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Cover Page Footnote

I have been fortunate enough to have wonderful support throughout this journey. To my principal supervisor, Dr Tracey Coventry, without whom I may never have made it this far— your support, guidance and encouragement was what I needed and is greatly appreciated. To Professor Leanne Monterosso—thank you for your positive feedback, your practical advice to improve my research quality and generosity of your time. To my nursing colleagues who have supported my learning journey and kindly volunteering to participate in my research. To my Husband who spent much time listening to me—thank you for your unwavering support and encouragement when I needed it most. To my Son, I hope you always strive to achieve your goals and dreams no matter how high or hard they may be.

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Abstract

Purpose: To investigate the perceptions of perioperative nurses regarding the use and impact of cross-training in the perioperative department.

Participants and setting: Scrub and scout perioperative nurses (n=8) who had completed a one-day recovery room cross-training program in a large tertiary private health care organisation in Western Australia.

Method: One-to-one, semi-structured interviews of perioperative scrub-scout nurses.

Findings: The participants perceived the positive aspects of cross-training were teamwork, professional satisfaction and added value to patient care. The aspects that inhibited participants from learning or taking part in the cross-training program were staffing issues, lack of confidence and burnout.

Conclusion: Cross-training supported effective staffing and quality patient care; however, training needs to be protected from disruption to ensure participants develop confidence and competence in the new areas contributing to workforce satisfaction, retention and patient safety.

Keywords Cross-training, perioperative nursing, teamwork, professional satisfaction, professional development, program development

Perioperative nurse work hours are increasing in the context of reduced staff numbers and increased workload¹. In this context, challenges can arise with organisational staff retention and turnover². In addition, replacement of an ageing population of experienced perioperative nurses may be difficult^{2,3,4}. Development of strategies to potentially increase efficiency and reduce nursing shortages is essential for the sustainable delivery of health care in Australia^{1,2}.

Cross-training is one such educational strategy aimed at improving teamwork and quality patient care. First described by Volpe et al.⁵, cross-training is a method used to educate and train individuals across multiple role responsibilities to improve teamwork and work flow. Originating in aviation and adapted

to perioperative nursing, cross-training has been described as an approach to facilitate management and utilisation of staff⁶. Nurses with a diverse perioperative skillset can be deployed in multiple roles in recognition of dynamic team needs and the provision of more effective, collaborative and efficient team support⁷.

Cross-training facilitates the professional development of perioperative nurses in the roles and responsibilities of the scrub, scout, recovery or anaesthetic nursing roles⁶. In aviation, cross-training was observed to support effective teamwork and improved communication between team members and consequently their performance⁵. In nursing, cross-training has been shown to improve staff-patient ratios, decrease

overtime through the ability to share staff across units, and increase staff satisfaction by fostering a greater sense of teamwork⁸. Masson and Fain⁹ highlight how cross-training programs were effective in developing staff member's capabilities and had the potential to assist with managing low staffing levels.

In Australia, the literature on nurses' perceptions of cross-training in tertiary hospitals is limited. A research project conducted in rural Queensland explored the role of perioperative nurses (n=12) and described their common experiences¹⁰. Cross-trained nurses were expected to perform in all aspects of the perioperative process from admission through to recovery. Although most staff enjoyed the challenge and holistic approach of cross-training, they also indicated the practice impacted their ability to deliver care. This multi-skill training was deemed necessary as rural nurses were often required to perform duties perceived as outside their scope of practice when adequate staff and services were not available and as a result of high staffing levels in comparison to low patient numbers¹⁰.

Teamwork is vital for the delivery of safe and effective care and must be embedded in an organisation's culture and workforce training. Solutions for improving teamwork highlight the importance of cohesion and adaptability as necessary for improvement^{11,12}. These two skills are directly related to cross-training. Volpe et al.⁵ described cross-training as a mechanism to provide each team member with insight into another team member's responsibilities. This quantitative research explored the effects of cross-training on team functioning in aviation students (n=122) who were randomly assigned to training

conditions that involved cross-trained teams and those that did not. The results indicated those who were exposed to cross-training demonstrated more effective teamwork communication and performance⁵. A study by Masson and Fain⁹ indicated cross-training facilitated staff members' ability to manage low staffing levels by the movement of nurses throughout the perioperative process. Inman et al.¹³ suggested that cross-training reduced the need for nursing overtime hours and agency staff. Cross-training may achieve this by supporting a more flexible workforce that uses cross-trained nurses in all perioperative areas during the shift to accommodate for high and low patient activity and to compensate for staffing shortages. Similarly, Kuthan¹⁴ concluded that cross-training allowed for more efficient distribution of staff by sharing nurses across areas of need throughout the working day.

Nurse retention and absenteeism remain major concerns for the health care industry. Although the positive influence of cross-training on teamwork, team functioning and staff utilisation has been demonstrated, there is a lack of data surrounding nurse satisfaction and the emotional impact of cross-training. A quality improvement project by Ballou et al.⁶ showed cross-training contributed to greater work satisfaction in teamwork and that nurses who engaged in challenging and innovative roles demonstrated greater adaptability and flexibility. Thus, the significance of this study was to explore the perceptions of cross-trained perioperative nurses and the impact on staff satisfaction and teamwork within a large tertiary private health care organisation.

Perioperative cross-training has been reported to improve staff shortages and maldistribution of nurses by

moving trained staff from areas of low to high activity to support the workload⁶. However, there is limited understanding of team members' perceptions of cross-training and its influence on staff retention. Following the redevelopment of a large private tertiary health care organisation in Western Australia (WA), the number of operating rooms increased from ten to sixteen. This planned expansion of services required the recruitment of additional scrub-scout, anaesthetic and recovery room nurses to the existing pool of nursing staff. The highly specialised nature of pre-, intra- and post-operative patient care occurs in isolation to other nursing specialty areas⁶. This requirement for specially trained staff and associated perioperative staff shortages leads to challenges in managing safe staffing levels^{13,15}.

Staffing issues caused by absence from sickness and leave, is affected by the lack of suitably skilled perioperative nurses available to work at short notice. This leads to an over-reliance on agency or casual nurses or the expectation for permanent perioperative nurses to work overtime. These staffing difficulties significantly impact teamwork through poor communication, low morale and negative effects on the ability to work as cohesive teams and thus provide safe care^{13,14}.

A report on future health workforce requirements identified nursing as a significant area of concern primarily related to low retention and recruitment rates and an ageing nursing workforce². The impact of staff attrition and absenteeism on the health care industry directly affects patient safety, productivity and workload¹⁶. The perioperative area consists of numerous subspecialties that require intensive training and the negative effect of staff absenteeism is keenly

felt¹⁷. Absenteeism can result in obstructed perioperative patient flow between areas, ineffective communication, poor teamwork, staff dissatisfaction and an increased risk of documentation and clinical errors¹⁸. Such concerns associated with nursing shortages and maldistribution of nurses have led to the implementation of innovative strategies such as cross-training to manage these situations¹⁶.

In response to these issues, a one-day cross-training program was developed by the organisation's education department in collaboration with the perioperative nurse educator. The program content was based on the National Safety and Quality Health Service (NSQHS)¹⁹ and the Australian College of Perioperative Nurses (ACORN)²⁰ standards and organisational policies and incorporated theoretical learning with supporting literature and supernumerary time in the recovery room. The purpose of this study was to investigate the perceptions of perioperative nurses regarding the use and impact of cross-training in the perioperative department.

Methods

A qualitative descriptive design was used to describe the attitudes and beliefs of perioperative nursing staff in relation to their experience of cross-training. Semi-structured interviews were used to elicit descriptions from perioperative nurses who had attended the cross-training program.

Setting and sample

The study was undertaken in the perioperative department of a large tertiary, private health care organisation in WA. A purposive sample of perioperative nurses (n=8) was selected from a cohort of 30 nurses who had participated in the recovery cross-training program.

Theme 1: Enablers of cross-training	Theme 2: Barriers to cross-training
Sub-themes: <ul style="list-style-type: none"> • teamwork • professional development and satisfaction • added value to patient care 	Sub-themes: <ul style="list-style-type: none"> • staffing issues • comfort zone and confidence • burnout

Data collection

Semi-structured, one-to-one interviews were conducted at a mutually convenient time and location. Each participant received an information sheet and written consent form. Interviews were digitally recorded and transcribed verbatim by a transcription service.

Data analysis

The qualitative data analysis process was guided by the six phases of thematic analysis described by Braun and Clarke²¹. Analysis began with familiarisation of transcripts and review for accuracy, which allowed for data immersion to search for meanings and patterns. The transcripts were categorised using NVivo 10 software²² where a 'bottom-up' approach was used to identify themes. Once organised into meaningful groups, the overarching themes were identified with their associated sub-themes and named to illustrate the analysis²¹.

Limitations

This study was limited to a small cohort of participants in one hospital within a large, tertiary private health care organisation in WA. It is possible that differences between public and private tertiary perioperative departments may affect the relevance of findings.

Findings

All participants were female; half (50%, n=4) were aged between 40 and 49 years of age. Experience in the perioperative specialty was equally divided between 11 to 30 years (50%, n=4) and 0 to 10 years (50%, n=4). Two overarching themes were identified: 'enablers of cross-training' and 'barriers to cross-training'.

Theme 1: Enablers

This theme represented the perceived benefits and positive outcomes of cross-training. The participants' viewpoints centred on the positive training aspects and the subsequent influence on the work environment. The following subthemes were identified:

- teamwork
- professional development and satisfaction
- added value to patient care.

Subtheme 1.1: Teamwork

The positive impact of teamwork was explained by one of the participants: 'Each department's not isolated; they're definitely interconnected'. Participants described how cross-training led to a sense of unity between the recovery and scrub-scout departments as individuals were 'able to tell what the other team members need and how you can help them'. Furthermore, cross-training programs were viewed as encouraging mutual collegial support: 'So, we could relieve each other for tea, lunch... so that helps with workflow'.

The program also enabled participants to develop a greater understanding of their team members: 'You can sympathise with them because you know'. It was evident that participants felt there had been an improvement in teamwork as a result of engaging in the cross-training program. This was summarised by one participant: 'Because we know, we are able to help each other' and 'I am a more versatile team member'.

Subtheme 1.2: Professional development and satisfaction

Participants who engaged in the cross-training program recognised they had a learning deficit in the area of recovery. Thus, the expansion of new knowledge and skills to fulfil responsibility to professional development was a key goal: 'It gives me a greater understanding and also able to educate and inform other colleagues about those specialties as well'. Participants believed they had increased their capability and flexibility to meet standards for practice: 'I am a more versatile team member, able to educate my colleagues and keep up my skill mix'.

Cross-training also provided a sense of professional satisfaction at the completion of the program. It was evident that participants felt proud of their initiative, new skills and confidence in another area of nursing. This was best explained by one participant: 'I can do recovery, I feel like I have more job satisfaction than just being a scrub-scout' and another stated on completion of the program 'I could provide better quality patient care and felt more personally and professionally fulfilled ... knowledge, it's rewarding'.

Subtheme 1.3: Added value to patient care

Participants considered their contribution to patient safety and quality care as a personal responsibility to improve their own clinical skills. One participant explained: 'Although it is good to have experts in specialties, it is everyone's responsibility to learn all aspects of the perioperative process and have an awareness of every part of the chain'. When participants were trained, they believed they were able to play a greater role in ensuring their patients remained safe. This was emphasised by one participant: 'the more skills you have, the better and more confident you are in your work and the more you can do, the more you care for the patient and the patient has better outcomes'.

Participants commented on how cross-training provided a holistic view of the patients' journey specifically through the intra-operative and post-operative processes. As a result, participants were able to seek improved outcomes for the patient. One participant shared that she was able to 'take into consideration the patient on the table when you see them in recovery' which gave a 'greater understanding of the outcomes of what you're doing'. Also, participants highlighted how their clinical handover to recovery room nurses had changed, because they were more aware of what information was required in order to provide the best care for the patient. One participant noted: 'I do cater my handover for recovery, because I now know what they need to know' and another participant suggested that she gained a 'broader understanding of the care required for the patient'.

Theme 2: Barriers to cross-training

The barriers were represented by the perceived factors that inhibited participants from learning or taking part in the cross-training program. The subthemes were:

- staffing issues
- comfort zone and confidence
- burnout.

Subtheme 2.1: Staffing issues

Staffing issues were frequently described by the participants. The insufficient staffing levels during training impacted the length and quality of their experience. Some participants reported that as a result other colleagues were not able to participate in the program. One participant was emphatic: 'If the staffing isn't right then you might get pulled from the program'. This aspect had a significant influence on participants' learning and negatively impacted their confidence at the completion of the program: 'The content was good, but I still don't feel confident to be put into recovery'.

The length of the program and limited exposure to a variety of patients was influenced by available staff, which affected participant's consolidation of theory to practice. One participant commented: 'The main complaint for people is that they haven't been allocated the correct amount of time in there to consolidate, then those people don't feel comfortable to go back or just won't go back'. This lack of time to consolidate learning reduced their desire to use their skills in recovery. This was succinctly summarised by one participant: 'The time allocated to supernumerary wasn't enough, so the experience wasn't worth a lot and I feel more apprehensive about being in recovery than before'.

Subtheme 2.2: Comfort zone and confidence

The desire to stay in a familiar environment was a key factor in the reluctance of nurses to engage in cross-training. This was articulated by a participant: 'They have been in their roles for a long time, they know what they're doing and they're good at it, and getting out of your comfort zone is uncomfortable'. Confidence was directly linked to this key factor along with the time allocated to program learning and consolidation. Despite the desire to work in recovery, the time assigned to program content was insufficient to build their confidence and comfort as noted by this participant: 'I found the content good, and I think it has helped, but I still do not feel confident to be put into recovery'. Furthermore, participants identified the time between training and working in recovery also had an influence on confidence: 'The longer the time since being in recovery, it's just really daunting, I think the skill isn't gone but the confidence with your skill is gone'. Another participant identified how staff were ambivalent about learning another role: 'Some don't see the bigger picture of the entire department' and a commonly heard expression was 'that's not my job'. One participant summarised reluctance to move from comfort zones: 'I think ... when they don't know, everything is hard until you learn it'.

Subtheme 2.3: Burnout

Participants were concerned that after completing cross-training they would be made to work in recovery at the end of their operating list which would potentially lead to an increased workload. One participant noted: 'If you get downtime, and then you're moved to the next busiest area, there's probably a risk of burnout'. Another participant

emphasised this concern: 'If you finish early and then you're straight into recovery and then that's really busy, too, then people will probably get tired'. Other participants were concerned that those who had done the training would be expected to work longer than others. This was highlighted by another participant: 'By doing the program, it might mean that you will end up going into recovery all the time, and those who haven't done the course get to go home'. Another stated how being moved around impacted on time off from work: 'It's about efficiency and moving the staff round, I think people will get quite exhausted that they're just busy ... whereas that downtime is sometimes important for people'.

Discussion

Perioperative nursing is a multifaceted nursing specialty and in the current health care climate of financial constraints, creative and flexible staffing solutions are necessary. The benefits of perioperative nurses with additional skills for specialised areas has been highlighted as a cost-effective strategy^{14,16}. Cross-training addresses the requirements of each area through allocation of staff to areas of deficit to ensure effective staff utilisation⁶. In addition, the importance of proactive planning for ongoing cost containment and retention of nursing staff occurs with a focus on patient-centred care.

The worldwide improvement in health outcomes and expansion of health services and technology are related to decreasing mortality rates leading to an ageing population²³. At the same time, health care services are operating in a fiscally constrained environment²⁴. Tertiary hospitals are expanding their surgical services to meet community needs, with increased surgical volume corresponding to increases

in recruitment and education of perioperative nursing staff. Brooks, Hinck, Johnson, Kelly and Doerner suggested the implementation of a cross-training plan ensured registered nurses were able to adapt to the growth of the service¹⁶. Similarly, Delaney²⁵ recognised cross-training as a strategy that extended the capacity of nursing staff and was influential in reducing the health care organisation's costs.

Flexibility is a highly desirable trait of perioperative nurses^{10,26}. By expanding each nurse's scope of practice, expertise is fully utilised and able to ebb and flow around health service provision and financial limitations^{25,27,28}. In the intensive care environment cross-training has served the needs of the organisation's bed occupancy by maintaining patient flow and retention of nurses^{8,29}. Additionally, cross-training reduces the use of costly agency nurses and thus supports retention of permanently employed nurses¹³.

Retention of nurses is frequently associated with job satisfaction³⁰ and consequences of cross-training were increased confidence and role satisfaction^{6,31}. In addition, professional growth through additional study and practice provided evidence necessary to pursue promotional opportunities³². In extending perioperative nurses' scope of practice across all roles and areas, nurses gained a comprehensive view of the patient journey with specific support at the point of care^{24,33}. Kuthan et al.¹⁴ described the benefits of a patient-centred care model where nurses accompanied patients on their surgical journey and provided specialty care from perioperative admission to discharge. Similarly, Bindon³⁴ observed nurses who continued to develop their ongoing competence were more able to

provide safe patient-centred care, therefore making a greater contribution to perioperative practice and excellence in nursing care.

In supporting the immersion of nurses into other subspecialties, cross-training increases familiarity with colleagues with whom nurses would otherwise have limited contact. According to Volpe et al.⁵ one key goal of cross-training was to gain a solid appreciation for another's tasks and responsibilities. This was described as being 'connected' in addition to an acknowledgment of each other's contribution, leading to more intimate teamwork. In turn, being connected fostered a more overall positive work culture. This connection is significant to effective communication which subsequently impacts on positive patient and nurse relationships¹⁴.

Successful implementation of cross-training requires role-specific content and a well-constructed program, conversely, poor planning and execution can lead to frustration and financial loss for nurses' and organisations^{6,16}. This study identified the lack of supernumerary time as a barrier to successful completion of the training. The benefits cannot be realised without employers' commitment to the release of staff for training and support for supernumerary time to allow for consolidation of practice^{35,36}

Nurses are known to resist allocation to unfamiliar areas³⁷. Participants in this study expressed that cross-training took them out of their comfort zone – they viewed cross-training as a challenging concept that was difficult to envisage and required a step into the unknown. Mouradijan and Stengel³⁸ reported when perioperative nurses were moved into a new area of perianaesthesia where after a structured training

process their initial fears were resolved with the growth of confidence. Additionally, the rewards of meeting such a challenge 'head on' were described as a deeper appreciation of the novice nurse, being a role model, reshaping career prospects and inspiring others. Similarly, Foley-Brinza and Brunges³¹ also noted that despite an initial unwillingness, the result of cross-training was improved nursing teamwork and culture.

However, the unfavorable aspects of this new challenge, such as added stress compounded by increased or heavy workloads when asked to cover absenteeism, can lead to burnout³⁹. The unique perioperative environment has been identified as potentially more hostile than other areas of nursing, due to the confined space of an operating theatre, high patient turnover and the intense nature of work being performed, which is also more likely to add to burnout⁴⁰.

Implications for perioperative nursing

The ACORN standards assert the acquisition of new knowledge is required to provide a high standard of safe patient care²⁰. All perioperative nurses have a professional responsibility to seek and engage in professional development activities. Additionally, perioperative education programs should be designed for specific training needs²⁰. Thus, programs such as cross-training should consider the impact on participant satisfaction, confidence and competence, in addition to reducing workforce issues, improving staff satisfaction and retention, and patient safety. A specific focus should be on the uninterrupted theory and practice experience to consolidate learning

and produce confident nurses willing to work across all areas. Strategic implementation of cross-training programs in the perioperative environment should also include evaluation of pre- and post-training experiences to ensure effectiveness of training and the positive impact on staffing and delivery of quality patient care.

Knowledge translation

1. Cross-training is a significant strategy for addressing perioperative workforce issues and ensuring patient-centred care.
2. Cross-training impacted positively on perioperative teamwork and job satisfaction reinforcing staff retention and quality patient care.
3. Inadequate consolidation of cross-training influenced successful transition to confident practice.

Conclusion

This study on perioperative nurses' perceptions of cross-training has affirmed the positive impact on teamwork and professional satisfaction and the delivery of holistic patient-centred care. However, in order for cross-training to be successful and increase nurses' clinical confidence, participants should have access to the uninterrupted theory and practical components of the program. The program was vital for skill development and was considered an essential element in developing confidence and competence. If known barriers are addressed, cross-training can potentially improve the active engagement of perioperative nursing staff and thus contribute to reduced workforce issues and improved patient safety and quality of care.

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