, and anxiety, and may suffer from physical symptoms such as hypertension and headaches.[4] The impact of MD extends beyond individual nurses, potentially leading to job dissatisfaction, burnout, and decreased patient advocacy.[4,5] For healthcare organisations, MD can contribute to high turnover rates, compromised quality of care, and diminished patient satisfaction. Addressing and mitigating MD is essential for promoting the well-being of nurses and enhancing the overall quality of patient care.[5,7]

Nurses working in critical care settings face significant physical and psychological demands, which can lead to increased stress, fatigue, and potential negative impacts on both their health and patient care.[8,9] To address these challenges and enhance the well-being of CCNs, organisations are increasingly interested in strategies that promote worker health and ensure patient safety.[7] Emotional intelligence (EI), the ability to understand and manage one's own and others' emotions, has emerged as a crucial competency for nurses.[10] By fostering empathy, compassion, and effective communication, EI can mitigate stress, improve job satisfaction, and enhance patient care, particularly in demanding environments like critical care settings.[10,11]

A strong sense of workplace belongingness, characterised by feelings of acceptance, inclusion, and support, is essential for the well-being and job satisfaction of healthcare professionals, including nurses.[12] When employees feel valued, respected, and connected to their organisations, they are more likely to experience increased job satisfaction, loyalty, and engagement.[12,13] It is widely recognised that uncivil behaviours encountered in the workplace can have detrimental effects on CCNs.[14] However, despite its recognised importance, there remains a significant gap in research on effective interventions to cultivate EI and a sense of belonging among CCNs.

THEORETICAL FRAMEWORK

The pervasive challenge of CCNs turnover represents a critical failure in the alignment between healthcare systems and the professionals they employ. To deconstruct this phenomenon, we propose an integrated theoretical model that delineates the psychological pathway from chronic workplace stressors to voluntary exit. Our conceptual framework, illustrated in Figure 1, posits that certain work stressors, namely, high job demands (vs. resources) and personal values conflict, initiate a deleterious process of resource depletion.

Drawing on the Job Demands-Resources (JD-R) model,[15] we hypothesise that sustained job demands pose a potential stressor that can directly deplete emotional energy, a core tenet of Conservation of Resources (COR) Theory. Furthermore, Lazarus & Folkman's transactional model of stress and coping proposes that stress is not caused by a single event but by the transaction between an individual and their environment.[10] This dynamic process of appraisal is critical; stress arises when demands are perceived to

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outweigh coping resource.[16] According to COR theory, the subsequent depletion of emotional energy manifests in adverse states of work stress, fatigue, and MD, collectively eroding health and well-being. When such resource depletion becomes chronic, individuals engage in self-protective withdrawal, which we operationalise as turnover intention.[17]

This pathway, however, is not deterministic. The framework introduces two critical buffering systems. First, we position EI as a key individual-resource variable. Informed by Affective Events Theory and Emotional Competency Theory,[18] we propose that EI mitigates the impact of stressors on resource depletion by enabling more adaptive emotional regulation and coping, thereby reducing the intensity of work stress and MD. Second, we identify the organisational and team climate as a critical contextual moderator. Social Identity Theory asserts that a climate fostering a sense of belonging strengthens identification with the organisational in-group.[19] We hypothesise that this sense of belonging directly weakens the link between resource depletion (e.g. fatigue, MD) and turnover intention, providing a social reason to remain despite psychological costs.

In summary, our model moves beyond siloed theoretical explanations to offer a synthesised view of CCNs turnover. It charts a core negative pathway from stressors to exit, while theorising how both personal capacity (EI) and the social environment (climate/belonging) can interrupt this progression, offering clear, testable targets for intervention. The global nursing shortage underscores the urgent need to move beyond superficial acknowledgments toward a mechanistic understanding of its drivers.[1] This study examines the impact of MD, work-related stress, and fatigue, critical manifestations of resource depletion, on turnover intention among CCNs. Specifically, we assess the potential for mitigation through two theorised resources: EI as an internal regulatory resource and sense of belonging as an external social resource. By testing this integrated model in the high-acuity clinical environment, the findings aim to inform the design of targeted interventions that bolster psychological resources and peer support. This research is critically needed to address a significant empirical gap in the literature concerning the work environments of Yemeni hospitals, where such data are presently scarce.

HYPOTHESIS

Drawing on the integrated theoretical framework of psychological resource depletion, the following hypotheses are formulated:

- **H1:** Workplace stressors (i.e., work stress, MD, fatigue) will exhibit significant positive direct effects on turnover intention.
- **H2:** Emotional intelligence and sense of belonging will independently mediate the relationship between workplace stressors and turnover intention.

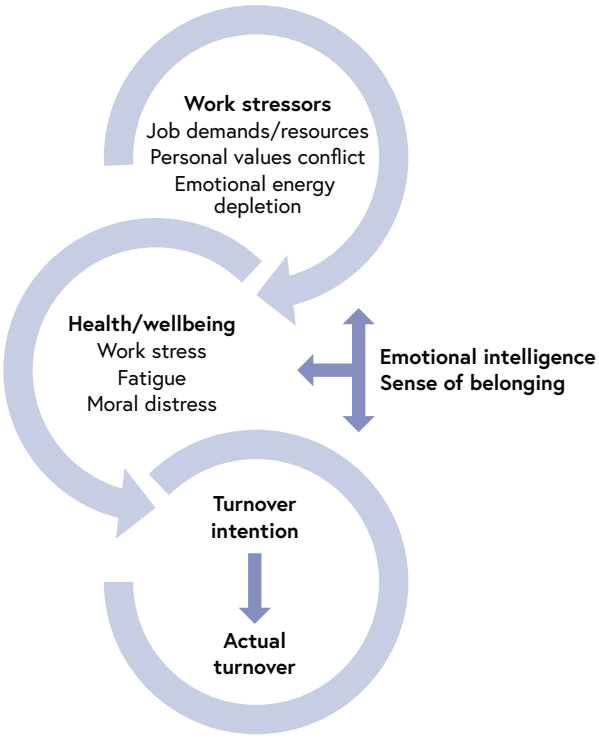

FIGURE. 1. CONCEPTUAL FRAMEWORK OF THE RELATION BETWEEN WORKPLACE STRESSORS AND CCNS TURNOVER INTENTION

- **H3:** Workplace stressors will have a significant positive indirect effect on turnover intention through the mediating pathway of reduced EI and sense of belonging.

STUDY DESIGN AND METHODS

SETTING AND SAMPLE

This study utilised a descriptive, multicentre, cross-sectional survey design. Participants were recruited from 20 ICUs across eight regional public and private hospitals in Sana'a. These facilities provide a broad spectrum of healthcare services, serving the local population of Yemen and a majority of the surrounding governorates. A convenience sample of 395 CCNs was recruited at their workplaces during scheduled shifts. Eligibility criteria mandated a minimum of six months of clinical experience in an ICU setting and the provision of informed consent. CCNs who held concurrent employment in both private and public (or teaching) hospitals were excluded to mitigate potential confounding effects related to divergent institutional practices.

SAMPLE SIZE DETERMINATION

A prospective power analysis was conducted to determine the minimum required sample size. Guided by the methodological convention for path analysis, which recommends 10–20 cases per estimated parameter,[20] and with a model comprising 6 parameters, a minimum sample size of

60 to 120 was initially indicated. To ensure robust statistical power for detecting significant path effects and to account for potential model complexity beyond the specified parameters, we targeted a sample size substantially above this minimum. Furthermore, to compensate for an anticipated 10% nonresponse rate, the target sample was inflated accordingly. This comprehensive approach resulted in a final target sample of 395 participants, which adequately satisfies the requirements for the planned analytical techniques.

DATA COLLECTION TOOLS AND METHODS

The study instruments were selected based on their robust psychometric properties, as established in prior research.[21-25] Their cross-cultural adaptation followed established guidelines for simultaneous development and translation frameworks for existing surveys.[26] We employed a forward-backward translation protocol, which involved an initial translation from English to Arabic. A blinded, independent translator then back translated this version into English. Subsequently, content validity was established through an expert panel of six content experts (four PhD-prepared nurses and two psychologists) and two Arabic language PhDs, who assessed linguistic and cultural appropriateness. Panel members rated each item's relevance, clarity, and appropriateness on a three-point scale (1=not necessary, 2=useful but not essential, 3=essential). We computed both item-level (I-CVI) and scale-level (S-CVI) content validity indices. All I-CVI and S-CVI values exceeded the recommended threshold of 0.80,[27] confirming strong content validity and resulting in the retention of all items. Subsequently, the internal consistency of the scales was assessed. Following the establishment of validity and reliability, summated scores were computed to represent the latent constructs for all subsequent analyses.

Turnover intentions were measured using the four-item scale developed by Alberts et al.[21] Respondents indicated their agreement with each item (e.g. "I am planning to look for a new job") on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The measure demonstrated strong internal consistency in the original development study (α=.93), which was replicated in the present sample (α=.82).

Emotional intelligence was measured using the 16-item Wong and Law Emotional Intelligence Scale (WLEIS).[22] CCNs responded on a seven-point Likert scale ranging from "1 (strongly disagree) to 7 (strongly agree)". The instrument comprises four distinct subscales: Self-emotions appraisal, others-emotions appraisal, use of emotion, and regulation of emotion, each containing four items. The WLEIS showed excellent internal consistency in the present sample (α=.90), aligning with the established reliability of the original instrument (α=.87).

The 12-item *Workplace Belongingness* Scale was used to assess CCNs perceived sense of belonging in their workplace. This instrument employs a 5-point Likert scale, ranging from "1 (strongly disagree) to 5 (strongly agree)", where higher scores indicate a stronger sense of belonging. All items on the scale are positively worded.[23] In this study, it demonstrated excellent internal consistency (Cronbach's α=.86)

Work-related stress among CCNs was evaluated using the 10-item Perceived Stress Scale (PSS). Items are rated on a 5-point Likert scale from 0 (never) to 4 (very often). Consistent with the standard scoring protocol, responses for items 4, 5, 7, and 8 were reverse-scored prior to summing all items to generate a total stress score.[24] The scale has previously demonstrated strong internal consistency (α=0.86). In the present study, it also exhibited excellent reliability (Cronbach's α=.88).

Moral distress was assessed using a revised 21-item Moral Distress Scale.[28] Responses on this Likert-type instrument range from 0 (never) to 4 (very frequently), measuring the frequency of MD experienced in critical care settings across five factors: "lack of competence in the work," "ignoring," "futile care," "absolute follow the physician's orders and unsafe care," and "providing care under personal and organisational pressures." The original validation study reported strong internal consistency for the overall scale (α > 0.73). In the current sample, this excellent reliability was replicated (Cronbach's α=.93).

The Shortened Fatigue Questionnaire (SFQ) was used to assess fatigue.[25] The instrument comprises of four items: "I tire easily," "I feel tired," "I feel fit," and "I feel physically exhausted." Participants rated each item on a 7-point Likert scale ranging from 1 ("yes, that is true") to 7 ("no, that is not true"). To calculate the total score, responses to the third item ("I feel fit") were reverse scored, after which the scores for all four items were summed. The instrument has previously demonstrated strong internal consistency (α=0.88). In the current sample, the SFQ showed excellent reliability, with a Cronbach's α of .94.

To ensure consistent data collection procedures, three nurses from both the ICU and emergency department were purposively selected to represent a range of clinical shifts. Following a standardised training session on the study protocol, these nurse-data collectors were responsible for participant recruitment. They obtained informed consent by detailing the study's purpose, ensuring anonymity and confidentiality, and advising participants of their right to withdraw without penalty. Subsequently, the nurses distributed the questionnaires, the first page of which contained a written consent form. Upon return, each questionnaire was immediately reviewed for completeness. Any with missing data were promptly returned to the participant for completion. Data collection took place between May 20 and July 31, 2024.

DATA ANALYSIS

The data analysis proceeded in two primary stages. Initial data management and statistical analyses were performed in IBM SPSS Statistics (Version 26). Subsequently, the hypothesised structural equation model was tested using Amos Graphics (Version 24) (SPSS Inc., Chicago, IL, USA).

Prior to primary analysis, all continuous variables underwent rigorous screening for univariate normality. This was assessed through both statistical tests "Kolmogorov–Smirnov" and the examination of skewness and kurtosis indices. The observed values for skewness (range: -1.22 to 0.66) and kurtosis (range: -0.13 to 1.07) fell well within the conventional thresholds of ±2,[29] thus supporting the assumption of normality and the use of parametric tests.

Descriptive statistics, including frequencies and percentages for categorical variables; means and standard deviations for continuous variables, were computed to characterise the sample. To examine group differences in key demographic and study variables, independent samples t-tests and one-way Analysis of Variance (ANOVA) were employed. Where ANOVA results indicated significant omnibus effects, Tukey's Honestly Significant Difference (HSD) post-hoc test was applied to control for Type I error while making pairwise comparisons. Practical significance was quantified using Cohen's d for two-group comparisons and Eta-squared for multiple groups explained. Bivariate associations between continuous variables of interest were quantified using Pearson's correlation coefficient (r).

The core research objective and hypothesis, which proposed a theoretically derived mediating mechanism, was tested using path analysis within a structural equation modelling (SEM) framework. To rigorously test the significance of the proposed indirect (mediation) effects, we employed a bootstrapping procedure with 5,000 resamples. The final measurement model demonstrated a good fit to the data, as indicated by the following indices: Chi-square=6.996, DF=3, p=.072, CMIN/DF=2.332, GFI=.994, NFI=.991, RFI=.956, IFI=.995, TLI=.974, CFI=.995, and RMSEA=.058. All statistical tests were two-tailed, with a pre-determined significance level of α=0.05.

ETHICAL AND INSTITUTIONAL APPROVALS

This study adhered to the Declaration of Helsinki [30] and received ethical approval from Al-Razi University (grant numbers: RU/02/FMHS/2023). The Research Ethics Committee reviewed and approved the study protocol on December 01, 2023. Approval was also obtained from relevant hospital authorities. All participating CCNs received comprehensive study information and provided written informed consent before completing the anonymous questionnaire. Data access was strictly limited to the research team, ensuring participant non-identifiability.

RESULTS

CCNS CHARACTERISTICS AND ASSOCIATION WITH WORKPLACE STRESSORS AND TURNOVER INTENTION

Most CCNs in this study were aged 30 years or older (63.5%), females (51.9%), held a bachelor's degree (61.0%), and were married (57.0%). Most had five or fewer years of experience in critical care settings 170 (43.0%). Notably, a large majority (80.8%) reported that their monthly income was insufficient, with this being more common among those working in public and teaching hospitals (65.8%). Furthermore, nearly half of the nurses (48.9%) were assigned a heavy workload, defined in this context as caring for three critically ill patients concurrently. This patient load exceeds the standard nurse-to-patient ratio of 1:1 or 1:2, which is widely advocated in ICUs to ensure patient safety and quality of care.

CCNs aged over 40 years exhibited significantly higher scores for sense of belonging and lower turnover intentions (p=.035 and .002, respectively). Female nurses reported significantly higher levels of fatigue compared to male nurses (p=.021). Nurses with the marital status of divorced or widowed experienced significantly higher MD, as indicated by the significant difference between marital status and MD (p=.019). Nurses with more than 10 years of expertise demonstrated a significantly higher sense of belonging and lower turnover intentions (p=.048 and .011, respectively). Those reporting insufficient monthly income exhibited significantly higher turnover intentions (p=.007). Nurses employed in private hospitals reported significantly higher sense of belonging, EI, and lower turnover intentions (p=<.001, .010, and .036, respectively). Finally, nurses caring for three critical patients reported significantly higher fatigue, lower sense of belonging, and higher turnover intentions (p=.044, .014 and <.001, respectively). The observed effects, while statistically significant, are modest in magnitude, suggesting limited practical or clinical relevance (see Appendix).

Correlation matrix between workplace stressors and turnover intention

Table 1 presents the bivariate correlation matrix among the study variables. As anticipated in H1, turnover intention was positively associated with all measured workplace stressors, demonstrating significant, albeit weak, correlations with work stress (r=.225, p < .001), MD (r=.217, p < .001), and fatigue (r=.225, p < .001). Further, the results offered preliminary evidence for the mediating mechanisms proposed in H2 and H3. Turnover intention exhibited moderate negative correlations with two key protective factors: sense of belonging (r=-.404, p < .001) and EI (r=-.426, p < .001). Notably, MD demonstrated strong associations with both work stress (r=.649, p < .001) and fatigue (r=.687, p < .001), and a similarly strong correlation emerged between fatigue and work

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TABLE 1. CORRELATION MATRIX BETWEEN STUDY VARIABLES

Variable	items	Score	Mean	SD	Correlation coefficient (r)					
					1	2	3	4	5	6
1. Work stress	10	0–40	25.49	5.31	1					
2. Moral distress	21	0–84	65.10	3.85	0.649**	1				
3. Fatigue	4	4–28	21.49	3.27	0.655**	0.687**	1			
4. Sense of belonging	12	12–60	43.65	5.26	–0.246**	–0.152**	–0.286**	1		
5. Emotional intelligence	16	16–112	65.77	14.76	–0.166**	–0.268**	–0.220**	0.431**	1	
6. Turnover intentions	4	4–20	14.75	3.51	0.225**	0.217**	0.225**	–0.404**	–0.426**	1

Notes: **Correlation is significant at the 0.01 level; α=Cronbach's alpha; SD=Standard deviation

stress (r=.655, p < .001). Finally, EI appeared to function as a potential buffer. It was positively and moderately correlated with sense of belonging (r=.431, p < .001) and showed significant, though weaker, inverse relationships with work stress (r=-.166, p < .001), MD (r=-.268, p < .001), and fatigue (r=-.220, p < .001).

Mediation model

To test the proposed mediation model, we examined the direct, indirect, and total effects within the path model (Figure 2, Table 2). The findings provide strong evidence for the mediating pathways. First, the path analysis offered partial support for Hypothesis 1 (H1), which posited a direct effect of workplace stressors on turnover intention. While the direct paths from individual stressors to turnover intention within the complex model were not all significant, the model confirmed that MD operates as a primary driver within the stressor network, exerting a significant direct positive effect on both fatigue (β=.69, 95% CI=.49-.83, p=.001) and work stress (β=.38, 95%CI=.25-.55, p=.001). Fatigue, in turn, was a significant direct predictor of work stress (β=.40 95% CI=.16-.53, p=.008).

Second, concerning the independent mediating roles (H2), the model revealed that MD had a significant direct negative effect on EI (β=-.24, 95%CI=-.39-.00, p=.050). In turn, EI was a potent, direct negative predictor of turnover intention (Total Effect: β=-.42, p < .001). Similarly, both MD (β=.24, 95%CI=.02-.38, p=.036) and work stress (β=-.15, 95%CI=-.27- -.03, p=.014) had significant direct effects on sense of belonging, which itself was a significant negative predictor of turnover intention. Crucially, the indirect effects through both mediators were statistically significant. Specifically, EI (β=-.31, 95% CI=-.39- -.21, p< .001) and sense of belonging (β=-.27, 95% CI=-.36- -.16, p=.001) significantly buffered the adverse effects of the stressors, thereby reducing turnover intention. These findings fully support H2.

Third, regarding the indirect effect pathways (H3), the analysis confirms that workplace stressors exert a significant positive indirect effect on turnover intention through the serial depletion of EI and sense of belonging. The model elucidates a clear cascade: MD directly increases fatigue (β=.69, 95%CI=.49-.83, p=.001) and work stress (β=.38, 95%CI=.25-.55, p=.001). The decomposed indirect effects were significant, demonstrating that MD increases turnover intention through its negative impact on EI (β=.07, p=.034).

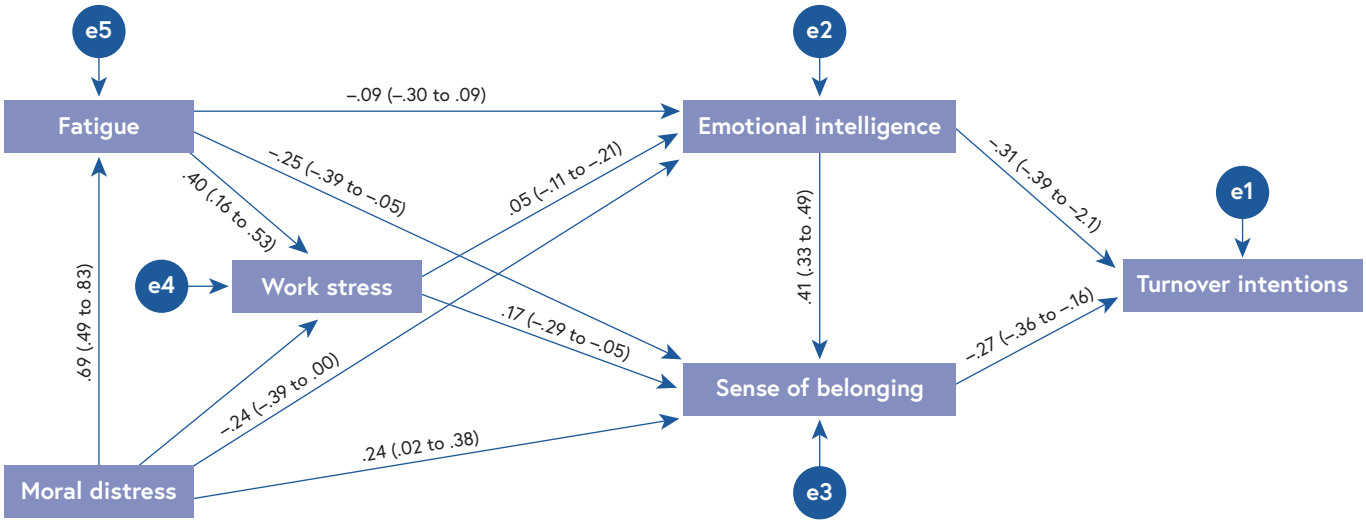

FIGURE 2. MEDIATION MODEL OF EMOTIONAL INTELLIGENCE AND SENSE OF BELONGING BETWEEN WORKPLACE STRESSORS AND TURNOVER INTENTIONS OF CCNS

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TABLE 2. STANDARDISED INDIRECT, AND TOTAL EFFECTS OF STUDY VARIABLES

Variables	Indirect effects			Total effects		
	β	95%CI	*p*	β	95%CI	*p*
MD –> WS	0.27*	0.17 to 0.35	0.002	0.65	0.53 to 0.74	0.001
MD –> EI	–0.03*	–0.22 to 0.08	0.602	–0.27	–0.36 to –0.16	<0.001
MD –> SB	–0.39*	–0.50 to –0.26	<0.001	–0.15	–0.27 to –0.02	0.016
MD –>TI	0.12*	0.06 to 0.18	<0.001			
Ft –> EI	0.02*	–0.03 to 0.10	0.473	–0.07	–0.29 to –0.08	0.380
Ft –> SB	–0.10*	–0.18 to –0.01	0.027	–0.34	–0.46 to –0.14	0.005
Ft –> TI	0.11*	0.03 to 0.18	0.008			
WS –> SB	0.02*	–0.04 to 0.09	0.575	–0.15	–0.27 to –0.03	0.014
WS –> TI	0.03*	–0.04 to 0.09	0.445			
EI –> TI	–0.11*	–0.16 to –0.06	<0.001	–0.42	–0.48 to –0.34	<0.001
MD –> EI –>TI	0.07	0.01 to 0.12	0.034			
MD –>SB –>TI	–0.06	–0.10 to –0.01	0.020			
Ft –>EI –>TI	0.03	–0.02 to 0.10	0.322			
Ft –>SB –>TI	0.07	0.02 to 0.12	0.014			
WS –>EI –>TI	–0.01	–0.04 to 0.02	0.548			
WS –>SB –>TI	0.03	0.01 to 0.06	0.003			
EI –>SB –>TI	–0.03	–0.04 to –0.02	<0.001			

Notes: *=total indirect effect; MD=moral distress; Ft=fatigue; WS=work stress; EI=emotional intelligence; SB=sense of belonging; TI=turnover intention

Furthermore, both fatigue and work stress exerted significant positive indirect effects on turnover intention through the mediating pathway of a reduced sense of belonging (β=.07, p=.014 and β=.03, p=.003, respectively). It is noteworthy, however, that not all indirect pathways were significant; the specific paths from fatigue and work stress through EI were non-significant (p > .05). Nevertheless, the preponderance of evidence, particularly the significant serial pathways, provides robust support for H3.

DISCUSSION

This study is the first in the region to delineate the complex interrelationships among MD, work stress, fatigue, sense of belonging, EI, and turnover intention in CCNs. The primary objective was to test a theoretical model positioning EI and sense of belonging as critical mediators between workplace stressors and turnover intention. The findings confirm the hypothesised model, revealing a nuanced network of direct and indirect pathways that elucidate the psychological mechanisms underpinning CCNs' retention.

The findings revealed several salient demographic associations. Notably, CCNs over the age of 40 reported a stronger sense of belonging, a finding that may reflect the cumulative benefits of established professional networks, organisational socialisation, and the development of role-specific expertise and coping strategies.[31,32] These factors likely foster a more resilient professional identity, which buffers against turnover intention. Furthermore, female nurses reported higher levels of fatigue, a result consistent with literature highlighting the dual burden of professional and traditional domestic responsibilities.[33] We also observed that divorced or widowed nurses experienced heightened MD, potentially due to the compounding effects of significant personal loss, social isolation, and financial strain, which may deplete the emotional resources necessary to navigate ethical dilemmas. This finding is consistent with extant literature demonstrating that spousal loss, whether through divorce or bereavement, is associated with more severe manifestations of MD and burnout, which in turn correlate with poorer overall health outcomes.[34]

At the organisational level, our data aligns with and extends the existing corpus of evidence on nurse retention. For instance, our finding that employment in private hospitals positively influenced sense of belonging, EI, and turnover intentions underscores the profound role of organisational structures in nurse well-being. This corroborates the work of Nantsupawat et al., who identified the work environment as a pivotal factor in retention and burnout.[1] The protective role of a supportive environment can be explained by its capacity to provide crucial resources; recent evidence suggests that social support at work facilitates psychological recovery, thereby reducing exhaustion and enhancing job satisfaction.[35] Similarly, the detrimental impact of insufficient income on job satisfaction and retention, as noted in previous studies was also observed in our cohort.[31,36]

A central finding of this study is the pivotal role of MD as a driver of negative outcomes. Our mediation analyses reveal that MD operates indirectly by impairing two key protective resources: EI and sense of belonging. This suggests that recurrent ethical dilemmas do not just cause immediate psychological pain but also gradually deplete the very capacities CCNs need to cope effectively. A parallel pathway was identified for fatigue, which amplifies work stress, leading to a similar diminishment of EI and sense of belonging, thereby increasing turnover intention. These findings regarding the direct effect of MD align with a robust body of prior research demonstrate a strong correlation between MD and intent to leave the workplace.[5,7,37,38]

Interestingly, EI and sense of belonging were positively correlated, indicating a potential synergistic relationship. This synergy can be interpreted as a virtuous cycle: Nurses with higher EI may be more adept at building and maintaining the social bonds that foster a sense of belonging,[39] which in turn provides a supportive context and psychological safety for the exercise of emotional skills. The specific competencies underpinning EI, including empathy, self-awareness, and effective communication and conflict resolution skills, are fundamental to fostering a supportive and collaborative work environment.[10]

These findings can be powerfully interpreted through the lens of Lazarus and Folkman's Transactional Model of Stress and Coping.[10] Within this framework, EI can be viewed as a key personal resource that shapes the primary appraisal of a stressor (e.g. judging an ethical constraint as a "challenge" rather than a "threat") and the secondary appraisal of one's coping capabilities. CCNs with high EI are likely better equipped to reframe challenging ethical situations, regulate the attendant negative emotions, and employ constructive strategies,[38] thereby mitigating distress. This aligns with nursing-specific research linking EI and a positive work environment to higher compassion satisfaction, a key buffer against burnout and fatigue.[40] Furthermore, the role of EI in reducing turnover intention may be explained by its ability to foster affective organisational commitment, an established mediator in this relationship.[41]

LIMITATIONS

While the multicentre design and high response rate bolster the generalisability and robustness of these findings, several methodological limitations must be acknowledged. Primarily, the cross-sectional nature of the data prohibits the determination of causal relationships among the variables studied. Furthermore, the reliance on convenience sampling and self-reported measures introduces the potential for selection bias and common method variance, which may influence the observed associations. The specific context of the participating Yemeni hospitals, though diverse, means the findings may not be fully generalisable to all nursing populations, particularly those in different healthcare systems or cultural settings. The external validity of these insights is thus bounded by the study's sampling frame. Notwithstanding these constraints, this investigation provides a critical, foundational examination of a previously underexplored facet of Yemeni nursing practice. The novel theoretical model and the empirical relationships identified offer a valuable platform for future longitudinal or experimental research to establish causality and explore the transferability of these findings.

IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

This study yields critical, actionable implications. For research, this work opens pivotal avenues. The correlational evidence for EI and belonging necessitates experimental and longitudinal designs to establish causality. Furthermore, the demographic finding of widespread insufficient income suggests socioeconomic factors may critically interact with psychological variables, demanding future inquiry into these moderating relationships across diverse cultural and institutional contexts to advance a nuanced, global model of nurse retention.

For policy, the findings mandate a dual-pronged strategy: mitigating occupational stressors (work stress, fatigue, MD) while proactively cultivating psychological resources. Evidence indicates that enhancing EI and fostering a sense of belonging are not merely beneficial but function as essential buffers against turnover intention. Consequently, policy must transcend generic wellness initiatives to institutionalise systematic assessments of MD and fatigue, informing targeted interventions like predictive staffing and flexible scheduling.

For practice, these results provide a validated framework for nurse leaders to build unit-specific resilience. This entails integrating EI training as a core competency, creating forums for moral discourse, and designing workflows that intrinsically foster a collective sense of belonging and shared purpose.

CONCLUSION

This investigation provides a more nuanced framework for understanding turnover intention among CCNs. We establish that work stress, fatigue, and MD do not operate in isolation but form a synergistic cluster of depletion that actively erodes retention. Crucially, however, this pathway is not deterministic. Our analysis reveals a critical buffering mechanism, wherein an internal resource (EI) and an external resource (a perceived sense of belonging) significantly moderate the impact of these stressors. By modelling this interplay, this study moves beyond correlational evidence to propose a testable, dual-pronged

model of resilience. The central implication is that effective retention strategies must evolve. Rather than focusing solely on the mitigation of negative workplace factors, interventions must proactively foster these specific psychological assets. Thus, the future of CCN retention lies not merely in alleviating systemic pressures, but in concurrently equipping the workforce with the emotional and social competencies required to navigate them successfully.

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RESEARCH ARTICLES

Peripheral intravenous catheter insertion training for undergraduate dual degree nursing and midwifery students: A descriptive qualitative study

AUTHORS

DANER L BALL RN, MHSM, BN,[1,2,3,4]
GILLIAN RAY-BARRUEL RN, PhD, BSN [1,2,3,4,5]
BARBARA HEWER RN, BN [5]
GLENDA HAWLEY RM, RN, PhD [1]
LAUREN KEARNEY RM, RN, PHD [1,2,5]
JESSICA A SCHULTS RN, PhD, BN [1,2,3,4]
NICOLE MARSH RN, PhD, BN [1,4,5]
CLAIRE M RICKARD RN, PhD, BN, FAAN, FACN, FAHMS [1,2,3,4,5]

1. School of Nursing, Midwifery and Social Work, The University of Queensland, Brisbane, Queensland, Australia
2. The Frazer Institute, The University of Queensland, Herston, Queensland, Australia
3. Herston Infectious Diseases Institute, Metro North Hospital and Health Service, Herston, Queensland, Australia
4. Alliance for Vascular Access Teaching and Research (AVATAR), Griffith University, Nathan, Queensland, Australia
5. Nursing and Midwifery Research Centre, Women's and Newborn Services, Royal Brisbane and Women's Hospital, Herston, Queensland, Australia

CORRESPONDING AUTHOR

DANER L BALL School of Nursing, Midwifery and Social Work, The University of Queensland, Level 5, Building 71/918, The Frazer Institute, RBWH Campus, Herston, Queensland 4029, Australia. E: d.ball@uq.edu.au

ABSTRACT

Background: Seventy percent of hospital admissions require a peripheral intravenous catheter (PIVC) and there is a shortage of skilled inserters. In some countries, undergraduate nursing and midwifery programs teach PIVC insertion, however, in Australia, this is typically limited to simulated PIVC insertion, without hospital-based PIVC insertion experience. We aimed to achieve nursing and midwifery undergraduate clinical competence in PIVC insertion by including hospital-based training.

Objectives: To understand 1) the experience of undergraduate nurse/midwife students who received hospital-based training to achieve PIVC insertion competency; and 2) the impact of the training on nurses/midwives' future PIVC insertion practice.

Study design and methods: Final year students completed a 5-day clinical placement with a hospital vascular access surveillance and education service. Semi-structured interviews occurred at the completion of the placement. A brief cross-sectional survey 12 months later questioned the impact of this training on their subsequent practice as registered nurses/midwives. Interviews were analysed using Braun and Clarke's six phases of inductive thematic analysis to detail participants' experiences and beliefs. Survey data was described descriptively and barriers and enablers to clinical competency were explored.

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RESEARCH ARTICLES

Results: A total of 19 students participated in the clinical placement between March and September 2022 with 16 achieving clinical competency. Eleven students were interviewed. Key themes developed include: 1) clinical PIVC training for undergraduate nurse-midwives builds knowledge, skills, and confidence; 2) mixed mode clinical placement learning builds on undergraduate university training; and 3) barriers and enablers to clinical competency. At 12 months, 60% of participants were employer-certified as PIVC competent and had performed the procedure as a graduate nurse or midwife.

Conclusions: Clinical placement with hospital-based vascular access services can enable undergraduate student nurses and midwives to develop PIVC competency. The study highlights the critical role of clinical placements in better preparing nursing and midwifery students for the demands of contemporary healthcare practice.

What is already known about the topic?

- In Australia, nursing and midwifery undergraduate education commonly includes PIVC insertion, however, students do not have the opportunity to obtain competency in PIVC insertion via a hospital-based training program.
- Nurses and midwives have the opportunity to obtain their PIVC competency once registered, usually within specialty departments such as emergency, operating theatres, and birth suite.
- Internationally, nursing students commonly learn to insert PIVCs and continue to utilise this skill for the duration of their clinical placements.

What this paper adds

- This paper demonstrates that nursing and midwifery students are able to obtain PIVC competency as part of a hospital-based training program and maintain this skill after one year.

Keywords: Catheterisation, competency-based nursing education, nursing, midwifery, peripheral education, vascular access device

BACKGROUND

Healthcare organisations expect graduate nurses and midwives to be competent and "work ready", able to practice autonomously with minimal guidance. As such, clinical placements are integral to the education and development of nursing and midwifery students.[1,2] Placements provide context for theory and opportunities to practise clinical skills under the guidance of experienced practitioners.[3,4] To achieve competence, nursing and midwifery students need opportunities to practise clinical skills in real settings.

It is estimated that 70% of hospitalised adult patients require a peripheral intravenous catheter (PIVC) to receive medications and fluids, making PIVC insertion the most frequent invasive procedure in hospitals.[5,6] In Australia, the care and maintenance of these devices is shared between health professionals. Junior medical staff, following the completion of a PIVC training program, insert the majority of PIVCs in Australia,[7] while nurses and midwives are primarily responsible for day-to-day device maintenance.[8,9] However many nurses also cannulate, particularly in specialty areas (e.g. emergency department [ED], infusion centres, medical imaging departments, haemodialysis [HD] units, cancer treatment services or vascular access teams) or in areas where medical staff are not readily available (e.g. rural and remote regions).[5,7,10-13] Nurses in general medical and surgical areas generally have less opportunity to obtain PIVC competency within their specialty, despite evidence that PIVC insertions in these areas are often delayed due to inadequate numbers of inserters.[14] Due to medication administration or prophylaxis most women have a PIVC during labour and birth,[15] therefore midwives also cannulate. In contrast, in most other countries PIVC insertion is primarily a nursing or midwifery,[16,17] rather than medical, responsibility, and undergraduate education commonly includes PIVC insertion.[5] For Australia to meet national standards for PIVC management,[18] it is timely to reflect on the job-readiness of students in this area. Australian undergraduate nursing, midwifery, and medical university programs usually teach PIVC insertion and maintenance through simulation-based learning throughout the duration of the program.[1,19] Usually, the PIVC skill is taught in laboratory settings, where students practise cannulation as part of clinical simulation scenarios. During clinical placements, however, hospital-based PIVC programs primarily target third- and fourth-year medical students to prepare them for their internship year. In contrast, nursing and midwifery students are rarely offered opportunities to practise cannulation, and therefore, they require additional training once registered to achieve PIVC insertion competence, potentially delaying their work readiness.

Teaching nurse/midwife students to insert PIVCs under the direct supervision of expert cannulation competent trainers during clinical placement is likely to have a career-long benefit to these practitioners and to health services by increasing knowledge, skills and confidence with this common procedure, promoting work readiness upon graduation. Therefore, the aims of this study were to understand 1) the experience of undergraduate nurse/

midwife students who undertook clinical placement rotation with a hospital vascular access surveillance and education service with a focus on achieving PIVC insertion competency; and 2) the impact of the training on their future practice as registered nurses/midwives.

METHODS

STUDY DESIGN

A descriptive, qualitative study was conducted within the Vascular Access, Surveillance and Education (VASE) unit at a large quaternary hospital between March 2022 and September 2022 to evaluate a novel nursing/midwifery student clinical placement focussed on PIVC insertion.[19,20] This study is presented in line with the Consolidated Criteria for Reporting Qualitative health research (COREQ).[21]

SETTING

The VASE unit is a dedicated and focused team that facilitates clinical, educational and surveillance aspects of vascular access device utilisation. The unit's objective is to improve clinical outcomes by preventing bacteraemia and other morbidity associated with vascular access devices and to maintain vessel health.

SAMPLE

A purposive sample of fourth-year (final year) undergraduate dual degree (nursing and midwifery) students enrolled at the University of Queensland, were invited to participate in a clinical placement in the VASE unit.

PROCEDURE

Participants completed a structured five-day clinical placement in the VASE unit under the supervision of Clinical Nurses (CNs). The focus of the placement was to build on students' content knowledge of vascular access and gain competency in PIVC insertion.

Prior to patient interactions, participants were provided with a workbook and attended a practical skills workshop to practise PIVC insertion on mannequins to build on their university PIVC skills training.

Participants were then supervised by CNs in PIVC insertion on a variety of patients with differing vascular characteristics, including those with difficult intravenous access, young adults, and the elderly, using both visual and palpation techniques across various sites on the forearm, providing them with a spectrum of potential clinical scenarios.

A clinical skills assessment tool for PIVC insertion, previously developed by VASE for health professionals, was used to determine competence. The tool required students to perform multiple supervised insertions until they demonstrated safe, independent practice. Competence was determined by the number of successful insertions and satisfactory completion of all performance criteria outlined in the assessment. The required number of successful insertions was individually based. Consent was obtained from patients requiring a PIVC prior to insertion.

Upon completion of this clinical placement, between May 2022 and January 2023, students were invited via email from the university administration to participate in voluntary face-to-face semi-structured interviews to understand students' perceptions, experiences, and self-assessed competence in PIVC insertion. A brief 12-month follow-up cross-sectional survey was then sent to students between July 2023 and October 2023 to assess their self-reported experience, competence and professional development with PIVC insertion since commencing work as a new graduate nurse/midwife.

DATA COLLECTION

Semi-structured interviews

Eleven face-to-face semi-structured interviews were conducted between 26 May 2022 and 4 January 2023. A mix of 9 closed and open-ended questions were developed by the research team and informed by vascular access specialists, university course convenors and a quality clinical placement evaluation tool.[22] One interviewer (DB), a female registered nurse and experienced qualitative researcher with no prior relationship with the participants, conducted all the interviews. These were conducted in person at times and in locations (e.g. hospital or university setting) convenient for participants using a structured interview proforma for guidance. Only the researcher and participant were present during the interviews, which lasted an average of 12 minutes. Interviews were audio-recorded and transcribed verbatim, with answers anonymised before the analysis. Transcripts were not returned to participants for comments and clarifications. Interview questions are provided in supplementary material 1.

Twelve-month follow-up survey

An 8-question, cross-sectional survey was developed based on interview data and tested for face validity by the investigators, a small group of expert nurse and midwife researchers, and then sent to all clinical placement participants between 17 July 2023 and 29 October 2023 via Microsoft Forms™. Surveys were a mix of open and closed answer questions, distributed via email and accessible on both computer and mobile devices. Two reminders were sent each month over the course of three months to those who had been interviewed, to encourage participation. Survey questions are provided in the supplementary material.

DATA ANALYSIS

Braun and Clarke's six phases of inductive thematic analysis were used to detail the experiences and beliefs of participants.[23] Interviews were transcribed and coded line-by-line independently by two researchers (DB and GRB) to enhance dependability.[24] Codes were utilised to inform the development of concepts, themes and sub-themes identified by consensus between researchers. Themes were reviewed in relation to coded extracts, and a thematic map was generated. A selection of extract examples was provided in text to support final themes. Themes were reviewed and defined with continued reference to codes and raw data via ongoing consultation with the project team to enhance validity.[24,25]

Survey responses were tabulated into counts and percentages for quantitative responses and thematically analysed in the same method as interviews for the open-ended responses.

Interview and survey responses were then compared to achieve a full understanding of both the immediate student experience and understand the impact of this training on clinicians' future practice.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the University of Queensland (Ref 2022/HE000191) prior to the commencement of the study. All interview participants received a written participant information sheet and provided informed written consent. Voluntary completion of the online survey was considered consent to participate.

RESULTS

INTERVIEWS

A total of 19 nurse/midwife students participated in the 5-day clinical placement with the VASE service between 28 March 2022 and 16 September 2022. All students identified as female, aged between 20 and 30 years. Twelve students (63%) agreed to participate in a follow-up semi-structured interview, however, one could not find time to participate due to clinical requirements and seven (37%) did not respond to the email invitation.

Of the responses from the 11 students who participated in interviews, three key themes were identified:

1. Clinical PIVC training for undergraduate nurse-midwives builds knowledge, skills and confidence.

Participants spoke of how beneficial they found their clinical placement with the VASE service. Participants particularly enjoyed the opportunity to master an important skill in a safe learning environment not usually offered to them as undergraduates.

> "I enjoyed learning how to do it [cannulation] properly … I think overall it was a good experience to learn how to do that, because it's a really great skill to have as a midwife, and it's like every woman needs one if they're having a fluid intervention in their labour and delivery, and it's just something you should do rather than getting a doctor to do it, especially because sometimes the doctor isn't around. I really enjoyed learning it and I look forward to using the skill." (Interview 6)

> "Overall, the experience was a very positive one with both the staff and patients and learning the skill. I found the skill very valuable in the clinical setting, and I thought it helped alleviate some of the stress in the emergency department as well as in nuclear medicine in helping them to cannulate." (Interview 7)

Participants added that learning the 'how' and 'why' behind PIVC insertion and maintenance practices, in line with current policy, helped them to recognise the importance of using evidence-based practice for patients with a PIVC in their care.

> "In my placement I learned all the evidence behind the skill and evidence-based practice with really highly trained, skilled clinicians … We were taught why and then how as well and I think doing five days in a row really solidified those skills and the theory behind it, so it was a really good learning model." (Interview 1)

> "Definitely it enhanced my knowledge all about cannulation, not even just the insertion process, but the different types and the things you need to be aware of once they're inserted, how long they (the PIVCs) can last, the different types of areas and veins, my knowledge expanded a lot. It was honestly just because they were taking the time to explain and show me, we weren't in a rush, I could ask as many questions as I could, so they were really supportive, so yeah it enhanced my knowledge a lot." (Interview 5)

Participants appreciated the opportunity to gain confidence in PIVC insertion with VASE in a simulation environment prior to patient interaction and received one-on-one education, supervision and feedback when developing their PIVC insertion skills. Participants were asked to rate their level of confidence in PIVC insertion based on the amount of PIVCs they had inserted, successful attempts and knowledge of policies and procedures. Confidence levels were rated from 1–10 (10 being most confident). The predominant modifier for their confidence score was a desire to practise more, both during and post placement.

> "Overall, if I'm going to be honest, I would say a 6. I only … I'm certified now, but I still don't feel 100% confident in cannulating and that's just because I had limited experience to do it due to the high demand of hard patients they needed to cannulate where I couldn't, even though I tried I wasn't successful, so my confidence was not there, because I haven't had many successful attempts." (Interview 5)

> "I feel like it would be a very strong 7 … I think I feel very confident going forward, but I feel like I would want one or more (because of the gap of doing it) sessions with someone just to brush over it and make sure I'm doing the right thing, otherwise performing the skill I feel very confident." (Interview 7)

2. Mixed mode clinical placement learning builds on undergraduate university training.

Mixed mode, informative and detailed teaching was a common theme identified.

> "I think it was really good,… we only had a three-hour session with our university learning, just on dummies, and then we hadn't been able to do it on actual people, so starting with the VASE team, we started from the very start, like the basics, all over again, and then went from basics to cannulating people, so it was really good starting from yeah the basics." (Interview 2)

> "So, during my experience, I had my first day doing a workshop with the nursing staff where there was theory and practice on the models, and then from the second day onwards I was practising on patients. There was a combination of ultrasound guided cannulations and just regular hand cannulations, and it was overall a really good experience." (Interview 4)

> "I think it greatly progressed my knowledge, 10/10 learning and teaching, as I said the teaching that I got at uni was like, here's the dummy and this is how you do it, and that's it, you do it maybe once or twice. Then learning it from the CN on the dummy first and then going and doing it directly after in a human arm, like a live arm, was yeah much more helpful. And the more you do it the better you become, and we got to do quite a few that week. Because veins are all different, not all different, but some people have different structure of their veins, so it was good to do a lot of looking for veins and making sure that I was putting it in the right place and getting confirmation from the nurse. And then doing it, rather than just 'oh you can see where the vein on the dummy arm is because everyone's been there.'" (Interview 6)

Participants valued spending time with clinicians who specialised in vascular access insertion, management, and surveillance, as they believed they were able to build on the knowledge they had learnt at university and practise those skills in a safe, supervised, clinical environment.

> "So previously I hadn't had any actual real experience in cannulation, I had just done it on a mannequin at a random 2-hour workshop, at a random point in the year and hadn't had the opportunity to complete the skill on a real person. So, it was extremely beneficial to have that one-on-one experience and education with the VASE team members and going around and completing cannulation on patients in the hospital. It was also good working with staff who were very specialised in that area as well because they had lots of knowledge and education that they could provide to us in regard to completing calculations and also the care of cannulas." (Interview 10)

Participants discussed that this combination of university and hospital teaching supported their skill development and improved their confidence with PIVC insertion and maintenance.

> "I would say it definitely built upon the foundation of what we got in the course, I would say it was very basic in the course and very briefly covered, the skill was quite brushed over. I think that going into the VASE team and having to do the pamphlet and the booklet it just opened up everything, like the education on infection control was much more in depth, which I think was more beneficial to our practice. And also having one on one time with the supervisors. When you're learning in uni with classes with 8 people with one tutor for 2 hours, whereas this was five sessions one-on-one most of the time, which was really good to build upon the small foundation we had, so I feel like I'm much better prepared now then I was." (Interview 7)

One respondent stated that the placement with the VASE service also helped in learning how to provide education to patients and other staff members, as well as alleviate some of the workload for staff.

> "The most helpful aspects were being able to take over from other staff who were stressed with having to fulfil other tasks, I think we saved them a lot of time being able to do that for them. I think it was good for even the patients being able to see students in the learning environment, and they also got education while we got education, because when you're doing the skill the supervisor would explain it to us and educate us, and I think that the patients also picked up on that which made them feel more comfortable with why they were getting it. And I think it was also helpful with teaching some of the staff, because I know when I was in the emergency department some of the staff had questions directed to the VASE team, so they could ask questions in real time and that was really helpful for their training and education as well." (Interview 7)

3. Barriers and enablers to clinical competency.

Inserting PIVCs under the direct supervision of a qualified PIVC trainer outside of VASE is a condition for all students (medical, nursing and midwifery) who successfully obtain their PIVC competency. However, several students/participants reported that it was difficult to find opportunities to cannulate once they finished the clinical rotation with the VASE team, due to staff being too busy or a lack of available qualified PIVC trainers to supervise them.

> "The challenge is just about getting the opportunity to do the actual practice on people and on patients, and also finding people that are confident enough to guide me, especially when I was finished with the PIVC group, you have to actually go and find someone who is confident and giving you the opportunity to do it is really hard." (Interview 3)

> "I think … a limitation was [there] weren't a lot of trainers, there weren't a lot of opportunities for me to cannulate in the birth suite which was frustrating because I wanted to use the skills that I had and I wanted to make sure that I was keeping it up and doing it correctly, because the more cannulations you do the better you become, then if I don't do it a lot I won't become better." (Interview 6)

> "The main [challenge] for me was just that it was really late … in my whole placement block, so I did it and then I finished my placement a week later, so I didn't have much of an opportunity to carry on the skill as a student, especially considering I went to a different clinical area afterwards where cannulation was impossible for me as a student … Also, during the five shifts there was a lot of downtime as the VASE staff needed to complete their own research or their other tasks that they were doing or they had other obligations such as CVAD workshops and stuff which I was still able to attend but obviously wasn't as relevant to completing cannulation." (Interview 10)

Participants recommended the clinical placement with the VASE service would benefit all undergraduate nursing and midwifery students, rather than dual degree students only.

> "I would say everyone should do it when they are a student, and everyone should learn (cannulation), especially not only the dual degree but also like nursing (straight nursing and straight midwifery)" (Interview 3)

> "Where possible, expand the training to nursing students as well because in my perspective nursing students would actually probably have more opportunities to complete cannulation on wards or in their clinical areas compared to midwifery." (Interview 10)

A common recommendation was to move the clinical rotation earlier in their undergraduate studies. Two reasons were offered for this: 1. To avoid the stress of having to complete the rotation at a time when they were trying to complete their clinical requirements (specifically achieving primary attendance at 30 spontaneous vaginal births); and 2. To give them more time to practise PIVC insertion before graduating.

> "I think it will be better to do it when you're second year, … already know some knowledge, so you get two more years to practise…." (Interview 3)

> "If I'd been able to complete the cannulation insertion shifts earlier in my degree that would have been helpful, I would have been able to practise the skill a lot more and continued to build confidence and competency around the skill." (Interview 10)

> "I think what I would have absolutely loved … would be to have done the VASE experience one semester earlier. So, like at the end of third year just would have been so good because you were learning about cannulation in clinicals. And also, because of midwifery, everyone was so stressed about getting the birth numbers that you need to graduate. So, it was hard and it was a bit stressful for some people who didn't have the numbers … doing it a semester earlier would be so nice cause you could kind of just focus on it." (Interview 11)

TWELVE-MONTH FOLLOW-UP SURVEY

Nineteen 12-month follow-up surveys were distributed to all who participated in the 5-day placement with VASE in 2022. This survey saw a 52.6% (11 respondents) participation rate, similar to that of the interviews 12 months prior, with 90% of respondents having a positive experience in PIVC insertion since graduating. Of those who had obtained their PIVC competency and had cannulated since commencing work as a new graduate nurse or midwife (60%), 100% reported that the skills they had developed with VASE had progressed their skills and knowledge with PIVC insertion across a range of departments (ED, ward, birth suite, rural).

> "The training gave me a good foundation of the skills and has given me more autonomy in my practice as a nurse/midwife in the rural health service where I am currently working." (Response 8)

> "The clinical skills training received with VASE was fantastic. Having a workshop to refresh prior skills was also great and has allowed me to be more confident in the workplace." (Response 2)

Of those who had their undergraduate competency recognised by their graduate employer and who had completed a refresher workshop at a health service, over one-third (36%) of respondents stated that they had no challenges in maintaining their PIVC competency since commencing work as a new graduate nurse or midwife.

> "No. I easily was able to obtain PIVC competency within ED department." (Response 7)

However, 27% reported that there were limited opportunities to cannulate in their graduate work environment, with patients often cannulated in the Emergency Department or birth suite prior to admission to their ward. Additional challenges noted were a lack of PIVC competent assessors to assess new graduates (18%), as well as managers unaware that new graduates could now acquire their PIVC competency during their undergraduate degree (9%).

Of those who had cannulated since commencing work as a new graduate nurse or midwife (60%), when asked how many PIVCs they had inserted to date, respondents had inserted between 3 and 50 cannulations with an 80–100% success rate. Eight of 11 survey respondents insisted that seizing every opportunity to practise PIVC insertion was the key to gaining confidence and skill.

> "It is a great skill, so try to take any opportunity to practice. Like any new skill, initially, PIVC insertion really scared me but since inserting more I have gained confidence and am no longer nervous to cannulate." (Response 6)

When asked if participants had any recommendations that they believed would improve the program in future, 45% of respondents stated that completing VASE placement earlier in their degree would allow students to further develop their PIVC insertion skills on their remaining clinical placements. 20% stated that a refresher course with VASE would be beneficial to help students maintain and further develop their skills post placement. And 18% stated that having more PIVC trainers on the ward to supervise students once competent would provide students with more opportunities to practice their PIVC insertion skills.

DISCUSSION

This study has identified the benefits of PIVC insertion training and competence attainment for undergraduate dual degree nurse/midwife students through a clinical practice placement within a specialised vascular access hospital service. Clinical placements play an essential role in undergraduate nursing and midwifery degrees by providing hands-on, real-world experiences in a diverse range of health settings, thereby fostering the application of theoretical knowledge into the clinical environment.[26] Internationally, undergraduate nursing and midwifery students do have access to hospital-based PIVC training programs, and this is a mandatory component of their university curricula.[27,28] However, in Australia, medical students and nursing/midwifery students have access to simulation-based PIVC insertion training programs,[29] yet often do not receive this real-world training, meaning that it takes longer for them to become work ready following graduation.

This project highlights the importance of structured and comprehensive training programs in preparing students for clinical practice. Participants in this study perceived their 5-day placement with VASE as both enjoyable and beneficial, as they were able to gain competence in a skill not usually offered to them through a specialised hospital service. This positive response speaks to the effectiveness of providing students with a safe learning environment where they can master essential skills under the guidance of experienced practitioners. Offering one-on-one education, supervision, and feedback enables students to acquire technical skills and to understand the underlying evidence governing PIVC insertion and management. Research with undergraduate nursing students has identified that inconsistencies between content taught in the university and individual clinicians in the workplace can impede students' learning.[19] Registered nurses may not be up-to-date with evidence-based practice for PIVC insertion and management, and conflicting practices among different clinicians and work areas can lead to confusion for students,[19,30] however, we did not find any evidence of this disconnect in our results.

A key outcome of the study was the enhancement of participants' confidence in PIVC insertion following their clinical placement. By providing students with simulation-based learning opportunities and personalised education and feedback, the program empowered students to develop their skills with proficiency and assurance. An emphasis on understanding the rationale behind PIVC practices instilled in the students a deeper appreciation for evidence-based care, reinforcing the importance of adhering to established protocols and guidelines in PIVC management. Additionally, placements hosted by the VASE service provided students with time to consolidate learning and solidify their skills, paving the way for a smoother transition into professional practice upon graduation. Research confirms that such training experiences are instrumental in building students' confidence and competence in performing clinical procedures, ultimately contributing to their readiness for professional practice.[2,4,19,30,31]

Participants in this study described how the skills learnt during their 5-day placement with VASE contributed to their experience with PIVC inserting into their graduate year. Since commencing work as a graduate nurse/midwife, participants described they had received recognition of prior PIVC insertion competency as an undergraduate nurse/midwife, and increased insertion confidence particularly in high acuity areas and emergency situations requiring immediate cannulation, as well as rural and remote health services with limited resourcing. This has obvious benefit for health services if graduates arrive competent or are easily brought to competence once employed. Given the high volume of PIVC insertions in Australian hospitals each year, a competent, available workforce is crucial, and the current model reliant on junior doctors has been shown to be inadequate.[7,32]

This work emphasises the value of multi-method training, using adult learning strategies to enhance students' learning experiences. Several studies have shown that undergraduate university programs alone do not adequately prepare nursing students to undertake essential skills such as PIVC insertion and management in the clinical environment.[19,27,33] Learning PIVC insertion needs to incorporate practice with real patients to be of practical use for students.[34] By building on the university PIVC training and combining pretraining activities, such as workbooks and practical workshops, with hands-on clinical experiences in the hospital environment,

students are equipped with a robust understanding of PIVC insertion and maintenance practices. The opportunity to interact with specialised clinicians in vascular access further enriches students' knowledge and skill development, enabling them to apply evidence-based principles in real-world healthcare scenarios. Additionally, the collaborative nature of the teaching approach not only benefits students but also extends to patients and other healthcare staff, fostering a culture of continuous learning and knowledge exchange within clinical settings. With thousands of nursing and midwifery students in Australia graduating each year,[35] hospital vascular access service capacity to train larger numbers of nursing and midwifery students requires further investment.

While this study demonstrates the efficacy of undergraduate clinical placements in preparing students for PIVC competency, it also sheds light on the challenges faced by new graduates in maintaining their skills post-graduation. Limited opportunities for cannulation in non-acute work environments, coupled with a lack of PIVC competent assessors and managerial awareness, pose significant obstacles to new graduate nurses.[27] To address these challenges, stakeholders must explore avenues for ongoing skills development and support, such as refresher and mentorship programs.[29] Hospital-based vascular access teams must be adequately resourced not only to undertake initial training, but also ongoing mentoring and refresher training for nursing and medical staff. By investing in initiatives that facilitate continuous learning and professional growth, healthcare organisations can empower new graduates to navigate the complexities of clinical practice with confidence and competence.

Extending this program to second and third-year students could be beneficial in enabling students to practise their cannulation skills under extended supervision, to improve confidence and competence in preparation for their graduate year. Integrating hospital-based placement cannulation rotations into nursing and midwifery curricula could alleviate junior medical practitioner workload, while enabling students to feel more prepared and "work ready", particularly in clinical areas requiring nurses/midwives to cannulate as part of routine patient/woman care (ED, infusion centres, medical imaging departments, HD units, cancer treatment services and birthing units).

LIMITATIONS

This paper describes the experience of one hospital clinical placement program for PIVC training for dual degree nurse/midwife undergraduates, and therefore the findings cannot be generalised to other sites without a dedicated vascular access support service.

CONCLUSION

Hospital-based vascular access services can provide undergraduate nurse/midwife students with one-on-one learning opportunities to develop and obtain their cannulation competency. Australia could benefit from ensuring undergraduate clinical placement opportunities occur with vascular access specialist nurses. The study highlights the critical role of clinical placements in preparing nursing and midwifery students for the demands of contemporary healthcare practice.

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RESEARCH ARTICLES

Understanding aged care emergency department presentations: The voices of nurses from residential aged care facilities

AUTHORS

CLINT MOLONEY RN, BN, MHRM, PhD[1,3]
GAVIN BECCARIA BSc, AP, MPS, PhD[2,3]
HANCY ISSAC RN, BNur, MRes, PHD[4]
VICTORIA TERRY RN, BNur, MRes, PHD [1,3]
MELISSA TAYLOR RN, BNur, MRes, PHD [1,3]

1. School of Nursing and Midwifery, University of Southern Queensland, Toowoomba, Queensland, Australia
2. School of Psychology, University of Southern Queensland, Toowoomba, Queensland, Australia
3. Centre for Health Research, University of Southern Queensland, Toowoomba, Queensland, Australia
4 Faculty of Health, Nursing, Southern Cross University, Gold Coast, Queensland, Australia

CORRESPONDING AUTHOR

CLINT MOLONEY School of Nursing and Midwifery, University of Southern Queensland, West St, Darling Heights, Toowoomba, QLD, Australia. 4350. E: moloney@unisq.edu.au

ABSTRACT

Objective: To explore the perceptions of registered nurses and personal care workers in residential aged care facilities (RACFs) regarding factors contributing to early clinical deterioration and potentially unnecessary hospital presentations.

Background: Persistent workforce shortages, inadequate staffing levels, inconsistent care standards, and suboptimal communication in RACFs contribute to increased hospital transfers. However, many hospital presentations from RACFS are unwarranted and avoidable, and many residents could be better treated by alternative means in place.

Study design and methods: This study used a qualitative methodology in which semi-structured focus groups with registered nurses and personal care workers from two private RACFs in Queensland were used to gather in-depth accounts of experience and perceptions. Data was analysed using Braun and Clarke's reflexive thematic analysis approach.

Results: Four major themes emerged: 1) Clinical decision-making and confidence under pressure, with RNs reporting low confidence and anxiety regarding whether or not to transfer; 2) Organisational and interprofessional dynamics, with staff describing tensions with emergency and ambulance services; 3) Clinical reasoning and support structures, where staff described the value of Nurse Practitioners and clinical guidelines in decision making; 4) PCW role clarity and communication, where uncertainty about scope of practice and fragmented handover procedures were described.

Conclusion: Hospital transfer decisions in aged care are complex and heavily influenced by the experience and confidence of Registered Nurses (RNs). Less experienced RNs tend to make more cautious decisions, sometimes leading to avoidable transfers. Nurse Practitioners (NPs) help support better decisions, but organisational pressures and unclear roles, especially for Personal Care Workers (PCWs), create challenges. These factors collectively promoted risk-averse decision-making and increased reliance on hospital transfers. Improving training, clarifying roles, and fostering teamwork can reduce unnecessary transfers and improve care quality.

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Implications for research, policy, and practice: There is a need to further investigate the impact of RN experience levels on hospital transfer rates. More attention needs to be given to developing effective models for integrating NPs into aged care teams. Further study the role and training needs of PCWs in early detection and decision-making.

What is already known about the topic?

- Up to 40% of hospital transfers from aged care facilities are potentially avoidable, often due to limited on-site clinical support and decision-making confidence.
- Newly graduated or less experienced RNs may lack the clinical reasoning skills needed to confidently manage acute situations, leading to more frequent hospital transfers.
- Poor communication between aged care staff, emergency services, and hospitals can hinder effective care transitions and lead to unnecessary hospitalisations.
- Ongoing staff shortages and increased demand for skilled nurses place pressure on existing staff, affecting the quality and timeliness of clinical decisions.

What this paper adds

- Confirmation that additional resources are required to better enable an early response for the assessment of residents with deteriorating health.
- A clear indication that communication processes need to improve between PCWs and RNs in the recognition of resident symptoms and any health deterioration.
- That PCWs could play a more integral role in reducing unnecessary hospital transfers through a more evolved scope of practice.

Keywords: Residential aged care, Registered nurses, Personal care workers, Clinical deterioration, Hospital transfers, Decision-making, Workforce shortages, Communication.

OBJECTIVE

To explore the perceptions of registered nurses (RNs) and personal care workers (PCWs) working in residential aged care facilities (RACFs) regarding the contributing factors towards potentially avoidable presentations to the hospital. Specific areas of focus included:

- Clinical considerations and practices when a resident's health is deteriorating.
- Resources needed to support clinical decision making when a resident's health is deteriorating.
- Available processes, both internal and external, to assist with decision making, including hospital outreach programs to mitigate avoidable hospital transfers from RACFs.
- Barriers encountered in managing residents in the RACF when they become clinically unwell.
- The degree of confidence in managing residents who are clinically deteriorating.
- Factors influencing decisions to transfer a resident to a hospital.
- Perceptions of their own and their colleagues' capabilities in recognising acute deterioration in residents.

BACKGROUND

The quality of care delivered in Australian RACFs is concerning for residents.[1-4] With a rapidly ageing population, urgent reform is crucial, as has been noted by the Royal Commission into Aged Care Quality and Safety.[6] Literature has highlighted that, due to increasing care complexities, facilities are now evolving to become sub-acute institutions with increasing complexities of care.[5-7] However, this increase in acuity has occurred without an appropriate workforce capability assessment, which has been linked to an increased risk of 'failure to rescue'.[8] A failure to rescue has been defined in the literature as "the failure to prevent a death resulting from a complication of medical care or from a complication of underlying illness or surgery."[8(pp1)]

Nursing care provided by RACF staff is documented as failing to meet professional nursing standards. A failure to meet these standards is known to adversely affect safe quality care, thereby compromising a resident's health and leading to unnecessary hopsitalisation.[7,9,10] A key driver of this problem is inadequate staffing ratios, which leave staff without sufficient time or resources to deliver required care.[11,12] Actual resident to PCW ratios vary between facilities based on size, funding, and staffing availability, and each facility must now have an RN on-site and on duty 24 hours a day, 7 days a week.[5,6] According to Australia's aged care sector full-year report (2024), and the Australian Institute of Health Welfare's (2024) report on staff ratios, current staffing ratios need to be increased to meet the desired care standards.[11,12]

A report led by the Committee for Economic Development of Australia (CEDA) warns that workforce shortages in the Australian aged care sector may reach 400,000 by 2050, signalling an escalating system-wide crisis.[13] These shortages are already contributing to sub-standard care delivery within RACFs, with significant implications for resident safety and wellbeing.[4] As staffing numbers decline, the capacity

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of aged care services to recognise, assess, and respond to clinical deterioration, particularly in increasingly common sub-acute presentations, becomes further constrained. To address concerns about care quality and meet rising sub-acute demands, workforce recruitment and retention must be accompanied by strengthened clinical capability development, ensuring RACF staff are supported to build confidence, competence, and decision-making skills in assessing and managing sub-acute situations, thereby reducing hospitalisation.[7-14]

There have been long-standing calls for minimum standards surrounding workforce knowledge and skill mix to enable quality nursing care standards for residents.[10-12] Poor communication and assessment between PCWs, RNs, and medical practitioners have contributed to sub-optimal care.[13-15] The disparities exposed by prior research demonstrate that it is imperative to improve staff capabilities in the detection of a resident's health deterioration.[18] The role that PCWs play in the earlier detection of deterioration needs greater exploration.[16] Further, investigating ways to improve clinical reasoning skills in this workforce needs to be at the forefront of changes in the sector.[16,17] Importantly, RNs working in the aged care sector require opportunities to further develop and grow experience in making decisions around hospital transfers.[18,19]

Many hospital presentations are unwarranted, where residents could have been treated in situ or by alternative means.[20-22] Despite the ever-increasing number of hospital presentations for frail older people, there has been no solution or model of care for frail older people in the setting of emergency care or in the discharge planning phase of care.[23] Recent research refers to a need to incorporate more targeted case management for individuals with chronic health conditions to reduce the need for hospital presentations.[24] What is clear from the literature is that nurse practitioners (NPs) may play a central role in providing this necessary case management, complementing the role of general practitioners in monitoring for changes in a resident's health status.[25] This, in turn, may help to better support RACF nursing staff with the ongoing monitoring and assessment of residents with chronic health conditions.[18]

This gap between planning and delivery also appears to have its origins within the role that PCWs play in assessment and communication of resident issues.[26,27] A growing decline in care standards and staffing levels regarding the value of recognising deterioration amongst residents by PCWs is a disguised contributor to deteriorating health for residents.[26,27] Under-prepared skill mix and staffing numbers appear to be undermining quality care and have led to instances of failure to rescue.[8,28] Consequently, this research recommended greater exploration of PCWs' core skills and practices within the context of appropriate guideline integration into care delivery by PCWs may impact the ability of these staff to better assess and report issues to RN's for intervention.[15]

The Australian Council of Nursing (ACN) embraces the concept that a suitably skilled and safe aged care workforce is primarily linked to an improved delivery of appropriate care.[29] There is a direct inverse association between nurse-to-patient ratios and patient deterioration and subsequent mortality.[33] Higher ratio of RNs to patients was associated with lower patient morbidity and mortality.[30] Nevertheless, the role of PCWs in detecting early deterioration has never been considered.[28,31,32]

STUDY DESIGN AND METHODS

This study used a qualitative approach. Focus with RNs and PCWs who work in RACFs and who had experienced situations of resident health decline and transfer to an emergency department were engaged in the research. Focus groups were semi-structured and guided by a set of promoting questions (Table 1).

Focus groups were chosen to explore the voices of residential aged care RNs and PCWs to better establish contributing factors towards unnecessary presentations to emergency departments (ED).

SETTING

Organisational permissions were sought from two private aged care facilities in the Ipswich region of Queensland, where flyers were distributed in the facilities to seek participation in focus group sessions.[33]

RECRUITMENT AND PARTICIPANTS

Using convenience sampling, a total of 12 RNs and 12 PCWs were recruited to participate in the study. The participants were organised into two RN groups and two PCW groups, each of which engaged in three focus group sessions conducted over a six-month period. To encourage equal participation and candid discussion, the groups were deliberately composed of homogeneous staff members of similar status and grade.[36,37] Senior supervisory staff were excluded from participation to create a safe environment where individuals felt comfortable sharing their perceptions, experiences, and concerns openly.[37]

Participation in the focus groups was voluntary, and all participants attended the full series of three sessions, except for one individual from Group 4 who was unable to attend the final session due to illness. Further details regarding the focus groups are provided in Table 2.

DATA COLLECTION

Focus groups were conducted face-to-face in a setting comfortable to the participants. Open-ended questions and facilitator prompts were developed by the research team and used to provide an opportunity for participants to provide an in-depth account of their experience and perceptions.

Three focus group intervals (pre, mid and end point) were conducted. Each focus group lasted approximately 1 hour in duration.

Groups were moderated (facilitated) by an experienced qualitative researcher. The researcher acted as group facilitator with the purpose of introducing topics (see Table 1) and guiding discussion around the agreed area of interest.[28] Using the technique of in-depth discussion, the participants' lived experiences, opinions, attitudes, ideas, and self-realisation were gathered. In-depth discussions enabled deeper questioning by progressing a cyclical process through continuous analysis.[33,34]

TABLE 1. FOCUS GROUP QUESTIONS FOR RNS AND PCW GROUPS

Question sequence	Specific question
Introductory Question:	Can you tell us what the usual clinical considerations and practice are when a resident's health is deteriorating?
Transition question:	What tools do you have to support you with clinical decision-making when a resident's health is deteriorating?
Transition question:	What processes do you have available to you to assist with decision-making for residents?
Focus questions:	Are there any barriers to managing residents in the RACF when they are becoming clinically unwell? How confident are you in managing residents who are clinically deteriorating?
Summarising question:	So, when are you deciding to transfer residents to the hospital? What drives this decision-making, and do you have some examples?

TABLE 2. PARTICIPANT'S YEARS OF EXPERIENCE IN THE AGED CARE SECTOR

Participant Type and Number	Range of Experience
Focus group 1 Registered Nurses RNs 1, 2, 3, 4, 5, 6	Ranged from 1 year of experience to over 30 years of experience in the aged care sector.
Focus Group 2 RNs 7, 8, 9, 10, 11, 12	Ranged from 2 years of experience to over 35 years of experience in the aged care sector.
Focus group 3 PCWs 1, 2, 3, 4, 5, 6	Ranged from 6 months of experience to over 15 years of experience in the aged care sector.
Focus group 4 PCWs 7, 8, 9, 10, 11, 12	Ranged from 1 year of experience to over 20 years of experience in the aged care sector.

DATA ANALYSIS

Braun and Clarke's six-stage approach was used to guide an inductive thematic analysis of the focus group datasets. This method was selected for its flexibility and suitability in exploring participant experiences and meaning-making.[37,38] Audio-recordings were professionally transcribed verbatim, checked against recordings for accuracy, and imported into NVivo qualitative data analysis software to support systematic coding, data organisation, and retrieval.[39,40] The analysis commenced with repeated reading of transcripts and written field notes to achieve familiarisation with the data, during which initial reflections and analytic observations were documented. In the second stage, initial codes were generated inductively, staying close to participants' language and prioritising semantic content to ensure that meaning was grounded in the data rather than imposed by researcher assumptions. Coding was iterative, and transcripts were revisited multiple times as understanding deepened.

In stage three, coded extracts were reviewed collectively to identify patterned responses across participants, and potential themes were constructed by grouping conceptually similar codes. Stage four involved reviewing, refining, and collapsing themes to ensure coherence, internal consistency, and clear distinctions between thematic categories, while checking interpretations against the full data set. During stage five, themes were clearly defined, named, and mapped to illustrate relationships, scope, and explanatory value. The final stage involved producing a detailed analytic narrative supported by data excerpts, demonstrating how themes addressed the research aim and reflected shared and divergent participant perspectives. Throughout the analytic process, reflexive discussions occurred among the research team to challenge assumptions, enhance credibility, and ensure transparency, forming a documented audit trail consistent with qualitative rigour.[37,38]

ETHICAL CLEARANCE

Ethics approval was obtained from the West Moreton Hospital and Health Service, Human Research Ethics Committee. Approval Number: HREC/2018/QWMS/44525. Informed written consent was obtained prior to participation, and participants were advised of their right to withdraw without penalty or prejudice at any time. They were also assured of anonymity and confidentiality of findings through the de-identification of findings.

RESULTS

LATENT INTERPRETATION SUMMARY

While participants provided direct statements about the factors influencing hospital transfers, underlying these were complex dynamics of professional identity, organisational culture, systemic inadequacies, and interprofessional tension.

The latent content of their voices suggests a pervasive sense of vulnerability and moral distress among RNs, who feel responsible for resident outcomes yet are inadequately supported in clinical decision-making. This reflects a broader systemic undervaluing of clinical expertise within aged care, negatively affecting staff morale and the quality of

resident care. At the same time, ambiguity and fragmentation surrounding the role of PCWs signal ongoing challenges with role clarity and capability development within multidisciplinary teams. Organisational pressures and perceived surveillance of clinical decisions further contribute to a risk-averse culture, which may unintentionally undermine resident-centred care. Compounding these issues are disrupted communication loops and gaps in real-time clinical reasoning and escalation pathways, particularly during after-hours periods, increasing the likelihood of delayed or unnecessary hospital transfers.

THEMATIC ANALYSIS OF FACTORS CONTRIBUTING TO HOSPITAL TRANSFERS IN AGED CARE SETTINGS

This thematic analysis explored the latent meanings behind participant narratives, grouping insights into broader themes that reflect the complex interplay of personal, professional, and organisational dynamics involved in hospital transfer decisions.

Four overarching themes were identified: (1) Clinical Decision-Making and Confidence Under Pressure, (2) Organisational and Interprofessional Dynamics, (3) Clinical Reasoning and Support Structures, and (4) PCW Role Clarity and Communication. Each theme is supported by participant quotations to illustrate how meaning was constructed and shared across participants.

Theme 1: Clinical Decision-Making and Confidence Under Pressure

A consistent undercurrent throughout participants' accounts was the uncertainty nurses experience when making clinical decisions under pressure. The latent meaning emerging here reflects how confidence, experience, workload, and limited organisational support influence transfer decisions. Less experienced RNs frequently felt unprepared to manage complex clinical situations independently.

As one RN (10) reflected, *"One contributing factor to ED transfers may be that RNs come straight from being a grad and go into aged care first with very little clinical experience,"* while a PCW (7) noted, *"Most of the registered nurses wouldn't know what to do because they don't deal with PEGs [percutaneous endoscopic gastrostomy tubes] often enough, so they end up in hospital."*

These excerpts reveal how confidence deficits directly shape decisions to transfer residents, even when nurses may possess the capability to manage care in-house.

Uncertainty further compounds this issue. Participants described hesitation and fear of being judged by emergency or ambulance staff for unnecessary transfers.

One RN (9) shared, *"I do still hesitate though as I am always asking myself will the ED staff or the QAS see this transfer as necessary,"* highlighting the emotional weight of clinical accountability.

Time and workload constraints intensified this dynamic, with RN (5) asking, *"Do they have time to assess this resident [referring to general practitioners]? If not, I'll need to send them to hospital because I don't have the time."*

Such reflections underscore how systemic workload pressures can override clinical reasoning, resulting in risk-averse decisions favouring hospital transfer.

Theme 2: Organisational and Interprofessional Dynamics

Organisational scrutiny and interprofessional misalignment were powerful influences on decision-making. The latent meaning here suggests that institutional oversight and hierarchical pressures can erode nurses' autonomy, leading to defensive practices. Participants spoke candidly about being reprimanded for their decisions:

"Management above the RN had a go at them because they weren't sick enough to go to hospital," one PCW (4) explained. Similarly, *"Facilities don't like them going off to hospital unless it's really necessary,"* another RN (8) added.

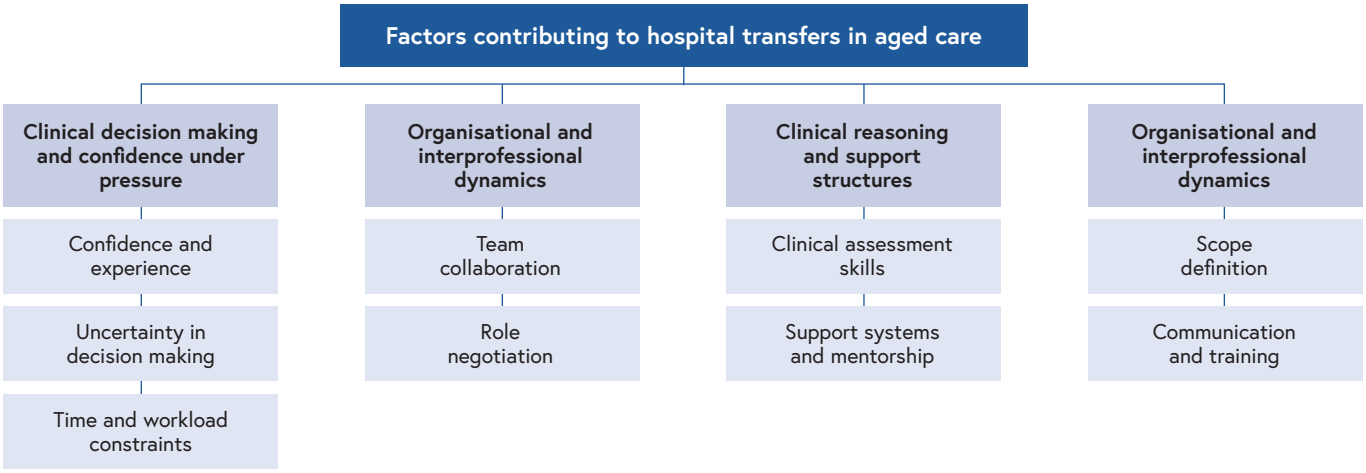

FIGURE 1. FACTORS CONTRIBUTING TO HOSPITAL TRANSFERS IN AGED CARE

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This scrutiny created a culture of fear and second-guessing, where nurses balanced clinical judgment against perceived managerial expectations. Interprofessional discrepancies also emerged, particularly in interactions with ambulance personnel. Several nurses expressed frustration that Queensland Ambulance Service (QAS) assessments did not always align with aged-care realities:

"QAS often refuses to transfer to hospital because according to their assessment it's all within normal limits, but we still send them," noted RN (5). With another (RN 8) highlighting assumptions made by paramedic staff that aged-care nurses should possess acute-care competencies: *"I feel they are assuming we have the same level of experience and capability as acute care ward staff and should look after them here."*

These tensions illustrate a broader systemic disconnect between community and acute-care expectations, which undermines collaboration and consistent decision-making.

Theme 3: Clinical Reasoning and Support Structures

This theme captures the variability in clinical reasoning among staff and the stabilising effect of NP involvement. The latent meaning emphasises that decision quality is often contingent on individual reasoning skills and the availability of clinical support.

As one RN (1) observed, *"There is a great variation in both PCW and RN ability in trying to identify resident issues earlier."* Another reflected (RN 6), *"Guidelines have probably helped me to identify and manage issues on an ongoing basis. Yet I feel others have been less astute at recognising a resident's deterioration."*

The inconsistency described here points to the need for structured education and mentorship frameworks.

NPs were identified as key supports that mitigate unnecessary transfers. Participants described NPs as providing clinical reassurance and rapid guidance that helped maintain residents in place.

One RN (7) noted, *"She [referring to the NP] has been there to support us most of the time and we've been able to keep the resident here,"* while another (RN 8) confirmed, *"We might not have our nurse practitioner come every day, but we will still have that contact for decision making."*

This highlights the positive influence of advanced practice roles in building confidence and fostering sound, resident-centred decisions.

Theme 4: PCW Role Clarity and Communication

The final theme concerns ambiguity surrounding PCWs' roles and communication pathways with RNs. The latent meaning centres on how unclear boundaries and communication breakdowns delay early recognition and escalation of resident deterioration. PCWs voiced uncertainty about their scope, with statements such as:

PCW (3) states, "There's a lot of things that we're asked to do that are out of our scope of practice," and PCW (4) expresses, *"I am unclear of where I can go and where the scope of practice stops."*

These uncertainties often created hesitation to act, leaving critical issues unaddressed until escalation was unavoidable. Communication lapses compounded the problem. PCWs described inconsistent handovers and uncertainty about when to alert the RN:

"Five minutes before the start of your shift, you should be in that area getting a handover to better understand residents' needs," PCW (6) advised, while a PCW (2) admitted, *"Even though it's within your scope of practice, I am unclear when to inform the RN."*

Together, these accounts expose how fragmented communication and blurred role definitions compromise timely and effective decision-making within aged-care teams.

DISCUSSION

This study found a clear perception that confidence was low when making decisions among RNs and PCWs regarding hospital transfers, which appeared to stem from clinical reasoning capabilities. Literature identifies several factors influencing nursing confidence, including the level of nursing experience, education and qualifications, organisation and unit culture influences, understanding of patient co-morbidity and history, situation awareness, and clinical reasoning.[17,35]

Findings from this study also suggest that a lack of experience in the RN workforce and unclear guidelines for the PCW workforce may contribute to poor assessment and decision-making when escalating concerns about a resident's health status. Research indicates that when nurses do not use or develop their set skills appropriately to conduct health assessments, this can become an issue. This is because nurses stop applying and developing skills that they can then compromise a resident's healthcare needs and gradually diminish the capability of nursing assessment skills.[36]

While confidence might improve communication and performance in aged care staff, it is not necessarily linked with more effective decision-making.[37] Other researchers have surmised that experienced nurses may not have the time to access evidence-based protocols to facilitate decision-making due to high workload pressure.[31,38] This creates concern as evidence is essential for ideal patient outcomes.[39,40] The quality of nurse decision-making appeared linked to access to timely and appropriate medical assessment.[47,51] It is evident that the decision-making and clinical reasoning skills of the aged care workforce need to keep pace with increasing sub-acute demands. Currently, Australia's health system is under-invested in sub and non-acute care, resulting in care moving to inappropriate places, such as acute hospitals.[41]

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Published research has outlined that an RN's decision-making capability and the support offered by GP access are key determinants towards any decision to seek emergency care. Evidence shows that where RACFs have an RN on shift overnight, with close support from regular GPs, they were able to articulate their decision-making processes around seeking hospital transfer more clearly and thereby determine the appropriateness of an ED transfer.[42] As a comparison, voices from participants in this study demonstrated a strong preference for prioritising and advocating for a resident's best outcomes during decision-making around hospital transfer, rather than simply the nature of the acute problem in isolation. This research therefore further supports the findings of Amadoru and colleagues that poor skill mix (staffing levels), knowledge, and decision-making capability, plus limited GP accessibility, are key contributors to potentially avoidable hospital transfers in the Australian context of residential aged cared.[42,43]

The growth of NPs embedded in RACFs has been noted to improve communication with doctors, referred hospital staff, and championed residential aged care staff through capacity building in providing increased sub-acute capabilities on site. It has been suggested by research that advancements in the employment of NPs would galvanise policymakers to approach the aptitude of RNs, interested in becoming NPs, to take the next step in education and training.[42] The Australian Nursing and Midwifery Federation has developed a plan that builds on several reforms for Nurse Practitioners (NPs) announced in the 2023 federal budget, including the removal of longstanding regulatory barriers that have historically restricted NPs from providing the sub-acute services their scope and expertise enable. Moving forward, the federal government will implement a 30% increase in Medicare rebates for NP-led care and introduce new scholarship programs to support and incentivise RNs to upskill as NPs. [43] Strengthening the NP workforce, particularly within aged care, has the potential to enhance timely assessment, stabilisation, and case management in place, thereby reducing unnecessary hospital transfers. Complementing these reforms, the Department of Health and Aged Care now mandates that approved providers must have at least one RN on-site and on duty 24 hours a day, 7 days a week, at each residential facility. [48] Increased RN presence and minimum care-minute requirements may improve clinical capability, support earlier detection of deterioration, and enable more confident decision-making within RACFs, further contributing to the prevention of avoidable ED presentations and hospital admissions.

The role that PCWs play in the assessment, reporting, and monitoring of residents also emerged as a strong theme in this research. The underuse and recognition of PCWs in the early deterioration of a person's health status does appear connected as a contributing factor to escalating hospital transfers. There was evidence of frustration amongst the PCWs interviewed around a breakdown in communication and handover practices, and a response time from the RNs to concerns they had for the resident in their care. Much of the literature supports a role for PCWs in the recognition of a resident's deterioration.[15,16] PCWs constitute about 70% of the aged care workforce and remain unregulated there is a need for improved preparedness using longitudinal and sustained evidence-based education that trains them in the response to a resident's developing deterioration in health.[15,44]

Recent research speaks to an educational mismatch for the PCW workforce, as training frameworks do not adequately develop new care workers contextually for the vital role they play in aged care. Redefining PCW's growing education requirements and scope of practice would therefore appear an essential next step if the aged care sector is to enhance practice, improve the quality of resident care, and minimise unnecessary hospital transfers. Added benefits detailed by recent research include the increasing public confidence that may stem from a more knowledgeable aged care workforce.[16,17] Recommendations stemming from the 2019 Royal Commission into Aged Care identified neglected educational preparedness within the PCW workforce as a major contributor to the systemic issues currently facing the sector. In particular, Recommendation 21 emphasises the need for mandatory professional development, enhanced training, and clear delineation of practice roles and responsibilities.[4] These policy concerns were strongly reflected in the study's findings, which revealed four overarching themes: (1) Clinical Decision-Making and Confidence Under Pressure, (2) Organisational and Interprofessional Dynamics, (3) Clinical Reasoning and Support Structures, and (4) PCW Role Clarity and Communication. Together, these themes demonstrate how gaps in workforce preparation, role understanding, and ongoing capability development continue to shape everyday practice in RACFs, reinforcing the relevance and urgency of the Royal Commission's recommendations.[4]

Decision-making regarding resident transfers to the emergency department is a critical professional responsibility for nurses in RACFs, yet it is often experienced as a constraint due to limited resources, staffing pressures, and medico-legal concerns.[45] These decisions can be ethically complex and risk-averse, sometimes resulting in unnecessary hospital admissions. Strengthening support systems, such as robust outreach programs and in-reach hospital avoidance services, can enhance nurses' confidence and enable care to be delivered safely on-site.[46] Moreover, improving interdisciplinary communication and mutual understanding between aged care nurses, paramedics, and emergency department staff is essential to ensure informed, collaborative decision-making. Shared protocols, telehealth support, and clear goals-of-care documentation can help align clinical actions with resident preferences and reduce avoidable transfers. Empowering aged care nurses through education, clinical governance, and team support is crucial to improving care delivery and resident outcomes.[45,46]

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CONCLUSION

This study highlights the complex and multifactorial nature of clinical decision-making regarding hospital transfers from residential aged care settings. Central to the findings is the pivotal role of RNs and their confidence, experience, and clinical reasoning skills in determining whether a resident requires hospitalisation. Variations in experience, particularly among recently graduated RNs, appeared to influence transfer decisions, often prompting transfers that more experienced staff felt might have been avoidable. Compounding this issue is the reported variability in clinical reasoning and the time constraints that hinder thorough assessment, which can lead to rushed or defensive decisions to transfer residents.

The presence of NPs emerged as a valuable support in enhancing RN decision-making, underscoring the importance of advanced clinical roles within aged care teams. However, organisational pressures and scrutiny from management also featured strongly, with both RNs and PCWs citing examples of decisions being second-guessed by leadership, creating an environment of uncertainty and risk aversion.

Furthermore, this study brought forward the significant though often unrecognised role that PCWs play in early detection of deterioration. Many PCWs expressed a lack of clarity around their current scope of practice and voiced a desire for clearer role definitions, improved training, and greater involvement in communication and assessment. Their contributions to monitoring and reporting were seen as essential to the early identification of issues yet inconsistently supported by formal systems and processes.

Ultimately, the findings suggest that a multifaceted approach is required to improve clinical decision-making and reduce potentially avoidable hospital transfers. This includes investment in workforce capability through targeted education and support for RNs, clearer role delineation and training for PCWs, and fostering an organisational culture that promotes interprofessional trust, collaboration, and timely access to medical decision-makers. Addressing these areas could enhance the safety, appropriateness, and timeliness of care provided within aged care settings, minimising unnecessary hospital transfers while supporting staff to act confidently within their clinical roles.

IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

Further studies are needed to explore how RN experience levels affect hospital transfer decisions. Research should evaluate the impact of NPs on decision-making quality and resident outcomes. Further investigation is required on effective models for integrating PCWs into clinical assessment and communication processes. Policy development should focus on supporting structured clinical education and mentorship for RNs, especially early-career nurses. Policies should clarify and formalise the scope of practice for PCWs to enhance their role in early detection and care planning. There needs to be a promotion of staffing models that include NPs to support timely and informed decision-making. By providing targeted training to improve RNs' clinical reasoning and confidence in decision-making standards of practice can only improve.

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REVIEW AND DISCUSSION PAPERS

Shifting the paradigm in novice nurse leadership: A discussion paper

AUTHORS

HOLLIE TIMMINS RN, NP, MN, BNurs [1]

MARGARET YEN RN, PhD, MHSc(Ed), MHM, BHSc(Nurs)[1]

1. School of Nursing and Midwifery, Faculty of Health, Charles Darwin University, Darwin, Northern Territory, Australia

CORRESPONDING AUTHOR

MARGARET YEN School of Nursing and Midwifery, Faculty of Health, Charles Darwin University, Darwin, Northern Territory, Australia. E: margaret.yen@cdu.edu.au

ABSTRACT

Objective: To justify and discuss a model of nurse leadership development that recognises the inherent leadership potential of novice nurses.

Background: Effective nurse leadership is associated with quality and safety of patient care, enhanced staff engagement, organisational efficiency and adaptation to current challenges. Extensive research into nurse leadership has produced a range of evidence-based theoretical frameworks that integrate significant leader characteristics with practice implications. However, few studies encompass inherent leadership characteristics and practice capabilities of novice nurses within a leadership development framework.

Methodology: A review of current academic literature on novice nurse practice and development was undertaken to inform selected themes and discussion.

Discussion: This paper discusses novice nurse leadership development as represented by a novel theoretical framework that places novice nurses within the context of their emerging practice. An exploration of four core dimensions, 1) leading self, 2) engaging others, 3) shaping teams, and 4) embracing innovation, presents opportunities for development within university and workplace learning contexts.

Conclusion: This paper offers a focused and novel framework for developing novice nurse leadership skills. This approach represents a change from traditional paradigms that equate leadership development with seniority.

Implications for research, policy, and practice: This discussion contributes to a wider discussion on the preparation of the nursing workforce for future practice in an environment that is characterised by complex healthcare systems and workforce challenges. Our framework can be used to reflect on current novice nurse leader development in universities and workplaces, and signals avenues for research of current practice areas.

What is already known about this topic?

- There is widespread advocacy for nursing leadership development.
- The positive influence of effective leadership on patient care and nursing workplaces has been established.
- Conceptual frameworks for novice nurse leadership development have emerged from the academic literature.

What does this paper add?

- This paper extends existing frameworks by encompassing inherent leadership characteristics and practice capabilities of novice nurses within a leadership development framework.
- Contemporary novice nurse leader roles, practice challenges and opportunities for development are explored.
- A model of novel nurse leadership that includes leading self, engaging others, shaping teams, and embracing innovation is proposed.

Keywords: Confidence, development, leadership, learning, novice nursing

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INTRODUCTION

Retention of nurses in healthcare, as a concerning and escalating global issue, has been met with widespread advocacy for leadership development.[1] The known influence of leadership on job satisfaction and retention,[2] work-related wellbeing,[3] and patient care outcomes,[4] creates a powerful argument for supporting nursing leadership development in this environment. This has created an imperative to examine how leaders are developed and supported, and which behaviours generate the most effective outcomes. This topic has been extensively researched and is well represented in academic literature.

Recognition of the capacity of novice nurses to influence healthcare has generated more recent interest. The authors consider a novice nurse to be an inexperienced nurse and can include student nurses or new graduates. Internationally, recognition has been given to advancing the leadership capability of novice nurses. The World Health Organization (WHO) advocates leadership development in younger nurses and midwives as part of a mandate to prepare future nurse leaders, to address nurse retention and recruitment issues and to optimise population health.[1] Similarly, in response to these issues, the International Council of Nurses (ICN) has advocated for nursing leadership to be developed at all levels.[5] Indirectly, the Nursing and Midwifery Board of Australia (NMBA) 'Registered Nurse Standards for Practice',[6] presents a number of standards that apply to nurses at all levels. These standards have implications for leadership capability, including relationship development, communication, collaboration, influencing practice and advancing quality and safety. In response to recognition of the leadership potential of novice nurses, this paper presents a framework for nurse leader development that represents a shift in the paradigm from a traditional focus on experienced nurses and those in formal leadership roles to that of novice nurses.

BACKGROUND

Nurse leadership is recognised as being vital to patient safety and to the wellness of healthcare workplaces.[7] Together with acknowledgement of the risks associated with on-the-job leadership learning through trial and error,[8] nurse leadership development has become commonplace. Recent academic literature reports a plethora of initiatives designed to support leadership development for nurses in leadership roles. These initiatives include graduate leadership studies,[9] group interactions, mentoring and peer support,[10] support from established nurse leaders,[11] exposure to learning on business acumen,[12] and targeted approaches specific to learner need and context.[13]

Other studies are specific in their focus on novice nurses and those who are not in formal leadership roles. These studies recognise that the complexity of healthcare and workforce dynamics shapes nursing practice at any stage and demands leadership preparation. Recognition has been given to the skills and capacity of undergraduate nurses to build on existing authentic leadership behaviours.[14] In new graduates, emerging skills in modelling and supporting others provide a basis for the design of the preregistration syllabus.[15] Solid leadership development at the undergraduate level as a means for strengthening the quality of healthcare,[16] and curriculum development that includes leading and managing self and others, as core concepts in a broader curriculum,[17] have also been reported.

Studies that report conceptual frameworks that reflect the development of novice nurses are limited. Conceptual frameworks are useful representations of assumptions about nursing practice and the nature of the phenomenon of interest.[18] James et al., advocated for an action learning approach to novice nurses' leadership development that supported growth of emotional intelligence to advance leadership confidence.[19] Their proposal for novice nurse leadership development included emotional intelligence, leadership styles, teamwork, change and communication. However, specific challenges or developmental strategies within each learning domain were not explored. Doherty and Revell present a comprehensive and holistic representation of authentic leadership that encompasses the history, context, and personal characteristics of nurses across all levels.[20] Their framework articulates access to opportunity and power that, together with self-awareness and regulation, can support authentic leader development. Within the framework, the commitment of authentic leadership to fostering relationships that advance the capability and well-being of others resonates well with the nature of nursing work as a social practice. However, Doherty and Revell's framework does not specifically explore the challenges or developmental strategies that are relevant to novice nurses.

We argue that an approach to leadership development for novice nurses must be reflective of the developmental stage of their practice confidence. The focus of our novice nurse leadership framework on leading self, engaging others, shaping teams, and embracing innovation reflects the challenges and developmental tasks inherent in the experience of being a novice nurse. This framework builds on the model proposed by James et al.,[19] by exploring more deeply and specifically novice nurse leadership challenges and developmental strategies. In focusing on novice nurses, our conceptual framework also extends the work of Doherty and Revell, whose authentic leadership model is applicable to leaders at all levels.[20] Our model presents a focused view of the key leadership behaviours that are relevant to novice nurse practice and explores avenues for leadership development of novice nurses within these domains.

METHODS

The authors were inspired by theoretical insights acquired during formal leadership engagement that promoted renewed reflection on leadership development within nursing practice. A focused review of current academic literature on novice nurse practice and development was subsequently undertaken to inform selected themes and discussion. The authors, in collaboration, extended their analysis to develop a visual representation of emerging themes and their interrelationships.

DISCUSSION

Nursing leadership is a relational practice whereby an individual engages others to achieve a goal and, in so doing, develops collaborative team relationships and the achievement of individual potential.[21] Leadership capability is inherent across the spectrum of nursing practice, from novice to expert and is arguably bound to the ability to lead, rather than to clinical seniority.[22] Nurturing leadership development in novice nurses is therefore relevant to individual practice and to the professional identity of the nursing profession.

Further to strategies undertaken to develop leadership capability, the capacity for leadership is also based on a range of antecedents. Individual history and experience, recognised as antecedents to leadership engagement,[20,23] have particular relevance to novice nurse leader development. Life experiences offer opportunities for leadership learning through participation, observation, modelling and self-reflection, forming the history of experience that nurses bring to their nursing work. These antecedents may serve to support early development of leadership skills alongside that of clinical practice.

Our consideration of novice nurse leadership as a dimension of nursing practice that is dependent on context and opportunities for development is reflected in the following discussion of four key interrelated domains: 1) leading self, 2) engaging others, 3) shaping teams, and 4) embracing innovation.

LEADING SELF

The concept of 'leading self' is founded on reflective practice and a commitment to ongoing professional development. Reflective practice, foundational to nursing practice and philosophy in Australia, is well defined in the 'Registered Nurse Standards for Practice', as "develops practice through reflection on experiences, knowledge, actions, feelings and beliefs to identify how these shape practice."[6p.3] Self-leadership is a deliberate approach to considering one's influence within the workplace, and reflection is based on developing personal capacity to influence within the scope of personally determined goals and the wider organisation.[24] Self-leadership occurs as nurses become aware of a challenging situation or feeling that prompts reflective self-dialogue. The concept of self-leadership is associated with performance,[25] and personal mastery,[24] and focuses on achieving personal goals, rather than specific organisational goals. Inherent to self-leadership is the development of personal confidence and efficacy.

The practice of 'leading self' has relevance as a foundational professional development activity for novice nurses and offers a strategy for ongoing enhancement of personal performance and career development. The evolution of professional consciousness through self-leadership can support confidence in communication and ongoing leadership capability,[24] as well as a reduction in stress.[26] However, as novice nurses' personal reflective practices on leadership capability are considered to be limited,[14] there is scope for nursing workplaces to encourage this practice and offer self-leadership education.[27] Student nurses, who often feel ambivalent and self-doubting about the prospect of leading, can develop confidence when supported to engage in self-reflection.[19] Furthermore, opportunities can be provided for novice nurses to be offered an appropriate level of autonomous work and responsibility, known to influence self-leadership capability and confidence.[25] Encouragement to perceive the positive and enjoyable aspects of a task, or natural rewards associated with work, can also strengthen self-leadership and motivation,[25] a finding that has particular relevance for novice nurses.

ENGAGING OTHERS

Central to the practice of 'engaging others' for novice nurses is communication confidence. Being comfortable and skilful in communicating with a wide range of patients, health professionals, and families is a challenging early development task for novice nurses, although one that is foundational for effective practice.[28] Communication is clearly embedded throughout the Registered Nurse Standards for Practice,[6] and the Australian Nursing and Midwifery Accreditation Council (ANMAC) Standards (Evidence Guide).[29] Communication confidence, the practice of 'engaging others', is a fundamental leadership skill and is therefore an important focus for novice nurse leadership development.

The intensely social nature of nursing, while a challenge for novice nurses, also presents fertile ground for learning to 'engage others'. Novice nurses' comfort with 'engaging others' through effective communication across the health care team can be supported by the development of self-efficacy,[30,31] and a commitment to 'leading self'.[24] While novice nurse leadership courses are reported as vital for building leadership and communication confidence,[32] development of these personal resources can also be supported through effective mentoring. The novice nurse-mentor relationship has been aptly conceptualised as "walking with another",[33p.23]

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an activity that includes sharing, through informal "chat", the meaning of workplace language and practice, and of their developing perspectives on nursing practice. "Walking with another",[33p.23] emphasises an interpersonal learning relationship based on effective communication that provides the mentee with a safe space to transition to their role and to their position within the wider team. Mentoring can also support novices to overcome factors that impact communication confidence, which can include a knowledge deficit and uncertain relationships with other health professionals.[34,35] Furthermore, the development of a sense of psychological empowerment, emotional intelligence and critical reflexivity, also considered foundational to effective engagement with others, can be supported through multidimensional learning experiences including theory and interactive work-based activities.[36] These strategies that foster skills in engaging others can then support immersion in the wider team.[14] The development of early communication skills and confidence in engaging others, therefore, while essential for novice nurses' beginning practice, has dual benefits in developing leadership capability.

SHAPING TEAMS

An effective teamwork environment is globally recognised as an essential tool for achieving effective and patient-centred healthcare.[5] Our discussion above has given emphasis to specific factors that support the development of novice nurse leadership, including leading self and engaging others. These practices are embedded in and fundamental to team development. This is important as teams form the context in which leadership is enacted. Novice nurses who have reflected on their practice and received support that has generated confidence in engaging others can contribute to the nature of the workplace team.

Importantly, novice nurses have a significant, although often understated, role in shaping teams through followership. Followership is the commitment to team values and objectives and involves collaboration and cooperation.[37] While an older study, Crossman and Crossman's emphasis on the influential role of followers captures the role of novice nurses in shaping teams: "Followership is a relational role in which followers have the ability to influence leaders and contribute to the improvement and attainment of group and organisational objectives. It is primarily an upwards influence."[38p.484] The qualities of effective followers are similar to those of effective leaders,[39] as both are concerned with the integrity of the team and its objectives and are united around a common purpose. Followers influence the shape of the team by sharing strategies to address issues, being interested and committed to team goals, asking questions, providing honest feedback and offering challenge and encouragement to the leader and team members.[40] The role of followers in shaping teams can also be considered as a seamless collaboration with the leader, with whom the leadership function is co-created.[41] Effective followers, therefore, can be considered as active and influential, rather than as passive members of the team.

For novice nurses, learning to be a follower is a relevant leadership skill. Unfortunately, the important role of followership in health care is overshadowed by a focus on leadership and leader development.[41,42] Inclusion of follower development in undergraduate programs in nursing,[41] and establishment of followership throughout the curriculum and professional practice, alongside leadership,[42] may address this limitation. An emphasis on the interdependence of leader-follower relationships in the workplace,[41] fosters a powerful learning ground for novice nurse follower-leader development. Based on this assertion, a leader's understanding of followership is foundational to their ability to develop effective followers within the team.[43] Leaders can provide feedback to novice nurses on their follower skills,[42] and can encourage self-assessment to support individual self-awareness and influence on leader and team performance.[44] Deliberate management of factors within health care workplaces that influence follower development has significant implications for the development of leadership capability in novice nurses.

Followers can therefore learn from leaders and, given the influence of informal learning in healthcare workplaces,[45] followers new to the team can also learn from other followers. The novice nurse, as a team member, thereby shapes and is shaped by these interrelationships.

EMBRACING INNOVATION

Innovation in nursing has been considered "the encouragement of professionals to utilise their acquired knowledge and skills in order to generate and develop new ways of working creatively and drawing on technologies, systems, theories and associated partners/stakeholders that may further enhance and evaluate nursing practice"[46p.165] and is considered a characteristic and an outcome of effective leadership.[47] Innovation is often paired with creativity in nursing, which includes an ability to be flexible, adaptable and able to embrace new ideas in collaboration with others.[48] Being innovative is often associated with experience and seniority; however, there is evidence to suggest that the capacity to be innovative can also be dependent on personal attributes such as being curious,[49] or being able to think of novel ways to practice that is useful to the work being done,[48,49] which can be found in nurses at any level.[48,50] Innovation includes having the ability to investigate a practice gap and articulate a vision,[50] and to recognise relationships and resources that support practice enquiry.[48] Advanced nurse leaders, through innovative practice and research, can influence nursing and policy at all levels.[5] There is merit in preparing novice nurses to visualise such possibilities for their future practice, including the development of the skills and confidence to initiate, as

leaders, practice enquiry in their clinical context,[51] a foundational skill that is endorsed by both ANMAC,[29] and the NMBA.[6]

Innovation in nursing has become a focal area of nursing research, as recognition is given to the diverse nature of nursing work, carried out in contexts that are uncertain, changing, requiring adaptation and problem solving, as demonstrated during the COVID-19 pandemic.[52] Nurses work with knowledge, evidence and intellectual challenge to address health care issues that defy the use of policy and procedure alone. Nurses working in front-line positions, often considered the 'pointy end' of health care, are in a place where circumstances establish opportunities for innovative responses.[53] Being creative and innovative and identifying areas for improvement also depends on being able to question practice; an important aspect of leadership considered to be less well developed in novice nurses.[15] There is a clear partnership between leadership and innovation, as while leadership enables innovation, opportunities to be creative and innovative can support leader development in novice nurses.

There is an onus on leaders to create opportunities for novice nurses, as future leaders, to develop creative and innovative practice. Workplace cultures that value the development of ideas and different ways of practising provide an environment where nurses at any level can develop their innovative potential.[54] The known influence of knowledge sharing on innovative behaviour supports workplace strategies to advance this behaviour.[54] This can be achieved through involvement in work problem solving as nurses collectively reflect on and reframe problems in a positive way, consider problems from different perspectives and reflect on their own assumptions. Furthermore, developing emotional awareness enhances confidence that can also support innovative practice for novice nurses.[19] Emotional regulation, which involves reflection on emotions, can enable innovative strategies to emerge and precipitate confidence in sharing new ideas.[53] Similarly, work engagement,[55] and psychological empowerment,[56] have been known to foster creative thought and innovative practice. Education in innovation as part of leadership preparation for novice nurses has also proven effective in advancing confidence in innovative practice.[48]

DIMENSIONS OF NOVICE NURSE LEADERSHIP

The four dimensions of novice nurse leadership are represented in Figure 1, which positions the novice nurse at the point of intersection. Figure 1 also reflects the interrelationships between each dimension. The influence of the leading self on the practice of engaging others and shaping teams provides an example of these interrelationships. There is scope for further consideration of the interrelationships between the four dimensions, illustrated in the figure by areas of overlap.

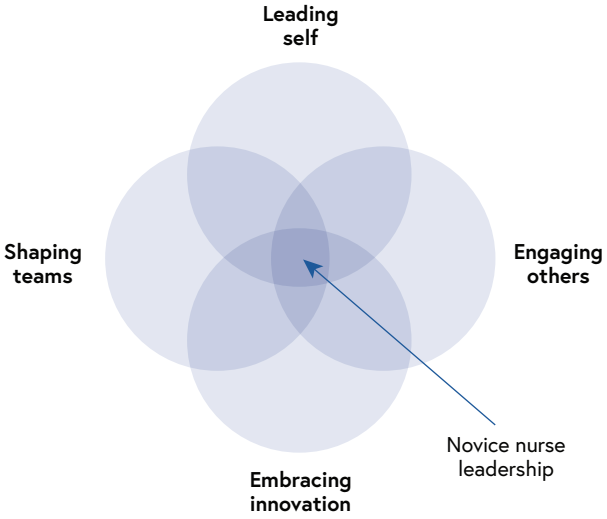

FIGURE 1: DIMENSIONS OF NOVICE NURSE LEADERSHIP

A FRAMEWORK FOR NOVICE NURSE LEADERSHIP DEVELOPMENT

Our discussion of novice nurse leadership development is represented in Table 1. While the domains and corresponding developmental strategies are listed separately, as a holistic model (see Figure 1) it is reasonable to consider the value of these strategies in supporting development across the four domains.

CONCLUSION

This paper presents an approach to novice nurse leadership development that is cognisant of the challenges that accompany novice nurse practice and represents a change from traditional paradigms that equate leadership development with seniority. The core dimensions of leading self, engaging others, shaping teams, and embracing innovation are interrelated, and form a basis for building an explicit innovative model of novice nurse leadership. This proposal contributes to a wider discussion on the preparation of the nursing workforce for future practice in an environment that is characterised by complex healthcare systems and workforce challenges, but nonetheless, is one that offers rich opportunities for novice nurse leadership development and practice innovation within the nursing profession.

IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

Universities and nursing workplaces have a role to play in recognising the critical need to support the development of leadership capability for novice nurses. Academics can design and present theoretical and practicum-based learning on self-leadership and innovative practice and can ensure pre-registration student learning about followership is valued

TABLE 1: A FRAMEWORK FOR NOVICE NURSE LEADERSHIP DEVELOPMENT

Dimension	Strategies for development
Leading self	Self-leadership training, support for self-reflection, provision of opportunities for autonomous work and responsibility at appropriate levels, encouragement to perceive enjoyment in work and natural rewards in work.
Engaging others	Coaching, mentoring, mentoring others within scope of practice, support for development of relationships, leadership training, removal of constraints on development of knowledge, communication confidence and relationships with others, opportunities to participate in simulation and case-based learning.
Shaping teams	Followership development, inclusion of followership training alongside leadership training in workplaces and universities, emphasis on leader-follower relationships, enhance leader understanding of followership and follower development, feedback to novices on follower skills, encourage novice self-awareness of follower skills, team and leader influence, support for follower–follower learning.
Embracing innovation	Provide opportunities for novice nurses to develop creative and innovative practice, support culture that is open to ideas and different ways of practicing, develop workplace avenues for knowledge sharing and problem solving, support individual reflection on assumptions, promote confidence in sharing new ideas, support work engagement and training in innovation.

alongside that of leadership. Within nursing workplaces, nurse managers, educators, and senior clinical nurses can encourage ongoing self-leadership and self-leadership education for nurses. Novice nurses can be allocated an appropriate level of autonomous work and responsibility that fosters a sense of accomplishment and mastery. Workplaces can also provide opportunities for novice nurses to develop their innovative potential through innovation education, involvement in problem-solving, and knowledge sharing. Novice nurse development of communication confidence can be achieved through development of skills that foster engagement with others. Together, universities and nursing workplaces can embed these strategies within student placements. The framework presented in this paper can support reflection on current novice nurse leader development in nursing workplaces. The framework also signals opportunities across the nursing profession to advance novice nurse leader development through ongoing research and curriculum deliberation.

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CASE STUDIES

Supporting novice nurses in perioperative nursing: A case study of an educational intervention

AUTHORS

KAREN MAHONEY RN [1]
SUE HAMMERLING RN, BN, GradDip(PeriopNurs) [1]
LINDA CHAPMAN RN [1]
JULIE TUCKER RN, PhD [1,2]

1. Division of Surgical Specialties and Anaesthesia, Northern Adelaide Local Health Network, Adelaide, South Australia, Australia
2. Clinical and Health Sciences, University of South Australia, Adelaide, South Australia, Austra

CORRESPONDING AUTHOR

KAREN MAHONEY Nurse Consultant, Lyell McEwin Hospital Operating Theatres, Division of Surgical Specialties and Anaesthetics, Northern Adelaide Local Health Network, Haydown Rd, Elizabeth Vale, South Australia, Australia. E: Karen.Mahoney@sa.gov.au

ABSTRACT

Objective: This case study describes the introduction and evaluation of a structured perioperative education program for novice nurses in the theatre setting to address ongoing retention and attrition rates of skilled perioperative nurses.

Background: A proficient and dynamic workforce is essential for speciality areas, including surgical theatre environments. Whilst perioperative nurse education occurs at undergraduate and postgraduate universities, assimilation and further development of skills into the work environment takes time and requires a supportive workplace culture. Lack of support and exposure to clinical experience limits the competency and confidence of novice nurses, which negatively affects retention in specialty areas.

Study Design: Twenty novice nurses underwent a three-month rotation across 14 perioperative speciality areas with an assigned nurse mentor between 2021 and 2024. An educational learning package was developed to track the knowledge, confidence, and capability of novice nurses. Focus group sessions were held every three months, and surveys were administered to assess the overall effectiveness of the program.

Results: Nineteen novice nurses reported increased confidence in their knowledge and overall confidence in the clinical area. Findings demonstrated that the program's structure was a strength, while organisational impacts were the main barrier, including a lack of staff and time pressures identified as barriers. Overall, workplace culture was improved for all staff with improvements in staff retention.

Conclusion: The retention of skilled perioperative staff is essential for best patient outcomes, organisational efficiencies, and a positive work culture and environment. This project has been successful in bridging the theory-practice gap, promoting skill acquisition and professional confidence for NN, whilst enhancing positive workplace culture and staff retention within the study setting. There is a need to review the self-paced learning booklets to enhance the documentation and to show completion by all participants.

Implications for practice: Attrition rates in speciality areas that require a high level of ability, such as the perioperative environment, remain a constant concern for healthcare. This study proves the importance of investing in skill development for novice perioperative nurses through a structured educational program in

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the clinical setting. Supportive frameworks enhance nurses' knowledge and confidence, leading to retention in speciality areas.

What is already known about the topic?

- Perioperative areas are high-pressure environments that require a skilled, specialised workforce to ensure patient safety.
- Maintaining a skilled workforce is problematic as a result of an ageing nursing workforce and the impact of the global pandemic (COVID-19 pandemic).
- Perioperative nurse education occurs at undergraduate and postgraduate universities, although assimilation of skills into the work environment takes time and requires a supportive workplace culture.

What paper adds.

- The findings add to current literature, which finds competency and confidence of novice nurses can be enhanced through supportive education and clinical exposure in the perioperative environment.
- It proves that providing a supportive educational framework that incorporates a mentoring structure can be beneficial for novice and senior nurses in fostering a positive work culture.

Keywords: Clinical supervision, debrief, novice, nursing, operating theatre, support.

OBJECTIVE

This case study aims to:

1. Describe the components of a structured perioperative education program for nurses in the theatre setting to address ongoing retention and attrition of skilled perioperative nurses.
2. Describe the evaluation of a structured perioperative education program in the clinical setting.

BACKGROUND

High-pressure perioperative settings require a skilled and competent workforce with specialised knowledge to maintain a positive work culture, enhancing patient outcomes and service efficiencies.[1,2] Turnover rates for senior perioperative theatre nurses (those with nine or more years of experience) remain a challenge for these environments,[3] with attrition compounded by an experienced ageing workforce nearing retirement. Knowledge transfer from this group to novice nurses (NN) is vital.[3-5] Limited clinical experience negatively impacts NN's competency and confidence.[6] Foundational perioperative nurse education and intensive short workshops are available through undergraduate/postgraduate universities, and professional groups both statewide and nationally (such as through the Australian College of Perioperative Nurses (ACORN)).[7] However, technical and non-technical skills require supplementation in the clinical setting with mentoring, critical thinking, and skill application, which are not routinely taught in undergraduate nursing schools.[6,8] Skill development in the work environment takes time and requires access to on-the-job education underpinned by a supportive workplace culture.[6] A lack of supportive learning from theory to practice result in undue mental stress and transition shock, leading to poor retention of staff in the perioperative environment.[6,8] Whilst ACORN recommends educational concepts be incorporated into the clinical perioperative orientation, there appears to be a paucity in these types of educational frameworks in Australian healthcare facilities.[2,9]

This case study describes the components and evaluation of an educational program for NN undertaken in a tertiary metropolitan hospital (Northern Adelaide Local Health Network) in South Australia. The study site found 20% of senior nurses intended to retire within the following two years. These figures, similarly, reported in sites across Australia and the United States of America (25–55%), identify an ageing workforce.[10] Faced with an increasing novice workforce with limited skills, there was an urgency to upskill NN.

METHODS

The program included NNs undertaking a three-month rotation covering speciality areas (Figure 1) with an assigned mentor (n=13). Rotations began in April 2021 and concluded in December 2024. In this study, novice nurses were defined as any nurse with under 4 years of postgraduate experience in the perioperative setting. Existing staff meeting the requirements only completed the areas they needed. The education program focused on 14 speciality perioperative areas, including an overview of speciality, types of surgical procedures, pathophysiology, pharmacology, and clinic operating days with corresponding specialist doctors.

Adapting the ACORN recommendations for orientation to the perioperative environment [9] and guided by Benner's[11] novice to expert framework, the quality improvement project (QIP) activities used self-guided learning and mentoring to

TABLE 1. QUALITY IMPROVEMENT ACTIVITIES

QI activities	Aim	Activities	Activities undertaken
Educational program	To develop critical thinking, clinical reasoning and assist consolidation of both theoretical and clinical components of the learning process	• Tailored education pack self-directed learning (Each speciality area, including written and visual information/ further links to resources. Topics included procedure types, equipment, instruments and consumables, positioning equipment.) • Self-assessed/review mentor sessions • Assess clinical application to develop knowledge and apply scout skills and scrub skills with supervision	• Completed self-directed learning pack (assessed mentoring sessions to ascertain learning gaps and progress) • Demonstrated in confidence and workplace performance, participating and demonstrating confidence in routine practice for each speciality. Demonstrates skills for scouting and scrub nursing with supervision (activities assessed by mentor and discussed mentee)
	Identify any concerns with the program or gaps in learning	• Mentoring	• 1:1 meeting (daily and ad hoc) with mentor • NN monthly meeting • The mentor and NN addressed aspects of daily allocation, including staffing and skill sets. To optimise immersive experiences, specialties with a greater number of theatres lists per week were allocated two or more NN.
	Evaluate the QI activity and assess the effectiveness of the education program for NN knowledge	• Surveys • Free text – themes analysed inductive approach	• Surveys: De-identified surveys containing 12 questions, 4 Likert scale, 5 free text, and 3 dichotomous, evaluated the role of mentors, support network and skill acquisition for novice nurses. • Example: 1) Was adequate supervision and guidance supplied during this clinical placement? 2) What factors had a positive effect on your learning experience for this area? 3) What factors inhibited your learning in this area?
Staffing numbers over the timeframe	Assess staffing and retention over implementation	• Daily Staff FTE and employment rates –beginning, during, and post-implementation monitored NUM	• Reduction in 7 senior staff retiring and one intermediate nurse leaving for work at another site • 17 NN requested to remain following the intervention

develop skills and evaluate implementation (see Table 1 and Figure 1).

QIP activities included NN completing an educational learning package with a tick box self-assessment developed by the Nurse Unit Manager (NUM) and the Associate Nurse Unit Manager (ANUM). The assessments were reviewed in mentor sessions to ensure knowledge attainment.[6] This process has proven to consolidate both theoretical and clinical components of the learning process.[4] Monthly focus group sessions were run by the NUM, or ANUM to aid with the review and revision of the program. The QIP was assessed using de-identified surveys, consisting of 12 questions (4 Likert scale questions, 5 free-text, and 3 dichotomous) to assess the effectiveness of the program from the participants' perspective (Appendix 1). Staffing rates pre- and post-intervention was recorded to track overall staff retention in theatre (see Table 1).

Evaluation of findings have been expressed as numbers, and percentages, and free text responses utilised a code book inductive approach for analysis with overarching themes.[12]

The project was approved by the Central Adelaide Local Health Network (CALHN) Higher Research Ethics Committee (Approval number: HREC19584).

RESULTS

Novice nurses (n=20) beginning the program included new NNs to the area (n=17) and existing staff (n=3). The was a 95% completion rate for the first 12 months and 100% (n=17) in later rotations (see Figure 1). Attrition rates a result of existing staff (n=2) requiring skill in selected specialties and one NN resigning for a permanent position at another hospital (n=1). The overall staffing rates in the main perioperative area during the intervention saw a reduction of 7 senior staff members retiring and one seeking employment at another site. Informal requests to stay in the theatre were made by the remaining NNs in the program.

The completion rate of self-guided learning booklets was difficult to assess, as booklets were not collected post-program. Additionally, 88% of mentors cited no documentation or verifications of completion in the booklets.

Surveys were completed by 11 (55%) NNs and 8 (63%) mentors (see Appendix 1). All participants understood their role in the program. Most mentors (88%) considered that the NN had progressed from novice to intermediate level in scouting, scrubbing minor cases, and the mentor's major area.

Most NNs (72.7%) reported the overall learning experience as excellent. Further, 45.5% of NNs strongly agreed, and 54.5% agreed that they received adequate supervision and guidance during clinical placements, and that the self-directed resource books enhanced access to relevant and up-to-date information within the clinic. 45.5% strongly agreed, and 45.5% agreed that the guidance received from nursing staff was constructive and forthcoming. Most mentors stated that 75% of NNs were engaged in learning, with 62.5% making themselves available for sessions, and 91% requesting busy morning shifts. Mentors reported that barriers to education engagement included lack of staffing (27%) in the perioperative area, allocation to specified lists (27%), no time to educate (13%) and the complexity of specialties requiring a wide variety of skills and knowledge (13%) (see Appendix 1).

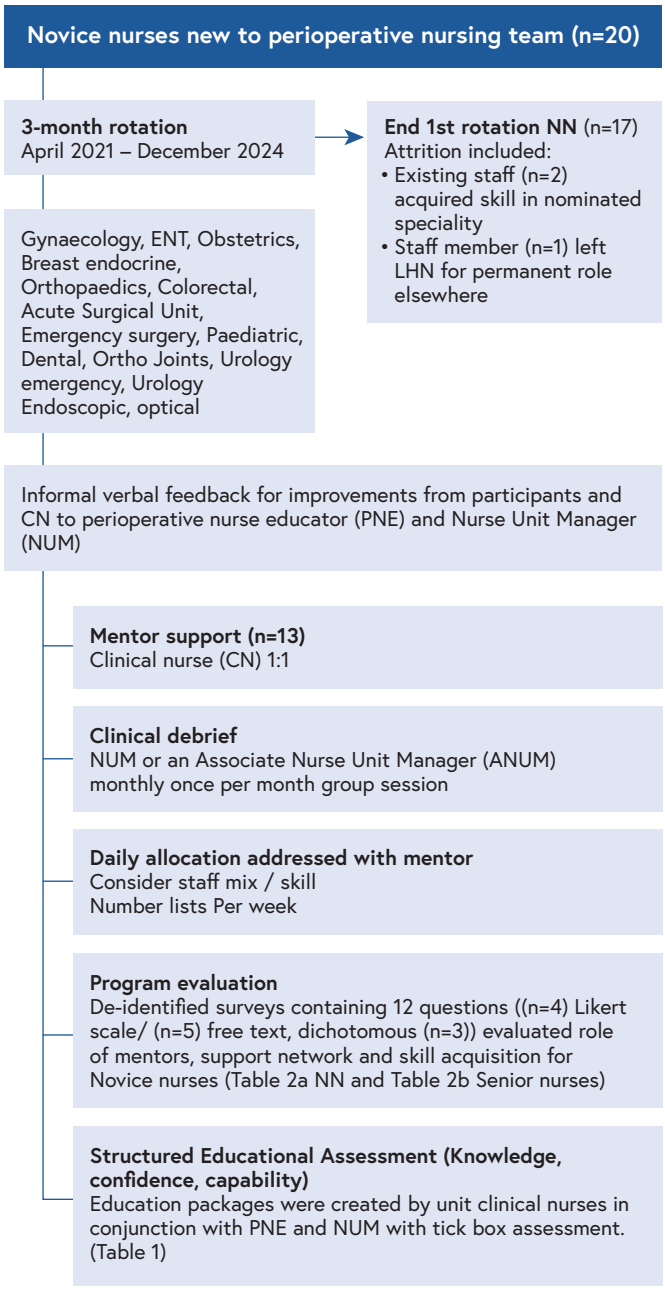

FIGURE 1. NOVICE NURSES NEW TO PERIOPERATIVE NURSING FLOW CHART

Free-text responses from feedback sessions, focus groups, and surveys were collated into main themes with codes. These included strengths and limitations relating to learning, mentoring, and organisational impact (see Table 2). Organisational constraints were the main barrier to the program, including staffing levels, busy clinics, and availability of mentors. Despite this, the overall educational intervention was reviewed favourably in building knowledge, skill and confidence by participants. Notably, opportunities were sought to build skills in additional case selection, supported by the theatre team, fostering a collaborative approach in supporting the NN and positive work culture. Reflected in statements by NN, who requested to stay in theatre, "My mentors' passion for perioperative nursing and teaching is pivotal… I'm not scared anymore, and I want to stay in perioperative" NN11.

DISCUSSION

Consolidation learning over a 12-month time frame contributed to NN demonstrating clinical ability, reporting a sense of security, and support within the perioperative area. These findings are consistent with studies that report the value of multifaceted learning and mentorship.[13-15] Moultrie[13] found flexibility in learning schedules that accommodated the unique needs of learners, which was displayed in our findings, with the use of reflective learning, learning assessment booklets, and mentoring. Self-paced educational booklets offered the adult learners flexibility to self-direct learning, meeting their educational needs. These strategies have been shown to be effective for all adult learners and applicable to nursing education.[16] Additionally, NN mentoring sessions promoted clinical reflection and learning, with mentors acknowledging that most NN had attained skills and confidence. However, it was difficult to show this outcome as educational booklets were poorly documented. Future workbooks need to consider focusing on strategies that encourage and prove completion rates, including incentives, online forums, virtual teams, or quizzes.

Survey responses reflected that ongoing mentoring and educational resources increased NN knowledge, positivity and confidence, resulting in increased levels of preparedness to scrub and scout for theatre lists supported by their mentor. These findings are similar to other studies, which report that a positive work environment enhances not only self-efficacy and resilience but also staff retention.[14]

Debriefing sessions were described as helping communication between the NNs and senior leaders, promoting reflection, learning and support. These findings add to the current literature.[17-19] NNs who identified areas for improvement found the open lines of communication with

TABLE 2. OVERARCHING THEME, GROUPING CODES FROM FOCUS GROUPS, SURVEY FREE TEXT

Theme	Grouping code	Novice Nurse		Mentors	
		Strengths	Limitations	Strengths	Limitations
Consolidation of learning	Meaning codes	Relevant information from mentors, hands-on experience/ completed booklets facilitated Knowledge/ skill. Rotations fostered practical experience in scouting and scrub nurse.	Organisational demands. Poor documentation in booklets.	self-paced learning supports adult learners. 1:1 mentoring, consistency in speciality increased NN knowledge and skills and overall morale of the entire team.	NNs have no initiative to roster busy shifts. Poor documentation in booklets.
	Statements	NN4 "The resource trolley was evolving but it kept me on my toes" NN10 "Before this allocation I was anxious to relieve in the theatre through support and education I am loving it"	NN1 "You can't anticipate what comes in as emergency and you can't request those cases, I would have loved a hemicolectomy!" NN2 "It's so busy sometimes you can't sit and look or complete the educational pack"	M8 "Ongoing support for NN and others is important as a team" M6 "We are working better as a team"	M1 "NN need a broader exposure across specialities" M10 "Some are not proactive at requesting to get experience". M5 "There needs to be evidence of completed packages"
Mentoring	Meaning codes	Supervision and feedback are timely and constructive. Mentors had a high level of expertise. Adequate guidance when sufficient staff. A collaborative team fostered growth growth-positive workplace. Debrief focus group	Organisational demands/ reduction in senior staff. Lack of availability of a mentor and allocation to clinics.	NN- comprehensive introduction and build skills. Growth NN in confidence scout/scrub with assistance. Develops collegial environment, job stratification.	Seniors need to de-brief. Issues juggling organisational demands.
	Statements	NN5 "My mentor and I planned our 3 months in advance looked for available cases she encouraged me to participate" NN7 "I worked closely with my mentor. I could ask any questions- I was supported"	NN9 "My mentor was great but other seniors lacked experience in educating". NN4 "Sometimes when clinical mentor is not their other staff have less experience".	M11 "I enjoyed mentoring, the education package helped me also".	M6 "Its difficult to juggle my role, their role and a buy unpredictable place"
Organisational impact	Meaning codes	Supported program. Availability mentor/ opportunity. Proactive in requesting shifts and scrubbing for lists.	Time pressures, staffing levels impacted on clinic allocation and learning. Pressured environment impacted on senior staff's availability to mentor effectively.		No time to update resources. Busy shifts, low staffing negative impact mentor role.
	Statements	NN3 "Every shift I had a mentor and request to scrub/ scout" NN6 "My mentor was always available; I love it and want to stay"	NN8 "I would have liked more shifts to consolidate skills" NN2 "Request to scrub not available as there just isn't senior staff to mentor"		M7 "The package is evolving, and I was more aware of my role as it progressed, but we need time to do this role properly"

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their mentor beneficial in planning ongoing objectives to meet their needs. Open communication is vital in fostering trust, understanding, and enhancing work satisfaction and morale.[1,19,20] This may have contributed to higher completion rates for NNs in the program and their requests to still be in the perioperative area.

Organisational constraints posed challenges for the program, with limited lists affecting clinical exposure skills and knowledge acquisition. It was clear through feedback that NNs who had multiple lists per week reported gaining confidence faster. On review, NNs with limited lists were offered longer rotation in specialties. Identifying that theoretical knowledge requires time in supportive practical placements to obtain skills.[6]

Mentors were challenged with balancing work demands and mentoring. Whilst the responsibility for teaching and mentoring was fulfilling, it was time-consuming and stressful. Durkin et al. (2023) reported the need to support and appreciate mentors, citing that mentoring engagement with inexperienced staff can be overwhelming, leading to burnout.[21] This suggests that further programs should review the framework for mentoring, which could include quarantining time for senior staff to mentor, reviewing workloads for mentees, optimising mentor skills through training, and offering modes to debrief.

Whilst there are benefits to the reported educational intervention, limitations existed, including a small sample size and reporting on only one facility. Free text responses only reflect the views of the sample, and caution remains in applying findings to other sites. The poor documentation for self-assessment needs review and strategies developed to improve accomplishment.

CONCLUSION

The retention of skilled perioperative staff is essential for optimal patient outcomes, organisational efficiencies and a positive work culture and environment. This case study illustrates the successful bridging of the *theory-practice gap,* promoting perioperative skill acquisition and professional confidence for NNs, whilst enhancing positive workplace culture and staff retention within the study setting. Whilst self-paced and assessed learning is valuable for adult learners in nursing, there is a need to review the documentation and to evidence completion by all participants. Organisational constraints will continue to affect the perioperative environment and mentoring roles, however, greater efforts should be made to ensure mentors are trained, supported and appreciated, focusing on establishing a supportive culture for NNs to learn.

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ERRATUM

Correction to: "Cervical screening in pregnancy: an opportunity for nurses and midwives to drive equitable cervical cancer elimination" by Jordan Dixon and Kate Flynn

CORRECTION NOTICE - ERRATUM

Correction to: "*Cervical screening in pregnancy: an opportunity for nurses and midwives to drive equitable cervical cancer elimination*" by Jordan Dixon and Kate Flynn (doi: 10.37464/2025.424.2478).

In the original publication of this article, edits had been introduced to a version of the manuscript during the copy-editing process post-acceptance for publication. Edits were made to the wording and tone of the manuscript in several sections, including restructuring, rewriting, rephrasing, and redefining, along with changes to the wording of headings and subheadings. This copy-edited version of the manuscript with these changes was not provided to the authors for their review. This is not standard practice for the journal and resulted in the incorrect and unapproved manuscript moving forward to publication.

The published version of the manuscript did not represent the authors' writing or position.

Copy edits made included:

1. Additions of text denoted by bold text [Text Added].
2. Deletion of text denoted by text with '~~strikethrough~~' [Text Deleted].
3. Movement of text from one part of the manuscript to another, denoted by:
    a. Underlined text in red [Text Moved Down/Up] at the location where the text was moved from.
    b. Underlined text in green Text moved From below/above at the location where text was moved to.

The following edits were made during copyediting and were not reviewed or approved by the prior to publication.

1. The corresponding author's email address was incorrect.
2. Language Note edited: ~~We use~~ [Text Deleted] **While this editorial uses** [Text Added] gendered language ~~throughout this editorial~~ [Text Deleted], **for clarity and consistency** [Text Added] ~~however~~ [Text Deleted] we acknowledge **and respect** [Text Added] that people who ~~don't~~ [Text Deleted] **do not** [Text Added] identify as women also seek pregnancy care and ~~are~~ [Text Deleted] **may be** [Text Added] at risk of cervical cancer.
3. Heading edited: ~~CERVICAL CANCER IN AUSTRALIA~~ [Text Deleted] **BACKGROUND** [Text Added].
4. Paragraph edited: Cervical cancer is ~~a disease of inequity,~~ [Text Deleted] predominantly caused by persistent infection ~~with~~ [Text Deleted] **of certain** [Text Added] carcinogenic ~~types~~ [Text Deleted] **variations** [Text Added] of **the** [Text Added] human papillomavirus (HPV) ~~and~~ [Text Deleted]. **With early detection, the disease** [Text Added] is almost entirely preventable. ~~Despite long standing~~ [Text Deleted] ~~cervical screening~~

ERRATUM

~~and~~ [Text Deleted] HPV vaccination [Text Moved Down] ~~programs in Australia~~ [Text Deleted], **however,** [Text Added] women continue to die from cervical cancer.~~[1]~~ [Text Deleted] **In Australia, the age-standardised incidence rate stands at around 6–7 cases per 100,000 women, with a mortality rate of around 1.7–2 deaths per 100,000.** [Text Added] Screening remains [Text Moved Down] ~~the cornerstone of~~ [Text Deleted] prevention [Text Moved Down] ~~in adult women, yet~~ [Text Deleted] 70% of people diagnosed with cervical cancer are under- or never-screened ('under-screened').[1] [Text Moved Down] ~~When cervical cancer is diagnosed during pregnancy or early parenthood, the consequences are devastating for women and their babies, partners and communities.~~ [Text Deleted] **Globally, Australia is well performing in the prevention of cervical cancer, with low rates being attributable to the introduction of the** [Text Added] National Cervical Screening Program (NCSP) [Text Moved From Below] **in 1991 and the national** [Text Added] HPV vaccination [Text Moved From Above] **program in 2007.** [Text Added]

5. Paragraph edited: In previous decades, cervical screening was a part of routine maternity care but fell out of practice, likely due to changing models of care, increasing demands on practitioners, a shift in mindset about standard care and the movement away from routine pelvic exams. [Text Moved Down]

6. Paragraph edited: In 2017 ~~Australia's~~ [Text Deleted] National Cervical Screening Program (NCSP) [Text Moved Up], **screening practices under the NCSP** [Text Added] shifted from **2-yearly** [Text Added] Papanicolaou (Pap) Smears~~, which examined cervical cells for abnormalities~~ [Text Deleted] **(a cervical screening test in which cells are scraped from the surface of the cervix and examined for abnormalities),** [Text Added] to **a 5-yearly** [Text Added] primary ~~HPV screening~~ [Text Deleted] **high-risk human papillomavirus (HPV) testing,** [Text Added] ~~,a~~ [Text Deleted] **which is** [Text Added] more sensitive ~~and effective test that requires less frequent screening~~ [Text Deleted] **for detecting persistent infections that can lead to cervical cancer** [Text Added].[1] **With this introduction, the frequency of screening requirements were reduced to every 5-years, and** [Text Added] since July 2022, all eligible women have been able to choose between self-collection (using a small swab inserted into the vagina to collect their own sample) or clinician-collection (clinician inserts a speculum into the vagina to collect a cervical sample).[1] Self-collected vaginal samples are just as accurate for the detection of underlying precancer of the cervix as clinician-collected cervical samples because an infected cervix sheds HPV DNA into the vagina.[2]

7. Paragraph edited: Despite the introduction of self-collection, national cervical screening participation has stagnated with one in four women overdue for screening.[3] With rising cost of living pressures, a shortage of (bulk-billing) cervical screening providers, and increasing out of pocket fees, barriers to participation are growing.[3] Screening remains [Text Moved From Above] **paramount for the** [Text Added] prevention [Text Moved From Above] **of cervical screening, with** [Text Added] 70% of people diagnosed with cervical cancer are [Text Moved From Above] **those who are** [Text Added] under- or never-screened ('under-screened').[1] [Text Moved From Above] ~~When screening is not accessible, systemic inequities deepen, widening disparities in health outcomes, particularly for communities already experiencing structural barriers to engaging with healthcare.~~ [Text Deleted]

8. Paragraph edited: **Recent modelling and progress reports published in 2024–2025 indicates that Australia is on track to reach the World Health Organization 'elimination' threshold (fewer than 4 new cases per 100,000 women per year) by around 2030, provided high HPV vaccination and screening coverage are maintained. However, gaps in prevention and screening persist, which may hinder Australia reaching this goal. One such gap in screening practice relates to pregnancy and early parenthood, where,** [Text Added] in previous decades, cervical screening was part of routine maternity care but fell out of practice, likely due to changing models of care, increasing demands on practitioners, a shift in mindset about standard care, and the movement away from routine pelvic exams. [Text Moved From Above]

9. Heading deleted: ~~NATIONAL STRATEGY FOR THE ELIMINATION OF CERVICAL CANCER IN AUSTRALIA~~ [Text Deleted].

10. Paragraph deleted: ~~In 2023 Australia launched its equity focused national strategy for the elimination of cervical cancer, which outlines strategic objectives across the three pillars of vaccination, screening, and treatment.~~ [Text Deleted].

11. Figure 1 deleted: ~~Figure 1: Australia's cervical cancer elimination strategy. Reproduced from National Strategy for the Elimination of Cervical Cancer in Australia, Department of Health and Aged Care.[1]~~ [Text Deleted]

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ERRATUM

12. Subheading deleted: ~~HPV VACCINATION~~ [Text Deleted].

13. Paragraph deleted: ~~Catch up HPV vaccination can be promoted before or after pregnancy for patients <26 years. A single catch-up dose is effective in this age group and is provided free for those who missed out at school under the national immunisation program.~~[1] [Text Deleted].

14. Subheading deleted: ~~SCREENING~~ [Text Deleted].

15. Paragraph edited: ~~Cervical screening is~~ [Text Deleted] safe and effective at all stages of pregnancy [Text Moved Down] ~~and~~ [Text Deleted] should not be delayed [Text Moved Down] ~~if due~~ [Text Deleted].[4] [Text Moved Down] ~~The traditional model of screening involving a sample from the cervix created significant barriers to implementation in the antenatal setting.~~ [Text Deleted] ~~Regression of~~ cytological changes [Text Moved Down] ~~in later pregnancy can lead to recommendations to complete screening postpartum.~~ [Text Deleted][5] [Text Moved Down] ~~Additionally, the risk of cervical contact~~ [Text Deleted] bleeding [Text Moved Down] ~~may not be acceptable to women or practitioners.~~[1] [Text Deleted] Self-collection [Text Moved Down] ~~provides~~ [Text Deleted] an acceptable [Text Moved Down] alternative [Text Moved Down] ~~and offers~~ [Text Deleted] meaningful choice for women.[4] [Text Moved Down]

16. Subheading deleted: ~~DIAGNOSTICS AND TREATMENT~~ [Text Deleted].

17. Paragraph deleted: ~~If colposcopy (a closer examination of the cervix using a magnifying instrument) is required following an abnormal screening test, midwives should reassure patients that assessment is safe during pregnancy and should not be delayed until the postpartum period.[5] The aim of colposcopy in pregnancy is to exclude invasive cancer and to reassure the patient that their pregnancy will not be affected by an abnormal cervical screening result.[5] Where high-grade lesions are suspected, definitive treatment, except in cases of invasive cancer, can be safely deferred until after pregnancy.[5]~~ [Text Deleted].

18. Paragraph deleted: ~~To reach equitable elimination, we need to draw on, and strengthen the capacity of, our existing resources.[1] One existing resource is maternity care in Australia.~~ [Text Deleted].

19. Subheading deleted: ~~MATERNITY CARE~~ [Text Deleted].

20. Heading added: **SCREENING FOR CERVICAL CANCER DURING PREGNANCY** [Text Added].

21. Paragraph edited: ~~Women in Australia~~ [Text Deleted] **In Australia women and** [Text Added] are giving birth later in life, with the median **maternal** [Text Added] age ~~now~~ [Text Deleted] **reaching** [Text Added] 32 years.~~[6] This demographic shift overlaps~~ [Text Deleted], **coinciding** [Text Added] with cervical ~~cancer~~ [Text Deleted] **cancer's** [Text Added] ~~epidemiology, where the~~ [Text Deleted] peak incidence ~~occurs~~ [Text Deleted] between **ages** [Text Added] 35 and 49 ~~years, when many women are pregnant or caring for young children~~ [Text Deleted].[3] **Further,** [Text Added] for many under-screened women, antenatal care may be their only consistent engagement with the healthcare system, offering a predictable schedule of appointments, continuity and trusted relationships. Even a single lifetime screening can significantly reduce their risk of cervical cancer.[3] [Text Moved From Below] Importantly, 95% of women will attend more than five antenatal visits, a level of engagement not often seen within the healthcare system.[6] Pregnancy is also a time when external motivation is high; many women engage in preventive health not only for themselves but for the benefit of their baby and family. By embedding cervical screening into routine antenatal care, we can address gaps left by fragmented services and ensure prevention does not fall through the cracks. [Text Moved From Below]

22. Paragraph edited: **While, pap smears posed significant barriers in the antenatal setting, as scraping the cervical wall risked irritation or** [Text Added] bleeding [Text Moved From Above], **which pregnant women and practitioners often found unacceptable,[5] the introduction of** [Text Added] self-collection [Text Moved From Above] **of HPV samples offers** [Text Added] an acceptable [Text Moved From Above], **less invasive** [Text Added] alternative [Text Moved From Above] **that enhances accessibility and provides** [Text Added] meaningful choice for [Text Moved From Above] **pregnant** [Text Added] women.[4] [Text Moved From Above] **The introduction of this option has improved participation rates among those in maternity care, improving outcomes. Further, while in many cases abnormal** [Text Added] cytological changes [Text Moved From Above] **detected during pregnancy regress later in gestation, leading clinicians to recommend deferring or repeating screening postpartum rather than immediate intervention during pregnancy,** [Text Added][5] [Text Moved From Above] **risks such as advanced disease progression in under-**

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ERRATUM

screened women mean screening [Text Added] should not be delayed [Text Moved From Above]. [Text Added] **Evidence demonstrates that cervical screening remains** [Text Added] safe and effective at all stages of pregnancy [Text Moved From Above] **when clinically indicated** [Text Added].[4] [Text Moved From Above]

23. Heading added: **ROLE OF NURSES AND MIDWIVES** [Text Added]

24. Paragraph edited: ~~In 2024 292,318 babies were born in Australia, within a maternity system provided by~~ [Text Deleted] **Maternity care in Australia is delivered by a multidisciplinary team, involving** [Text Added] midwives, nurses, obstetricians, **and** [Text Added] general practitioners~~, or a combination of all four~~ [Text Deleted].[6] Nurses and midwives are uniquely positioned within this system, with continuity and freedom of movement across community, hospital and home settings. **Notably,** [Text Added] 46% of [Text Moved From Below] models of care now [Text Moved From Below] **incorporate** [Text Added] midwifery continuity [Text Moved From Below]**,** [Text Added][6] [Text Moved From Below] **underscoring the need to equip** [Text Added] midwives [Text Moved From Below] **to address the full spectrum of** [Text Added] reproductive health [Text Moved From Below], including cervical [Text Moved From Below] **screening and** [Text Added] dysplasia [Text Moved From Below] **management, while upskilling tertiary** [Text Added] medical [Text Moved From Below] **teams to** [Text Added] champion [Text Moved From Below] **these efforts and enable** [Text Added] nurses [Text Moved From Below] and [Text Moved From Below] midwives [Text Moved From Below] to work [Text Moved From Below] **to full-scope** [Text Added] practice. [Text Moved From Below]

25. Paragraph edited: 46% of [Text Moved Up] ~~all~~ [Text Deleted] models of care now [Text Moved Up] ~~have a~~ [Text Deleted] midwifery continuity [Text Moved Up] ~~component~~ [Text Deleted].[6] [Text Moved Up] ~~As we move toward an expansion of midwifery-led models of care,~~ [Text Deleted] midwives [Text Moved Up] ~~must be equipped to manage the full breadth of women's~~ [Text Deleted] reproductive health [Text Moved Up] ~~issues~~ [Text Deleted], including cervical [Text Moved Up] dysplasia [Text Moved Up]~~. In parallel we need to upskill our~~ [Text Deleted] medical [Text Moved Up] ~~workforce within the tertiary system so they can~~ [Text Deleted] champion [Text Moved Up] ~~cervical screening and support~~ [Text Deleted] midwives [Text Moved Up] and [Text Moved Up] nurses [Text Moved Up] to work [Text Moved Up] ~~at their full scope of their~~ [Text Deleted] practice. [Text Moved Up]

26. Paragraph edited: Cervical screening is within the scope of practice of nurses and midwives, and while many have been providing this service for several years, some still don't see a role for themselves in this area. However, this is starting to change with the introduction of self-collection which has expanded access for screening participants and opened doors for nurses and midwives to play a greater role in cervical screening. The autonomy inherent in self-collection provides increased flexibility in where and how the test is done and who can facilitate access. With appropriate training, clinical governance and support, nurses and midwives can deliver both screening options to the same quality as doctors, reducing patient wait times and improving patient satisfaction and outcomes. [Text Moved From Below]

27. Paragraph edited: The National Strategy [Text Moved From Below] **for the Elimination of Cervical Cancer, developed by the Australian Centre for the Prevention of Cervical Cancer in partnership with the Australian Government Department of Health, Disability and Ageing,** [Text Added] highlights the important role nurses and midwives play in achieving elimination, calling for clear pathways to enable them to "independently request and sign pathology request forms for a cervical screening test (and be eligible for Medicare reimbursement)".[1] Until July 2021 this was standard practice in Victoria, with one pathology service funded to process tests ordered by non-medical providers. Unfortunately, since this agreement lapsed, MBS funding for cervical screening is now restricted to providers with a Medicare Provider Number (MPN) such as doctors, nurse practitioners and endorsed midwives. [Text Moved From Below]

28. Paragraph edited: These restrictions create system level barriers to expanding the autonomous screening role of nurses and midwives. In midwifery-led clinics, a MPN provider may not be readily available to co-sign pathology forms, limiting access and provision to cervical screening within maternity models of care. [Text Moved From Below] Additionally, non-medical providers cannot independently access the National Cancer Screening Register (NCSR) to determine whether a patient is due for screening. Without direct NCSR access, ideally integrated into electronic medical record systems, we are making it harder for nurses and midwives to identify eligible women and provide timely care. [Text Moved From Below]

29. Heading edited: ~~PREGNANCY AS AN EQUITY LEVER~~ [Text Deleted] **ADDRESSING INEQUITY** [Text Added]

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30. Paragraph edited: For many under-screened women, antenatal care may be their only consistent engagement with the healthcare system, offering a predictable schedule of appointments, continuity and trusted relationships. Even a single lifetime screening can significantly reduce their risk of cervical cancer.[3] [Text Moved Up]

31. Paragraph edited: Importantly, 95% of women will attend more than five antenatal visits, a level of engagement not often seen within the healthcare system.[6] Pregnancy is also a time when external motivation is high; many women engage in preventive health not only for themselves but for the benefit of their baby and family. By embedding cervical screening into routine antenatal care, we can address gaps left by fragmented services and ensure prevention does not fall through the cracks. [Text Moved Up]

32. Paragraph edited: The national strategy identifies five **key** [Text Added] populations who are more likely to be under-screened **for cervical cancer** [Text Added]. Efforts to improve access for these ~~populations~~ [Text Deleted] **groups** [Text Added] must be designed ~~and delivered in consultation with the people~~ [Text Deleted], **governed and evaluated in partnership with the communities** they aim to benefit**, rather than imposed upon them** [Text Added]. For example, initiatives to increase cervical screening through pregnancy care must not be imposed ~~onto~~ [Text Deleted] **on** [Text Added] First Nations women, but shaped ~~through~~ [Text Deleted] **by** [Text Added] First Nations leadership, ~~governance and community driven decision making~~ [Text Deleted] **communitycontrolled organisations and local governance structures that embed selfdetermination** [Text Added].

33. Paragraph edited: Colonisation, institutional racism and a lack of culturally safe care ~~has prevented~~ [Text Deleted] **have undermined** [Text Added] First Nations ~~women from feeling safe~~ [Text Deleted] **women's trust** [Text Added] in maternity care **and reproductive health services** [Text Added]. ~~With the development of~~ [Text Deleted] **Emerging** [Text Added] Birthing on Country models ~~which work~~ [Text Deleted] **seek** [Text Added] to redress these ~~issues, we are~~ [Text Deleted] **harms by** [Text Added] returning childbirth services to First Nations communities and First Nations Control**, embedding cultural continuity, community governance and Indigenous workforce leadership** [Text Added].[7] In 2023, First Nations mothers accounted for 5.6% of women who gave birth, with around 70% now accessing antenatal care**.** [Text Deleted], [Text Added][6] **creating a critical touchpoint to discuss cervical screening in a culturally safe way.** [Text Added]

34. Paragraph edited: People who identify as LGBTQ+ and people who are intersex frequently encounter cisheteronormative assumptions within reproductive health services, **including misgendering,** [Text Added] ~~leading to~~ [Text Deleted] inappropriate questions~~, stigma and a lack of recognition of their reproductive health needs.~~ [Text Deleted] **and forms that do not recognise diverse bodies and identities.** [Text Added] ~~As a result of systemic barriers,~~ [Text Deleted] **These experiences contribute to stigma, distress and avoidance of care,** [Text Added][8] [Text Moved From Below] ~~they are~~ [Text Deleted] **meaning they may be** [Text Added] less likely to be offered or **to** [Text Added] participate in screening and may find **pelvic** [Text Added] examinations **particularly** [Text Added] distressing.[8] [Text Moved Up] **Creating genderaffirming pregnancy and parenting care, with inclusive language and flexible screening options, is therefore essential to improving access.** [Text Added]

35. Paragraph edited: Women with disability ~~face~~ [Text Deleted] **experience** [Text Added] multiple, compounding barriers to cervical screening, including inaccessible ~~health services~~ [Text Deleted] **facilities and equipment** [Text Added], limited provider training, **communication barriers,** [Text Added] and misjudgements [Text Moved From Below] **by** [Text Added] family, carers and ~~provider~~ [Text Deleted] **clinicians** [Text Added] misjudgements [Text Moved Up] ~~around~~ [Text Deleted] **about** [Text Added] sexual activity **and risk** [Text Added].[9] ~~Providers' tendency to~~ [Text Deleted] **When providers** [Text Added] prioritise disability ~~-~~ [Text Deleted] related ~~concerns~~ [Text Deleted] **issues** [Text Added] over preventive health**,** [Text Added] ~~can lead to~~ [Text Deleted] cervical screening ~~being missed~~ [Text Deleted] **can be overlooked or deprioritised** [Text Added]. Pregnancy care ~~can offer a safe~~ [Text Deleted] **offers a safer, more holistic** [Text Added] context ~~to discuss~~ [Text Deleted] **in which nurses and midwives can raise cervical** screening ~~with these women and any~~ [Text Deleted]**, negotiate with** [Text Added] hesitant carers or family members**, and plan adjustments that enable screening to occur respectfully** [Text Added].

36. Heading edited: MIGRANT AND REFUGEE WOMEN ~~- CULTURALLY AND LINGUISTICALLY DIVERSE~~ [Text Deleted]

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37. Paragraph edited: Women from migrant and refugee backgrounds now ~~make up a third~~ [Text Deleted] **comprise roughly onethird** [Text Added] of women giving birth in Australia and are **about** [Text Added] 50% less likely to have completed cervical screening ~~compared to~~ [Text Deleted] **than** [Text Added] Australian-[Text Deleted]born women.[6,10] ~~These women~~ [Text Deleted] **Many** [Text Added] may not have had ~~previous~~ [Text Deleted] **prior** [Text Added] access to HPV vaccination ~~and~~ [Text Deleted] **or organised** [Text Added] screening **programs in their country of origin** [Text Added], placing them at ~~higher~~ [Text Deleted] **increased** [Text Added] risk of ~~developing~~ [Text Deleted] cervical cancer **and unfamiliarity with the concept of screening** [Text Added].[10] For many ~~migrant and refugee women~~ [Text Deleted], pregnancy care ~~will be~~ [Text Deleted] **represents** [Text Added] their first **sustained** [Text Added] interaction with the Australian ~~healthcare~~ [Text Deleted] **health** [Text Added] system~~.~~ [Text Deleted]**, providing a crucial opportunity to offer interpretersupported, culturally responsive information about cervical screening and to integrate screening into broader settlement and primary care pathways.** [Text Added]

38. Paragraph edited: People living in rural and remote areas ~~have less~~ [Text Deleted] **face reduced** [Text Added] access to preventive health ~~due to~~ [Text Deleted] **because of** [Text Added] distance,**travel costs** [Text Added] and **the** [Text Added] inconsistent ~~availability of healthcare providers~~ [Text Deleted] **presence of medical practitioners** [Text Added]. **In these settings,** [Text Added] upskilling nurses and midwives is strategic ~~in these areas~~ [Text Deleted]**,** [Text Added] as there are more registered nurses and midwives per 100,000 people working in remote and very remote areas~~, compared to~~ [Text Deleted] **than** [Text Added] medical professionals.[11] **Enhancing their competencies in cervical screening counselling, referral and followup can therefore extend the reach of the National Cervical Screening Program into communities where access is otherwise limited.** [Text Added]

39. Paragraph edited: Pregnancy creates a unique and natural opportunity to address inequities by providing an inclusive, culturally safe, gender-affirming environment irrespective of who you are or where you live. In this setting, people can be empowered to make informed decisions about their health, creating an optimal entry point for priority populations not only into cervical screening, but the entire pathway. [Text Moved Down]

40. Paragraph edited: Nurses and midwives are well placed to facilitate this access during pregnancy due to their experience and ability to foster trusted relationships with their patients. They regularly provide services for women from diverse backgrounds, many of whom face substantial barriers to accessing traditional medical models of care. [Text Moved Down]

41. Heading deleted: ~~OPPORTUNITIES AND CURRENT RESTRICTIONS: NURSES AND MIDWIVES' ROLE~~ [Text Deleted]

42. Paragraph edited: Cervical screening is within the scope of practice of nurses and midwives, and while many have been providing this service for several years, some still don't see a role for themselves in this area. However, this is starting to change with the introduction of self-collection which has expanded access for screening participants and opened doors for nurses and midwives to play a greater role in cervical screening. The autonomy inherent in self-collection provides increased flexibility in where and how the test is done and who can facilitate access. With appropriate training, clinical governance and support, nurses and midwives can deliver both screening options to the same quality as doctors, reducing patient wait times and improving patient satisfaction and outcomes. [Text Moved Up]

43. Paragraph edited: The national strategy highlights the important role nurses and midwives play in achieving elimination, calling for clear pathways to enable them to "independently request and sign pathology request forms for a cervical screening test (and be eligible for Medicare reimbursement)".1 Until July 2021 this was standard practice in Victoria, with one pathology service funded to process tests ordered by non-medical providers. Unfortunately, since this agreement lapsed, MBS funding for cervical screening is now restricted to providers with a Medicare Provider Number (MPN) such as doctors, nurse practitioners and endorsed midwives. [Text Moved Up]

44. Paragraph edited: These restrictions create system level barriers to expanding the autonomous screening role of nurses and midwives. In midwifery-led clinics, a MPN provider may not be readily available to co-sign pathology forms, limiting access and provision to cervical screening within maternity models of care. [Text Moved Up]

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45. Paragraph edited: Additionally, non-medical providers cannot independently access the National Cancer Screening Register (NCSR) to determine whether a patient is due for screening. Without direct NCSR access, ideally integrated into electronic medical record systems, we are making it harder for nurses and midwives to identify eligible women and provide timely care. [Text Moved Up]

46. Paragraph edited: Pregnancy creates a unique and natural opportunity to address inequities by providing an inclusive, culturally safe, gender-affirming environment irrespective of who you are or where you live. In this setting, people can be empowered to make informed decisions about their health, creating an optimal entry point for priority populations not only into cervical screening, but the entire pathway. [Text Moved From Above]

47. Paragraph edited: Nurses and midwives are well placed to facilitate this access during pregnancy due to their experience and ability to foster trusted relationships with their patients. They regularly provide services for women from diverse backgrounds, many of whom face substantial barriers to accessing traditional medical models of care. [Text Moved From Above]

48. Headings edited: ~~ELIMINATING CERVICAL CANCER IS POSSIBLE~~ and ~~WE ALL HAVE A ROLE TO PLAY~~ [Text Deleted] **CONCLUSION** [Text Added].

49. The Acknowledgments, Conflict of Interest, and Funding Statements were not included in the published manuscript as contained in Title Page document submitted by the authors.

The corrected article has been published which includes wording as written and intended by the authors and has been approved by the authors prior to publication.

The corrected version is available from: https://doi.org/10.37464/2025.424.2478

The original article, marked with a Correction Notice, has been archived and is available upon request from the journal.

The editors and publisher apologise for this Edit and any confusion it might have caused.