ACORN AUSTRALIAN COLLEGE OF PERIOPERATIVE NURSES | JOURNAL OF PERIOPERATIVE NURSING

Volume 33 | Issue 4 Article 6

12-9-2020

Identifying research priorities for improving patient care in the perioperative environment: A descriptive cross-sectional study

Pat F. Nicholson Dr
p.nicholson@deakin.edu.au

Lois Hamlin RN, DNurs, FACN, FACORN
lochaps@gmail.com

Jed Duff
j2.duff@qut.edu.au

Brigid M. Gillespie PhD RN FACORN
b.gillespie@griffith.edu.au

Carolyn Williams
WISTERIA@BIGPOND.NET.AU

Recommended Citation

Nicholson, Pat F. Dr; Hamlin, Lois RN, DNurs, FACN, FACORN; Duff, Jed; Gillespie, Brigid M. PhD RN FACORN; and Williams, Carolyn (2020) "Identifying research priorities for improving patient care in the perioperative environment: A descriptive cross-sectional study," *Journal of Perioperative Nursing*: Vol. 33 : Iss. 4 , Article 6.
Available at: https://doi.org/10.26550/2209-1092.1095

https://www.journal.acorn.org.au/jpn/vol33/iss4/6

Peer-reviewed article

Authors

Associate Professor Patricia Nicholson
PhD, RN, FACORN
Course Director, Master of Nursing Practice (Perioperative) and HDR Coordinator, Deakin University, Geelong, Victoria

Dr Lois Hamlin
DNurs, RN, FACN, FACORN(Hon)
Senior Lecturer, Faculty of Health, University of Technology Sydney (retired)

Professor Jed Duff
PhD, RN, FACORN
Professor of Nursing, Queensland University of Technology
Chair of Nursing, Royal Brisbane and Women's Hospital

Professor Brigid M Gillespie
PhD, RN, FACORN
Professor of Patient Safety, School of Nursing & Midwifery, Griffith University and Gold Coast Hospital and Health Service, Queensland

Carollyn Williams
M Hlth Sc (Nur), FACN, FACORN

Identifying research priorities for improving patient care in the perioperative environment: A descriptive cross-sectional study

Introduction

Changes in the delivery of patient care, the rapid evolution of technology and the complexity of the current health care environment require health professionals to make clinical decisions that are both current and evidence-based[1,2]. Perioperative nursing has a long history steeped in tradition and routine practice and although evidence-based practice (EBP) has existed for decades, a number of barriers to implementing this practice in the operating room have been identified[3,4]. Perioperative nurses are accountable for the care provided to patients presenting for surgery; therefore, implementation of EBP is important for standardising patient care[1] and supporting positive patient outcomes. By incorporating EBP skills in perioperative nursing, a rationale for current practices in the operating suite is also justified[1]. With increased accountability for the quality of care provided in the perioperative environment, the value of perioperative nurses' contribution to patient care has been questioned[5].

In order to increase the quality and efficiency of patient care, perioperative nurses' contribution to research and research utilisation in the perioperative environment is crucial[6]. It is important to identify priority, relevant research questions to address the gap that exists between data that is generated by researchers and the information that is required by end-users[7]. Despite the importance of this, there is limited evidence about how research priorities should be established[8].

This study was undertaken to identify research priorities in perioperative nursing and identify areas of practice that could inform the development of new standards of practice for perioperative nurses.

Background

Optimising nurses' contribution to timely and effective translation of research into clinical practice remains a challenge[9]. In an integrative review exploring the state of readiness for EBP, although nurses reported being familiar with EBP, divergent views were reported, including difficulty in searching, retrieving and critically appraising research articles[10]. The introduction of sophisticated surgical techniques and advances in technology in the operating room[11–15] have resulted from innovations and application of scientific research[14], with the development of specialist nursing knowledge considered crucial for safe and effective patient outcomes[5,12–14,16]. It is therefore important that perioperative nurses participate in activities that improve patient outcomes and advance the nursing profession by actively seeking opportunities to engage in EBP and quality improvement projects or participate in research[9]. With engagement in these activities, traditions are validated or challenged[17]. There is also an emphasis on the importance of incorporating new research findings into daily health care practice and improving patient safety[18].

Evidence from research, guidelines and standards of practice provide a foundation on which perioperative nurses can develop their capacity as consumers of research as well as integrate EBP into their clinical practice[17]. The peak professional body for perioperative nurses, ACORN (the Australian College of Perioperative Nurses, originally the Confederation of Operating Room Nurses which became a College in 2000) plays an important role in these efforts. ACORN was formed in 1977 with the aim of standardising perioperative nursing practice and educating perioperative nurses[19,20]. The mission of ACORN included the development of the ACORN Standards, guidelines and policy statements ('the Standards'). The Standards were first developed in 1980 and reviewed triennially to guide nurses in providing optimum quality care for the patients admitted to the operating room. With the advances occurring in perioperative nursing, a review of the 2004 Standards was undertaken to incorporate an international model, through the establishment of teams of perioperative nurses representing each state and territory in Australia. Extensive literature reviews were completed by each team resulting in standards that were referenced and reflected an evidence-based underpinning with the aim of contributing to the highest standard of patient care and professional competence in the perioperative setting[21,22]. The Standards continue to be updated every two years and provide a valuable resource for perioperative nurses and other professionals involved in managing surgical patients as well as promoting implementation of EBP in the operating suite.

In a recent editorial it was highlighted that while research publications in both emergency nursing and intensive care nursing have increased substantially over the past 20 years, similar outputs are not reported for publications related to perioperative nursing[23]. With the aim of supporting and encouraging research in perioperative nursing and promoting evidence-based practice, ACORN established a research committee (RC). The primary function of the RC is to guide and coordinate all aspects of research activity for the College. To inform the scope of the committee's purpose a national research and networking workshop was held during the 2018 ACORN and ASIORNA Conference. This interactive research activity explored, among other things, the research evidence supporting the Standards, gaps in the evidence base related to the Standards, and the challenges associated with implementing the Standards in clinical practice[24]. Four research priorities were identified during the workshop: patient and staff safety, equipment and technology-related issues, the uptake and audit of the Standards and the culture of the perioperative environment[1]. To explore in more depth potential research priorities in the perioperative setting, the RC conducted a national survey inviting ACORN members to participate in ranking topic areas developed from the networking workshop in 2018.

Aim

The aim of this study was to categorise priority research topics in perioperative nursing. A secondary aim was to identify gaps for consideration and inclusion in the Standards.

Method

Study design

A descriptive cross-sectional study design was used to identify research priorities in perioperative nursing[25].

Sample and setting

Members were invited via email through the ACORN membership database to participate in the survey, with a follow up email sent one month later. Only those residing in Australia, and those who opted to participate in research studies advertised through the College, were invited to participate.

Data collection tool

The data collection tool included two sections. The questionnaire contained 20 items clustered around five topic areas into which the ACORN standards are grouped: staff and patient safety, professional practice, asepsis and clinical care, equipment and environment, and management and staffing. The choice of these particular items was predicated on the data collected at the research workshop held during the 2018 ACORN and ASIORNA Conference. Participants were asked to read a series of topic area items and rate them according to level of relevance and level of importance using a 5-point Likert scale, from 1 (not at all relevant / not at all important) to 5 (extremely relevant / extremely important). Thus, higher scores indicated higher levels of relevance and importance for each survey item across the five standards topic areas. A five-point Likert scale was used to increase the response rate and quality of the responses. The survey also comprised open-ended questions for each of the five topic areas. Participants were invited to make any comments or suggest areas for further research. Demographic information was included in the questionnaire. The questionnaire was developed and reviewed by the RC members for feasibility in terms of readability, clarity of the questions and time taken to complete. The development of the questionnaire was informed by the findings from

the ACORN conference workshop[24]. (See supplemental material for a copy of the questionnaire.)

Data analysis

The quantitative data were analysed using the Statistical Package for Social Sciences (SPSS v24, IBM, New York, NY, USA). Descriptive statistics were used to calculate absolute (*n*) and relative frequencies (%) for categorical, means and standard deviations (SD) for survey items. Composite scoring was used to combine items that represented each of the items included in the survey. This created a score for each item in the relevance and importance scale by producing a single composite score[26]. For example, to create a composite score for 'consider risk mitigation in the operating suite', the average of the mean score for relevance (4.4) and importance (4.4) was calculated.

The second phase of analysis involved qualitative data which was gathered from the comments section of the survey. Inductive content analysis was undertaken to identify patterns and themes[27], which involved a systematic coding and categorising approach, while exploring text to determine trends and patterns of words used, their frequency and their relationships[28,29]. Two RC members undertook this analysis, independently initially, then together reached a consensus about whether the themes were an accurate representation[25].

Results

Of the 5251 members in the ACORN database, 113 responded, with a response rate of 2.2 per cent. The majority of respondents were females (*n* = 104, 92%) with an average age of 48 years (SD = 9.90). Most were registered nurses (*n* = 108, 95.6%) with an average of 20 years (SD = 10.3) experience in the operating suite. The main area of practice was represented by instrument or circulating nurses, or both (38.9%), with 34 (30.1%) indicating their role in the operating suite involved multiple clinical roles. Eight (7%) nurses were employed in an anaesthetic role or in the Post Anaesthesia Care Unit (PACU) (*n* = 7; 6.2%) or both (6 = 29, 29.7%). Further demographic details are presented in Table 1.

As shown in Table 2, most participants had completed a postgraduate certificate or diploma in perioperative nursing (*n* = 28, 24.8% and *n* = 29, 25.7% respectively). Twenty-four (21.2%) respondents had completed a master's degree, with two (2.8%) having completed a doctoral degree. Principle place of work was in the operating suite, day surgery settings or a combination of the two, in both the public and private sector. Most respondents (*n* = 68; 60.18%) worked in metropolitan settings, with 36 (31.86%) employed in regional settings. The remainder were rurally based (*n* = 9, 7.96%). All respondents were a member of ACORN, with other memberships including the Australian Nursing College (*n* = 36, 31.9%), the Australian Nursing and Midwifery Federation (*n* = 55, 48.7%), and other speciality organisations (*n* = 42, 37.1%). Further clinical demographics are included in Table 2.

National research priorities

Respondents ranked items in the 'staff and patient safety' topic area highest across both relevance and importance, with means ranging from 3.7 (SD = 1.12) to 4.5 (SD = 0.83). The average rating for the 'professional practice' topic area was second highest across both relevance and importance ranging from 3.5 (SD = 1.17) to 4.3 (SD = 0.82); the 'equipment and environment' topic area rated

Table 1: Demographic data of participants (*n* = 113)

Characteristics	*n*	%
Gender		
Female	104	92.0
Male	9	8.0
Age group		
21–30	6	5.3
31–40	15	13.3
41–50	42	37.2
51–60	41	36.3
60+	9	8
Registration		
RN	108	95.6
EN	5	4.4
Perioperative nursing role		
CNS/CNC/ANUM	27	23.9
Clinical nurse	49	43.7
PNSA	1	0.9
NUM/POSD	17	15.0
Clinical educator / academic	18	15.9
Quality coordinator	1	0.9
Main area of practice		
Instrument/ circulating	44	38.9
Anaesthetic/PACU	29	29.7
Multiple clinical roles	34	30.1
Non-clinical role	6	5.3
Years of experience		
0–10	27	23.9
11–20	32	28.3
21–30	34	30.1
31–40	18	15.9
41 or more	2	1.78

CNC = clinical nurse consultant; CNS = clinical nurse specialist; ANUM = associate nurse unit manager; PNSA = perioperative nurse surgeon assistant; NUM = nurse unit manager; POSD = perioperative services director

Table 2: Clinical demographics (*n* = 113)

Characteristics	n	%
Highest level of qualification		
Hospital certificate / diploma	7	6.2
Bachelor of Nursing	23	20.4
Postgraduate certificate / diploma	57	50.5
Master's / doctoral degree	26	23.0
Location of setting		
Metropolitan	68	60.2
Regional	36	31.9
Rural	9	8.0
Type of setting		
Public	72	63.7
Private	37	32.7
Other	4	3.5
Practice setting		
Operating suite	95	84.1
Day surgery	1	0.9
Operating suite / day surgery	12	10.6
Other	4	3.5
Professional membership		
ACN	36	31.9
ANMF	55	48.7
Other	42	37.1

ACN = Australian College of Nurses; ANMF = Australian Nursing and Midwifery Federation.

third. Overall, the standards topic areas that were ranked relative to relevance were ranked similarly in relation to importance. Table 3 details these results.

With regard to composite scoring of each of the items, those ranked one to ten scored higher for relevance (4.1 to 4.5/5) and importance (3.9/5 to 4.5/5) and related to safe patient care, encompassing topics such as culture, risk mitigation, bullying and disruptive behaviour and practices that prevent adverse patient outcomes, for example medication safety. The items that were ranked between 11 and 20 scored lower for relevance (3.0/5 to 3.9/5) and importance (3.0/5 to 4.0/5) and related to safety in the perioperative environment, for example instrument tracking and noise reduction in the operating theatre, with most topics not included in the current edition of the Standards.

Key themes

Participants responded to the open-ended questions regarding the national research priorities. The process of coding, categorising and repeated crosschecking revealed two overarching themes. These were 'management of risk' (both patient and staff) and 'culture of the perioperative environment' (which was expressed in negative terms). The first theme, 'management of risk', was linked to both patients and staff, and was evident in the quantitative data, as highlighted in Table 3. The second theme identified was 'culture of the perioperative environment', which was described negatively. However, topics associated with this theme were expressed less frequently than those topics associated with the management of risk. Within these two themes, five sub-themes were identified, with each one composed of one or more topics (see Table 4). The sub-theme 'safety' comprised eight topics and the remaining sub-themes each contained two, except for 'staffing', which had only one topic.

Comments made in relation to the theme of patient risks were both tangible, e.g. personal protective equipment, and intangible, e.g. practice protocols. The former included the potential for surgical site infections (SSI), e.g. 'more attention to protecting the sterile field, explore breaches and discuss speak up culture of this. Way more important than what's on people's heads'. [Respondent 108, perioperative services director]

Other tangible risks included medication management, equipment issues (e.g. laser safety) and the need for adequate staffing and skill mix to provide acceptable patient care. Examples of an intangible risk for patients were lack of access to or use of standards (ACORN and others), also a lack of situational awareness. One respondent noted, 'senior executives are the main barriers with providing resources and equipment to meet ACORN and MoH [Minister of Health] standards'. [Respondent 57, nurse unit manager]

There were also tangible and intangible risks to staff. Tangible risks included exposure to plume, cement (fumes), high noise levels, excessive workloads and associated fatigue. For example, 'staff fatigue in relation to on call, overtime and late / no meal breaks'. [Respondent 81, instrument nurse] One comment supporting an intangible risk included 'we eat our young'. [Respondent 37, multiple clinical roles] Some risks were deemed relevant to both patients and staff. To illustrate this sub-theme one respondent stated that we should 'analyse the patient and staff risks associated with the implementation of poorly designed (user interface) digital medical records e.g. ieMR'. [Respondent 97, anaesthetic nurse]

The issue of 'the culture of the perioperative environment' was evident across the qualitative data, except the section on 'equipment and environment'. Staff were more

Table 3: Results relative to relevance and importance within ACORN standards topic area (*n* = 113)

Topic area	Item detail	Relevance		Importance		Composite (R+I)/2	Rank
		$\bar{x}$	SD	$\bar{x}$	SD		
Staff and patient safety	Identify strategies to change the culture of the operating suite and enhance the safety of the perioperative team	4.5	0.83	4.5	0.83	4.5	1
	Consider risk mitigation in the operating suite	4.4	0.88	4.4	0.89	4.4	2
	Explore the safe use of patient handling equipment in the operating suite	4.3	0.8	4.2	0.9	4.25	6
	Evaluate the use of, and outcomes associated with, the new ACORN practice audit tools	3.9	0.99	4	1.13	3.95	11
	Determine how to protect the perioperative team during the use of cytotoxic drugs intraoperatively	3.8	1.18	3.7	1.12	3.75	15
Professional practice	Identify barriers and enablers to ACORN guidelines / standards implementation in perioperative settings	4.3	0.82	4.2	0.86	4.25	7
	Examine compliance with medication safety standards and labelling of medications	4.2	0.85	4.1	1.04	4.15	9
	Investigate strategies to manage and provide safe patient care to surgical patients with cognitive impairment	4	1.07	3.9	1.13	3.95	12
	Investigate the use of patient / family-centred approaches in the perioperative context	3.7	1.1	3.7	1.25	3.7	17
	Explore the lived experience of new graduate nurses when implementing the ACORN Standards in practice	3.7	1.17	3.5	1.17	3.6	18
Sepsis and clinical care	Examine the effectiveness of strategies to minimise or prevent perioperative-acquired pressure injuries	4.4	0.84	4.4	0.84	4.4	3
	Identify the most effective types of head attire for use in the perioperative setting	3.4	1.41	3.2	1.4	3.3	19
Equipment and environment	Identify the most effective method to minimise heat loss in patients before, during and after surgery	4.4	0.83	4.3	0.86	4.35	4
	Examine the integration of instrument tracking with the Patient Information Management Standard (electronic)	3.9	1.07	3.9	1.06	3.9	13
	Explore noise reduction methods in operating rooms and patient care areas	3.9	1.05	3.7	1.1	3.8	14
Management and staffing	Explore non-technical skills, such as situational awareness, decision making, communication and teamwork in operating suites	4.4	0.88	4.2	0.94	4.3	5
	Consider recognition and attitudes of perioperative nurses to bullying behaviours	4.2	0.95	4.2	0.97	4.2	8
	Explore the effects of disruptive behaviour on patient safety	4.1	1.04	3.9	1.11	4	10
	Examine the impact of different staffing models or models of care on patient experience	3.8	1.1	3.7	1.15	3.75	16
	Examine the causes of obesity among perioperative nurses	3	1.39	3	1.4	3	20

Table 4: Sub-themes and topics

Sub-themes	Most frequently occurring topics [number of comments]
Safety	Non-use / awareness of / lack of access to standards [7] Plume and other fumes [2] Fatigue [5] Wellness [3] Noise in operating rooms [2] Tracking compliance [2] Loan set processes [2] Preventing SSIs (not attire-related) [5]
Culture of the perioperative environment	Negative culture and patient safety [3] Aggression / bullying / negative behaviours [10]
Operating room attire	Hats [7] Foot covers [2]
Education and training	Staff education / training / ongoing [6] Equipment-related training [2]
Staffing	Staffing ratios [4]

likely to experience the impact of a negative environment rather than the patient. However, several respondents noted that when staff were intimidated they did not speak up and patient safety was compromised, as reported by one respondent, 'patients are not safe when staff are distracted or feel intimidated by others'. [Respondent 108, perioperative service director]

The most frequently reported comments highlighted bullying, intimidation and aggressive behaviours across all of the topic areas. Several comments also reflected the need for a change of attitude by surgeons, senior nurses and hospital administrators. These included 'how to engage medical staff to comply with processes that nursing staff introduce for staff and patient safety'. [Respondent 50, nurse unit manager] and 'professional respectful behaviours need to be reinforced with zero tolerance to breaches'. [Respondent 108, perioperative services director].

Discussion

Three research topics were identified as priorities in this study: patient safety, management of risk in the operating room, and culture of the perioperative environment. Issues linked to safe patient care, including prevention of pressure injuries, safe use of patient handling equipment, minimising heat loss and medication safety, were rated high on both scales (relevance and importance), with education linked to the use of equipment identified as a key theme. There is a plethora of evidence relating to maintaining normothermia in surgical patients[30–32], and also for evidence relating to pressure injury prevention in the perioperative environment[33–35]. However, in a recent meta-synthesis of Cochrane reviews the authors concluded that the generation of high-quality evidence about the prevention and treatment of pressure injuries is crucial[36], in particular in the perioperative environment[37]. The findings are similar with regard to technology and use of equipment in the operating suite[38]. One of the challenges facing clinicians is how to implement research findings in clinical practice[6].

Patient safety within the health care industry has emerged as a result of the evolving complexity in health care systems and resulting increase in adverse patient outcomes[39]. It is reported that patient harm due to unsafe care is the fourteenth leading cause of the global disease burden[40], with approximately half of these injuries considered preventable[41]. Hospital-acquired complications (HAC) were reported for two per cent of all hospitalisations in 2016–2017 which included 2.2 million elective and 352 000 emergency surgeries[42]. The cost of these failures is considerable with an estimated 15 per cent of hospital expenditure attributed to treating safety failures[40]. This costs the Australian health care system an estimated $1 billion per year[43].

Issues relating to staff wellbeing were rated as being important and relevant, this was also identified in the qualitative data, in particular bullying and disruptive behaviour. In fact, one of the major themes identified in the data related to culture in the perioperative environment. Although there are a number of studies where bullying behaviour has been identified[44–47] further research is required to identify the factors associated with culture in the unit with strategies developed so that this can be better managed. Awareness of the importance of a poor safety and quality culture is paramount in preventing adverse patient events, a concept not well researched[48]

but of extreme importance in an increasingly complex perioperative environment.

The publication *To err is human: Building a safer health system* suggests a comprehensive approach to improving patient safety and states that an organisational culture that encourages learning from adverse events and near misses is required[49]. The importance of this was confirmed in a systematic review which identified the association between positive organisational and workplace cultures and positive patient outcomes, such as reduced mortality rates and hospital acquired infections and increased patient satisfaction[50].

Similar topics that were rated lower in the relevance and importance categories, such as noise in the operating room and instrument tracking, were identified in the qualitative data. When searching the literature, studies exploring noise in the operating room [51,52] or instrument tracking[53] have been published; however, these provide limited evidence to inform clinical practice. Another example of a topic where there is limited evidence in the literature was obesity among perioperative nurses[54,55]. Many of these topics have been identified as leading health problems globally, for example the growing epidemic of obesity in Australia[56,57]; therefore, there is an opportunity for perioperative nurses to undertake research to address these issues and improve the safety of patients and wellbeing of health care professionals. It should be noted that many of these lower-ranked topics have not been considered for inclusion in the standards, which may account for them being rated lower in the survey. [A guideline about wellbeing is included in the 16th edition of the Standards. The survey was conducted before this edition was pubished.]

A key component of safety and quality in health care includes the Australian *National Safety and Quality Health Service Standards* (NSQHS Standards) which were introduced in 2011 with the aim of protecting patients from harm and improving the quality of health service delivery[58]. As the largest component of the health workforce, nurses play a critical role in meeting these standards and improving the quality of patient care[59]. The importance of this was evident with the inclusion of the icons from the NSQHS Standards in 16th edition of the ACORN Standards, indicating how individual ACORN standards support the NSQHS Standards[60]. As noted in 2018 by Williams et al., well-developed, evidence-based standards are not enough to change practice as a number of barriers have been identified when perioperative nurses are required to introduce evidence into their practice[24]. While criticisms about the poor quality of the research informing the standards was noted[24], these documents are only as good as the research evidence used to inform them[61]. As evidenced in the literature there has been limited input of end-users in identifying relevant research priorities; therefore, there remains an obligation to ensure research activities align with the interests, needs and values of perioperative practice[8].

Implications for perioperative nursing

In summary, the results from the survey identified issues that related to patient and staff safety, with the qualitative data describing embedded practices or non-implementation of best practice that respondents considered unsafe for patients and themselves. Where it affected staff in particular, this was linked to the negative culture of the setting, with formal leadership required to institutionalise evidence-based practice and initiate change[62,63]. Responses from the perioperative nurses provide an indication of the evidence that is required in clinical practice. While evidence-based practise is considered the gold standard, a number of barriers prevent the application of best practice standards[64]. It is clear that building research capacity is important, not only to demonstrate the positive impact of perioperative nursing on patient outcomes but also to strengthen the evidence on which standards for practice are based and enhance the professional standing of perioperative nurses[24].

Limitations

Although the low response rate reported in this study is a limitation, it should be noted that the perioperative nurses who responded to the survey were from a range of nursing roles, locations and types of hospital settings. Valuable information about the research priorities in perioperative nursing has been identified, highlighting areas of practice that require further evidence to support practice.

References

1. Spruce L. Back to basics: Implementing evidence-based practice. AORN J 2016;101(1):107–112.
2. Vetter MJ, Latimer B. Tactics for teaching evidence-based practice: Enhancing active leaning strategies with large class of graduate EBP research in nursing students. Worldviews Evid Based Nurs 2017;14(5):419–421.
3. Duff J, Butler M, Davies M, Williams R, Carlile J. Perioperative nurses' knowledge, practice, attitude, and perceived barriers to evidence use: A multisite, cross-sectional survey. ACORN J 2014;27(4):28–35.

4. Duff J, Butler M, Davies M, Williams R, Carlile J. Factors that predict evidence use by Australian perioperative nurses. Journal of Perioperative Nursing 2016;29(2):24–29.
5. Michael R. Facilitating nursing research: A professional mandate for perioperative nurses. Can Oper Room Nurs J 2007;19(1):30–46.
6. Kristensen N, Nymann C, Konradsen H. Implementing research results in clinical practice – the experiences of healthcare professionals. BMC Health Serv Res 2016:16;48. doi: 10.1186/s12913-016-1292-y.
7. Sutherland W, Fleishman E, Mascia M, Pretty J,Rudd M. Methods for collaboratively identifying research priorities and emerging issues in science and policy. Methods Ecol Evol 2011;2(3):238–247.
8. Smith N, Mitton C, Peacock S, Cornelissen E, MacLeod S. Identifying research priorities for health care priority setting: A collaborative effort between managers and researchers. BMC Health Serv Res 2009;9:165.
9. Carter EJ, Mastro K, Vose C, Rivera R, Larson EL. Clarifying the conundrum: Evidence-based practice, quality improvement, or research? The clinical scholarship continuum. JONA 2017;47(5):266–270.
10. Saunders H, Vehvilanen-Julkunen K. The state of readiness for evidence-based practice among nurses: An integrative review. Int J Nurs 2016;56:128–140.
11. Bull R, Fitzgerald M. Nursing in a technological environment: Nursing care in the operating room. Int J Nurs Pract 2006;12:3–7.
12. Gillespie BM, Wallis M, Chaboyer W. Clinical competence in the perioperative environment: Implications for education. ACORN J 2006;19(3):19–24.
13. Hamlin L. Nurse education, accountability and the operating room nurse. ACORN J 1993;6(3):21–24.
14. Hilbig J. Knowledgeable users provide competent perioperative nursing care. ACORN J 1999;12(2):34–37.
15. Riley R, Manias E. The use of photography in clinical nursing practice and research: A literature review. J Adv Nurs 2004;48(4):387–405.
16. Gillette V. Applying nursing theory to perioperative nursing practice. AORN J 1996;64(2):261–270.
17. Baker J D. Nursing research, quality improvement, and evidence-based practice: The key to perioperative nursing practice. AORN J 2017;105(2):3–5.
18. Kristensen N, Nymann C, Konradsen H. Implementing research results in clinical practice – the experiences of healthcare professionals. BMC Health Serv Res 2016;16:48.
19. Hamlin L. Setting the standard: The role of the Australian College of Operating Room Nurses – Part 1. ACORN J 2006;19(1):29–36.
20. Richardson-Tench M. ACORN: The establishment and development of the Australian College of Operating Room Nurses. ACORN J 2008;21(1):28–35.
21. Australian College of Operating Room Nurses (ACORN). Standards for Perioperative Nurses 2004. Adelaide: ACORN; 2004.
22. Born S. 2004 ACORN Standards review. ACORN J 2004;17(3):61.
23. Duff J. The imperative to build research capacity and promote evidence-based practice in Australian perioperative nurses. Journal of Perioperative Nursing 2020;33(2):3.
24. Williams C, Duff J, Nicholson P, Hamlin L, Gillespie B. Using the ACORN standards: An exploration of claims issues and concerns. Findings from the research workshop at the ACORN & ASIORNA conference in Adelaide. Journal of Perioperative Nursing 2018;31(4):37–41.
25. Harding T, Whitehead D. Analysing data in qualitative research. In Schnieder Z, Whitehead D, LoBiondo-Wood G, Haber J. Nursing and midwifery research: Methods and appraisal for evidence-based practice 5th ed. Elsevier: Chatswood, NSW; 2014, 127–142.
26. George D, Mallery P. SPSS for Windows step by step: A simple guide and reference, 11.0 update 14th ed. Boston: Allyn and Bacon; 2016.
27. Elo S, Kyngäs H. The qualitative content analysis process. JAMA 2008:62(1):107–115.
28. Erlington C, Brysiewicz P. A hands-on guide to doing content analysis. Afr J Emerg Med 2017;7:93–99.
29. Vaismoradi M, Turune N H, Bondas T. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. Nurs Health Sci 2013;15(3):398–405.
30. Kumar A, Martin D P, Dhanorker S R, Brandt S R, Schroeder D R, Hanson A C et al. Improving the rate of surgical normothermia in gynecologic surgery. Gynecol Oncol 2019;154(3):590–594.
31. Ralph N, Gow J, Conway A, Duff J, Edward K L, Alexander K, Bräuer A. Costs of inadvertent perioperative hypothermia in Australia: A cost-of-illness study. Collegian 2020:27:345–351.
32. Ousey K, Edward KL, Lui S, Walker K, Duff JS, Leaper D. Perioperative, local and systemic warming in surgical site infection: A systematic review and meta-analysis. J Wound Care 2017;26: 614–624.
33. Goudas L, Bruni S. Pressure injury risk assessment and prevention strategies in operating room patients – findings from a study tour of novel practices in American hospitals. Journal of Perioperative Nursing 2019;32(1):33–38.
34. Martinez-Garduno C M, Rodgers J, Phillips R, Gunaratne A W, Drury P, McInnes E. The surgical patients' pressure injury incidence (SPPII) study: A cohort study of surgical patients and processes of care. Wound Pract Res 2019;27(2):120–128.
35. Wang I, Gillespie B M, Walker R. Pressure injury prevention in the perioperative setting: An integrative review. Journal of Perioperative Nursing 2018;31(4):27–35.
36. Walker R M, Gillespie B M, McInnes E, Moore Z, Eskes A M, Patton D et al. Prevention and treatment of pressure injuries: A meta-synthesis of Cochrane Reviews. J Tissue Viability 2020. doi: 10.1016/j.jtv.2020.05.004.
37. Sving E, Bååth C, Gunningberg L, Björn C. The experiences of operating room teams working with real-time feedback of interface pressure to prevent pressure injuries. A feasibility study. Perioper Care Oper Room Manage 2020;20:100096. doi: 10.1016/j.pcorm.2020.100096.
38. Smith J, Palesy D. Technology stress in perioperative nursing: An ongoing concern. Journal of Perioperative Nursing 2018:31(2):25–28.
39. World Health Organization. Patient safety [Internet]. Geneva: WHO; 2019 [cited 2020 July 9]. Available from: www.who.int/news-room/fact-sheets/detail/patient-safety.
40. Slawomirski L, Auraaen A, Klazinga N. The economics of patient safety: Strengthening a value-based approach to reducing patient harm at national level [Internet]. Paris: Organisation for Economic Cooperation and Development; 2017 [cited 2020 July 9]. Available from: www.oecd.org/els/health-systems/The-economics-of-patient-safety-March-2017.pdf.
41. Oyebode F. Clinical errors and medical negligence. Med Princ Pract 2013;22(4):323–333.
42. Australian Institute of Health and Welfare (AIHW). Hospitals at a glance 2017–18 [Internet]. Canberra: AIHW; 2019 [cited 2020 July 9]. Available from: www.aihw.gov.au/getmedia/b93ed17e-47f2-4bc8-92ae-c5cbceeaa657/Hospitals%20at%20a%20glance%202017%e2%80%9318.pdf.aspx.
43. Australian Bureau of Statistics (ABS). Cause of death, Australia 2016 [Internet]. Canberra: ABS; 2016 [cited 2020 July 9]. Available from: www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Australia's%20leading%20causes%20of%20death,%202016~3.

44. Hutchinson M, Vickers M, Wilkes L, Jackson D. The worse you behave, the more you seem to be rewarded: Bullying in nursing as organizational corruption. Employ Respons Rights J 2009:21(3):213–229. doi: 10.1007/s10672-009-9100-z.
45. Iqbal A, Khattak A, Malik F R. Bullying behaviour in operating theatres. J Ayub Med College Abbottabad 2020:32(3):352.
46. Mohanty P, Mohanty S. Impact of workplace bullying on performance, psychological distress and absenteeism: An original review of healthcare sector. Int J Econ Perspect 2017:11(3):1277–1286.
47. Yang Y M, Zhou L J. Workplace bullying among operating room nurses in China: A cross-sectional survey. Perspect Psychiatr Care 17 April 2020. doi: 10.1111/ppc.12519.
48. Davis E, Beale N. It's time: The poor culture regarding safety and quality in Australian hospitals must be addressed! Asia Pac J Health Manag 2015:10(3):GS36–GS41.
49. Kohn L T, Donaldson M S, Kohn L T, Corrigan J. To err is human: Building a safer health system. Washington DC: National Academy Press; 2000.
50. Braithwaite J, Herkes J, Ludlow K, Testa L, Lamprell G. Association between organisational and workplace cultures, and patient outcomes: Systematic review. BMJ Open 2017;7:e017708. doi: 10.1136/bmjopen-2017-017708.
51. Keller S, Tschan F, Semmer N K, Holzer E, Candinas D, Brink M et al. Noise in the operating room distracts members of the surgical team. An observational study. World J Surg;2018(42):3880–3887. doi: 10.1007/s00268-018-4730-7.
52. Hogan L J, Harvey R L. Creating a culture of safety by reducing noise levels in the OR. AORN J 2015;102(4):410.
53. Zhu X, Yuan L, Li T, Cheng P. Errors in packaging surgical instruments based on a surgical instrument tracking system: An observational study. BMC Health Serv Res 2019;19:176. doi: 10.1186/s12913-019-4007-3.
54. Kelly M, Wills J. Systematic review: What works to address obesity in nurses? Occup Med 2018;68(4):228–238.
55. Chin D L, Nam S, Lee S-J. Occupational factors associated with obesity and leisure-time physical activity among nurses: A cross sectional study. Int J Nurs Stud 2016;57:60–69.
56. Dankyau M, Shu'Aibu J, Oyebanj, A, Mamven O. Prevalence and correlates of obesity and overweight in healthcare workers at a tertiary hospital. J Med Trop 2016;18(2):55–59. doi: 10.4103/2276-7096.188533.
57. Brum MCB, Dantas Filho FF, Schnorr CC, Bertoletti OA, Bottega GB, da Costa Rodrigues T. Night shift work, short sleep and obesity. Diabetol Metab Syndr 2020;12(1):1–9.
58. Australian Commission on Safety and Quality in Health Care (ACSQHC). National Safety and Quality Health Service Standards 2017 [Internet]. Sydney: ACSQHC; 2017 [cited 2020 July 9]. Available from: www.safetyandquality.gov.au/standards/nsqhs-standards.
59. Twigg D E, Duffield C, Evans G. The critical role of nurses to the successful implementation of the National Safety and Quality Health Service Standards. Aust Health Rev 2013;37(4):541–546.
60. Australian College of Perioperative Nurses (ACORN). Standards for Perioperative Nursing in Australia 16th ed. Adelaide: ACORN; 2020.
61. Duff J, Butler M, Davies M, Williams R, Carlile J. Factors that predict evidence use by Australian perioperative nurses. Journal of Perioperative Nursing 2016;29(2):24–29.
62. Michaelis B, Stegmaier R, Sonntag K. Affective commitment to change and innovation implementation behavior: The role of charismatic leadership and employees' trust in top management. J Change Manag 2009;9(4):399–417.
63. Stelter C, Ritchie J, Rycroft-Malone J, Charns M. Leadership for evidence-based practice: Strategic and functional behaviors for institutionalizing EBP. Worldviews Evid Based Nurs 2014;11(4):219–226.
64. Duff J. The future of nurse education in Australia and implications for perioperative nursing. Journal of Perioperative Nursing 2020:33(1):3–4.