Perioperative nurses' perceptions of competence: implications for migration

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Perioperative nurses' perceptions of competence: implications for migration

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Abstract

Background: Nurses' recognition of their own level of skills and abilities (that is, perceived competence) is a prerequisite for ensuring they can practise in a safe manner. The demand for competence in the operating room (OR) may vary between clinical environments. It is, however, unclear what competency levels migrating nurses need in order to be deemed safe.

Aim: This paper describes Canadian and Australian nurses' levels of perceived perioperative competence and discusses these results in the context of nurse migration.

Method: A survey was distributed to OR nurses in six hospital sites (three in Canada and three in Australia). Perioperative competence was measured with a 40-item self-report survey which consisted of six domain subscales: *foundational knowledge and skills; leadership; collaboration; proficiency; empathy;* and *professional development*. Non-parametric tests were used to describe differences between groups based on country of origin, years of experience, and speciality qualifications.

Results: Canadian and Australian nurses reported their overall competency levels as high across all domains. Significant differences were found, between countries, in three of the six competency domains: *foundational knowledge and skills* ($p<.001$); *collegiality* ($p=.023$); and *empathy* ($p<.0001$).

Conclusions: Describing perioperative competence cross-nationally represents the first step in generating international dialogue around educational preparation for migrating nurses. The increasing global mobility of nurses makes it imperative to further standardise, with an international perspective, knowledge and practice expectations in perioperative settings.

Keywords: Competence, operating room, international, nurse migration, survey.

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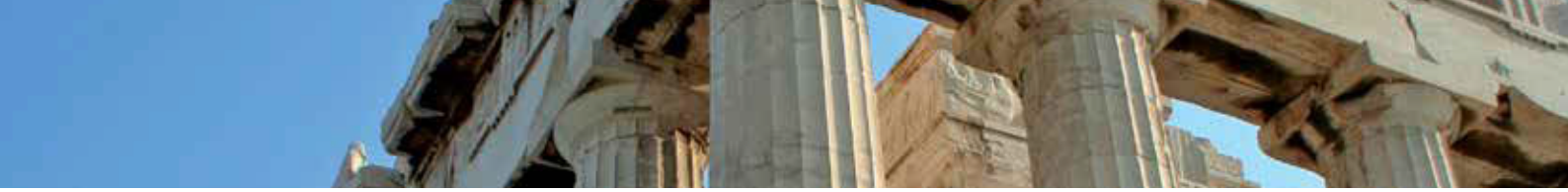
Introduction

Competence has been described in relation to the skills, abilities and attitudes a nurse requires to perform their work role in a given situation[1]. Nursing competence is a professional issue and is fundamental to patient outcomes[2]. Assessment of competence is, therefore, crucial to identifying areas requiring further professional development and education. It is also required to ensure that nurses recognise what activities are beyond their skills and abilities and, therefore, should be avoided.

Practice requirements in speciality areas, such as the operating room (OR), have been articulated through specific guideline statements. These guidelines, operationalised as behavioural indicators of competence, have been developed in Australia, Canada, the United States, and the United Kingdom[3-6]. The perioperative practice guidelines, in all four countries, reflect similar expectations of knowledge and clinical expertise but, however, the level to which nurses are theoretically prepared and clinically trained is likely to differ from country to country.



Although perioperative standards of practice would, at face value, appear similar, clinical practices may still differ from country to country. Migrating nurses may, as a result, encounter variations in the practice expectations in the country to which they relocate. The "core content" needed to prepare migrating OR nurses for perioperative practice is not clearly defined. There has, to date, been limited discussion about this issue and particularly as it impacts on perioperative nursing. Further discussion and understanding may help create informed international dialogue, on a strategic level, to ensure that the content offered in perioperative nursing courses meets the educational needs required for migrating nurses.

Nurse migration between Canada and Australia

Canada and Australia are geographically large countries with relatively small populations that are predominantly located in limited areas of the country (the southern portion in Canada and the coastal perimeters in Australia). Both countries are experiencing increasing cultural diversity and similar demographic changes as evidenced in a growing elderly population[7-9]. Both countries provide health care services based on a socialised health care model that is reliant on government funding[7]. In Australia, however, health care has an established a combination of public and private services (that is, fee-for-service) with a utilisation ratio of around 60:40 respectively[10]. Canada uses a mainly government-funded model but has, in recent times, begun a gradual shift towards the privatisation of some health care services[11].

Canada and Australia are, as developed countries, the destinations for the largest number of nurse migrants[12]. Between 1995 and 2000 Australia received 11,757 foreign nurses[13]. More recent Australian data indicates that a higher than average proportion of nurse migrants were employed in the nursing fields of critical care and emergency (7.0%), medical (6.3%), surgical (6.3%), and the OR (5.6%) (Note: The terms "medical "and "surgical" nursing, as used in Australia, represent different areas of practice under general nursing[9].) As a destination for migrating nurses, the trend has been similar for Canada: The number of nurses educated outside of Canada increased from 548 in 1998 to 2,104 in 2003[8].

Although Canada and Australia are receiving countries for migrant nurses, they are also recognised as being a major donor for nurses to other countries[12]. In 2003, 5,366 Canadian registered nurses (RN) maintained their Canadian licence while working outside of Canada[8]. During the 1980s and 1990s, Australia had become increasingly reliant on migrant nurses to offset the departure of Australian-trained nurses overseas[13]. Over the last couple of decades, Canada and Australia have experienced skills shortages that have been exacerbated by the exodus of skilled nurses[11,12,14].

Licensing requirements

Earning a nursing degree in Australia requires a three-year course (introduced in the mid-1980s) with students gaining theoretical and practical experience across the areas of medical, surgical, community, mental health, and at least one other speciality area (for example, paediatrics, critical care). Speciality areas such as the OR are usually not included as a component of the undergraduate nursing curricula as the goal is to produce a nurse with "generalist" skills. The degree programme in Canada is currently four years and students graduate with a Bachelor of Science in Nursing or a Bachelor of Nursing.

The Canadian Nurses' Board requires foreign nurses to write a national certification exam, which consists of an educational evaluation, foreign licensing verification, a qualifying nursing exam, and a test of English language proficiency[15]. The pass rate for migrant nurses writing the certification (registration) exam varies depending on the country of origin[11]. It is speculated that similarity in language, health care system and nursing role expectations, between donor and host countries, is linked to higher success rates. To be eligible for Australian registration, migrant nurses must meet current nursing education standards, verify that they have practised as a nurse within a defined period of time preceding their application, and demonstrate proficiency in spoken and written English[16]. Nurses migrating to Canada are required to write a provincial registration exam. The licensing requirements for Canadian and Australian nurses are fairly similar in most respects, except that there is currently no requirement for those nurses who have migrated to Australia to sit a national licensing exam.

The study

Design

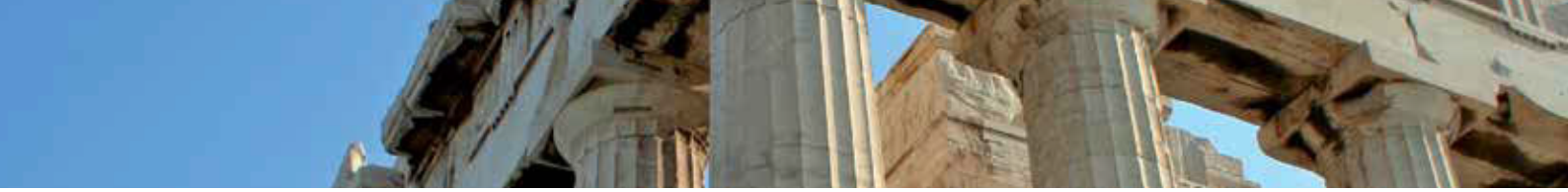
A cross-sectional survey was used and data were collected during 2010. The *Perceived Perioperative Competence Scale – Revised* (PPCS-R), a 40-item self-report scale was used to assess OR nurses' perceived competence[17].

Aim and significance

The study reported Canadian and Australian nurses' perioperative competence, across six context-specific domains, using the PPCS-R[17]. The level to which nurses are educationally prepared may, in the context of nurse migration, differ from country to country. Understanding cross-national differences has the potential to identify areas of difference and the analysis of these differences may unveil explanations that contribute to improved clinical care and patient outcome[18]. This understanding may also assist in international recruitment including the preparation and orientation of new nurses to this speciality.

Participants and settings

A consecutive sample of RNs, working in the OR departments of six large metropolitan hospitals, was invited to participate. Three of the hospitals selected were in Queensland, Australia, and three were from Toronto, Ontario, Canada. The six hospitals included in this study were similar in the respect that they were large public referral hospitals. Some, but not all, specialised in trauma surgery. Nurse participants considered eligible for inclusion were staff nurses involved in direct patient contact (that is, circulating and



scrubbing) as well as nurses who held management or education roles. All accessible nurses working in these roles and listed on the department roster of each hospital, were included in the sample.

An *a priori* power analysis was used, for this study, to estimate the required sample size of the Canadian and Australian groups. Based on a two-tailed test, with a power of 80%, a probability of <.05, and an effect size of .5 (Cohen's *d*), the required sample size for this comparative descriptive study was 128 per group[19].

Data collection

Ethics approval, to conduct the multi-site survey, was given by the Human Research Ethics Committees at each of the six participating hospitals and Griffith University (Australia). An information sheet, explaining the aim and purpose of the study, was given to potential respondents who were assured that their rights to voluntary involvement, anonymity and to withdraw without prejudice would be sustained. Consent was implied by the return of the completed surveys.

Measures

The development of the original 98-item PPCS-R was based on an integrated literature review and five earlier studies[17,20-23]. During psychometric testing, the PPCS-R was reduced from 98 items to 40 items[17]. The 40-item PPCS-R was, prior to this study, assessed by four Canadian OR nurse experts (with masters or doctoral degrees) from Toronto in order to ensure that it was contextually appropriate. Minor word changes, to four items, were made based on the feedback. The 40-item PPCS-R uses a 5-point Likert response scale ranging from 1 (representing "never") through to 5 (representing "always"). Scale scores are totalled for a range from 40 to 200 with higher scores indicating greater levels of perioperative competence. The PPCS-R comprises six subscales or domains that indicate different dimensions of perioperative competence. These include: *foundational knowledge and skills; leadership; collaboration; proficiency; empathy;* and *professional development*. A description of these subscales can be found elsewhere[17].

Demographic data regarding the age, years of OR experience, speciality qualifications (that is, certificate/diploma/degree), nursing role, nursing classification, and employment status of the participants were also collected.

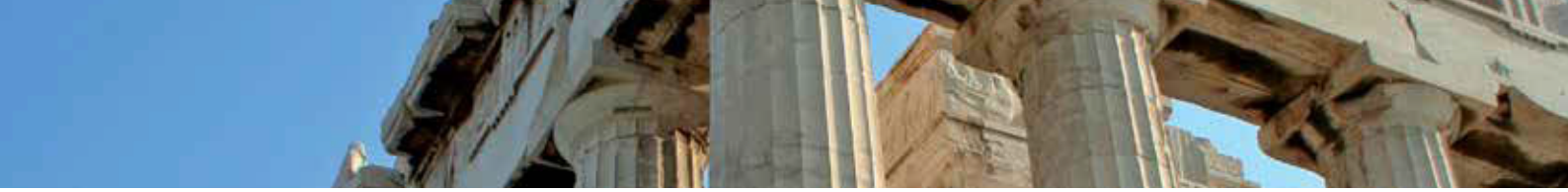
Data analysis

Survey data were analysed using the statistical program *Predictive Analysis Software* (PASW Statistics® Version 18.0; Inc., Chicago, IL) for Windows and were checked for accuracy. Descriptive statistics were used to measure variable dispersion across the sample. The types

Table 1. Comparative demographic characteristics of each sample.

Demographic variable	Canada (n=134) Frequency (%)	Australia (n=176) Frequency (%)	*p*-value	Standardised residuals[1] (z-scores)	
				Canada	Australia
Gender					
Male	14 (10.4)	21 (11.9)	χ^2 (1) = 0.132; *p*=.717	-0.3	0.2
Female	118 (89.6)	155 (88.1)		0.1	0.0
Age					
≤25 years	7 (5.2)	24 (13,6)	χ^2 (4) = 31.86; *p* < .0001**	-1.7	1.5
26–35 years	29 (21.6)	62 (35.2)		-1.6	1.4
36–45 years	45 (33.6)	39 (22.2)		1.5	-1.3
46–50	10 (7.5)	29 (16.5)		-1.7	1.4
>50 years	42 (31.3)	22 (12.5)		2.8**	-2.4*
Years of OR experience					
≤5 years	39 (29.1)	65 (36.9)	χ^2 (2) = 2.232; *p* = .337	-0.9	0.8
5.1–10 years	26 (19.4)	33 (18.7)		0.1	0.0
>10 years	69 (51.5)	78 (44.3)		0.7	-0.6
Speciality qualifications					
(Yes)	103 (76.8)	51 (28.9)	χ^2 (1) = 72.6; *p* < .0001**	4.6**	-3.9**
Employment status					
Full-time	113 (84.3)	115 (65.3)	χ^2 (1) = 15.557; *p* < .0001**	0.5	-1.3
Part-time	17 (12.7)	56 (31.8)		-2.6**	2.3*

Values outside ±1.96 are significant at *p*<0.05; values outside ±2.58 are significant at *p*<0.01; values outside ±3.29 are significant at *p*<0.001.



of analyses used were determined by the level of the data (that is, categorical or continuous) and its distribution. Composite (total) and subscale scores on the PPCS-R were measured as continuous variables while age, gender, years of OR experience, speciality qualifications, and employment status were analysed as categorical variables. Cronbach's alpha was used to determine the internal consistency of the total PPCS-R and its six subscales. A value of >.70 indicates acceptable internal consistency for newly developed instruments[24].

Inferential statistics were used to detect sample differences. The Chi-squared test was used to compare the Canadian and Australian samples in relation to gender, age category, years of experience, specialty qualifications and employment status. The Mann-Whitney *U* test was used to compare the samples in relation to each of the six competence domains. Differences within groups were measured using the Kruskal-Wallis test to compare median scores across the six competence domains, for the Canadian and Australian samples, in relation to years of OR experience (≤5 years, 5.1 to 10 years, >10 years) and education. For all inferential analyses, a *p* value of <.05 was considered significant.

Results

In this study, 786 questionnaires (211 Canada and 575 Australia) were distributed. Three hundred and ten surveys were returned for an overall response rate of 39.4% (134, or 63.5%, from Canada and 176, or 30.6%, from Australia). The Canadian and Australian samples were similar in relation to gender composition (p=.717) and years of OR experience (p=.337). Nearly one-third (31.1%) of the nurses in the Canadian sample were over 50 years of age compared to just over one-tenth (12.5%) of the nurses in the Australian sample. Just over half (51.1%) of the nurses in the Canadian sample reported having over 10 years' OR experience compared to a smaller proportion (44.3%) of nurses in the Australian sample. Nearly 77% of the nurses in the Canadian sample reported having speciality qualifications compared to a considerably smaller 29% of Australian nurses. There were statistically significant differences across the Canadian and Australian samples in relation to age (>50 year age category p<.0001), speciality qualifications (p<.0001) and employment (part-time employment p<.0001). Table 1 details the demographic characteristics of each sample.

Table 2 displays descriptive results of Cronbach's alpha for the six subscales in relation to the number of items in each domain, theoretical, and actual score ranges, medians and interquartile ranges (IQR) for the Canadian and Australian samples. Comparison of observed score ranges with theoretically possible score ranges indicates that all scores were positively skewed – respondents were, that is, more likely to perceive higher, rather than lower, levels of their own perioperative competence. Cronbach's alpha was consistently high across each of the subscales across both samples, ranging from .83 to .94. For the total PPCS-R scores, internal consistency reliability was a high .97.

Table 3 shows comparative data in relation to median scores, across each of the six competence domains, between Canada and Australia. Nurses in the Canadian sample reported higher levels of competence in the domains of *foundational knowledge and skills* (p<.001), *collaboration* (p=.023), and *empathy* (p<.0001). There were non-significant differences between groups across the other competence domains and in the total PPCS-R scores.

The Kruskal-Wallis test was used to identify differences within groups in relation to years of OR experience (≤5 years, 5.1–10 years, and >10 years) in both samples. Results indicate significant differences in the median scores across competence domains for each sample, with the more experienced nurses posting higher scores (p<.0001).

The Australian nurses with speciality qualifications reported higher median scores (across five out of the six competence domains) than their compatriots without speciality education (p=.0001 to p=.018). There were, however, no significant differences between Australian

Table 2. Summary statistics for the Canadian and Australian samples: possible and actual range, median, interquartile range, and Cronbach's alpha.

		Canada (n=134)			Australia (n=176)		
PPCS-R Domain (1="never"; 5="always")	Possible range	Actual range	Median (IQR)	Cronbach's alpha	Actual range	Median (IQR)	Cronbach's alpha
Foundational knowledge and skills (9)	9 – 45	15-45	40.0 (7.0)	.91	16-45	37.0 (7.0)	.93
Leadership (8)	8 – 40	9-40	32.0 (8.0)	.92	31-40	32.0 (8.0)	.94
Collaboration (6)	6 – 30	8-30	27.0 (5.0)	.82	18-30	25.0 (3.0)	.85
Proficiency (6)	6 – 30	10-30	26.0 (5.0)	.90	7-30	25.0 (4.0)	.94
Empathy (5)	5 – 25	5-25	23.0 (4.0)	.87	5-25	21.0 (3.0)	.89
Professional development (6)	6 – 30	14-30	24.0 (6.0)	.85	15-30	24.0 (4.0)	.86
Total scale score/alpha	40 – 200	71-199	170.0 (33.0)	.97	93-200	163.0 (24.0)	.97

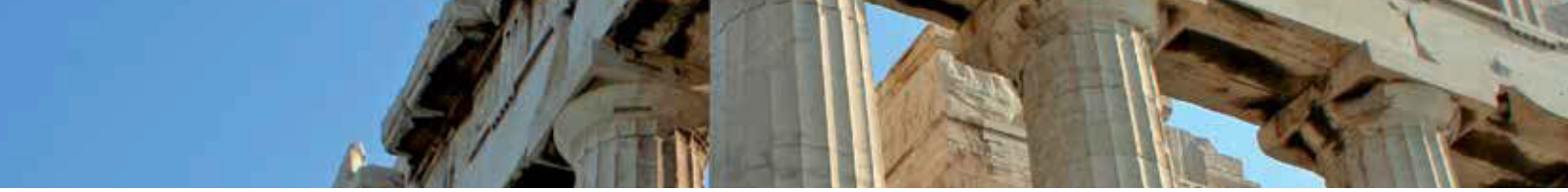


Table 3. Comparative data: six competence domains for the Canadian and Australian samples.

	Mean rank		Mann-Whitney *U*-test
Competence domain	**Canada**	**Australia**	***p*-value (Exact sig. 2-tailed)**
Foundational knowledge and skills	169.4	135.6	U=22788.5; z= –3.352; p<.001*
Leadership	145.4	158.9	U=10423.5; z= –1.331; p=.183
Collaboration	166.6	143.5	U=9751.0; z= –2.277; p=.023*
Proficiency	158.7	150.5	U=10913.5; z= –.803; p=.422
Empathy	178.1	135.5	U=8364.5; z= –4.211; p<.0001*
Professional development	153.0	153.9	U=11455.0; z= –.090; p=.926
Total PPCS-R	155.9	139.3	U=9268.5; z= –1.665; p=.096

*Statistically significant p<.05

nurses with and without speciality qualifications in relation to *empathy* (p=.091). In respect to the Canadian nurses, there were no statistically significant differences in median scores across the six competence domains in relation to speciality qualifications (p=.056 to p=.973).

Discussion

Any study comparing the perceived competence of nurses practising in different countries and in different health care contexts, even when they share a common language, may be criticised as attempting to make impossible comparisons. Nurse competence is, however, central to role performance[21,25] and underpins the development of generic and speciality practice standards[26,27] and as such, nurses' own perception of competence can provide a basis for some comparison. Describing perceived perioperative competence, on a cross-national basis, represents an important first step in informing international dialogue around the educational preparation of migrating nurses.

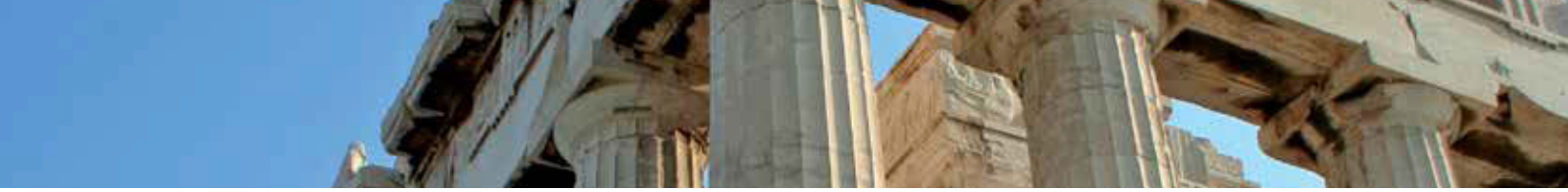
The results indicate that nurses in both samples thought their overall competence levels were good, although Canadian nurses reported higher median scores across three out of six competence domains (*foundational knowledge and skills; collaboration; empathy*). Previous research suggests that clinical experience is commensurate with higher levels of perceived competence[28]. Over one-third of the Australian nurses had five years' or less OR experience, while over half of the nurses in the Canadian sample reported having greater than 10 years' clinical experience. Yet there were no between group differences relative to years of OR experience (Table 1).

Within sample comparisons suggest that nurses with more OR experience had higher levels of perceived competence. Differences in institutional health care contexts of practice may have confounded these results. While nurses from both the Australian and Canadian samples were both drawn from large public hospitals, the study did not have the ability to control the complexity and diversity of the surgeries being performed within the six hospitals. This variation may have given one of the samples greater or more diverse clinical exposure.

Carper's[29] seminal paper on patterns of nursing knowledge identified that patient empathy was essential in understanding the meaning of health from the patient's perspective. Yet empathy may also be the most difficult to master and to teach. There were, however, statistical differences in relation to country of origin, with significantly higher scores for empathy in the Canadian sample. Hospital orientation programmes, throughout perioperative departments in Toronto, have successfully introduced the concept of patient- and family-centred care (PFCC) with provides additional training that would be considered related to empathy. The introduction of PFCC concept may, in part, explain this result.

In this study, statistically significant cross-national differences were reported in relation to the competence domain *Collaboration,* with the Australian sample reporting lower scores. Again, such differences are likely to be attributed to years of OR experience[30,31], as well as the contextual variation in health care institutions and geographic locality. In the Canadian context it may be an expectation that OR nurses develop skills around prioritisation and coordination at different levels. Institutional differences have been linked to the levels of nurse competence in previous research[30].

Our results showed discernible differences, across all domains of competence, between those Australian nurses with speciality qualifications and those without. It seems that Australian nurses with a postgraduate qualification perceived themselves as more competent. Australian nursing curricula presently offer limited (if any) undergraduate exposure to perioperative nursing and even fewer credentialling pathways for advanced practice roles. There is, moreover, no formal education qualification mandated for Australian nurses who enter the perioperative environment. Without the appropriate education and clinical exposure, beyond generalist practice, novices must often experience a steep learning



curve in the OR. Any difference demonstrated through speciality education may likely be more pronounced in regard to developing clinical knowledge.

In our study, it is quite extraordinary that over 75% of the Canadian nurses surveyed possessed speciality qualifications. This is statistically significant and may be attributed to the fact that having speciality qualifications is now a requirement in many ORs in Toronto as well as the relative availability of OR courses in the greater Toronto area. Thus the Canadian nurses in our sample may differ from perioperative nurses from other provinces/regions and from the Australian nurses surveyed. Canadian OR nurses, with at least two years' clinical experience in perioperative nursing, have the opportunity to write a perioperative certification examination (which is renewable every five years) through the Canadian Nurses' Association[8,11]. While not all Canadian perioperative nurses practise in advanced roles where there is greater autonomy in practice (for example, nurse anaesthetist/sedationist, first surgical assistant), this form of credentialling is still important in that it recognises that the perioperative nurse has reached a certain level of competence to practise in their chosen speciality[11]. It is noteworthy that in both Canada and Australia the legal role and scope of practice for advanced nurses is not as restricted as it is in other developed countries[7,13].

Limitations

The authors acknowledge that this study has some limitations.

Firstly, an overall response rate of just under 40% is less than optimal[32] and may diminish the ability to generalise results beyond the samples from which they were drawn because of a non-response bias[33]. This multisite study did, however, include six hospital sites, and thus captured a wide cross-section of respondents.

Secondly, the use of a non-probability sampling method reduces the ability to generalise survey results beyond the nurse respondents in the study. The Canadian nurses surveyed may, for instance, differ from nurses in other provinces on the basis of available education and provincial education requirements. Thus, consecutive sampling is, notwithstanding this concern, considered the best of all non-probability methods because it includes all respondents that are available. As such, consecutive sampling makes the sample a better representation of the population as compared with convenience sampling, where not all respondents are necessarily given the opportunity to respond[33].

Thirdly, we used a self-report tool to measure perioperative nurses' level of "perceived" competence – not their actual competence. Consequently, there may be some differences in how nurses perceive their level of competence and how others, such as peers, assess their competence. In order to assess nurses' actual competence, we would need to observe nurses in clinical practice. Nevertheless, despite the criticism given to using self-report measures of nurse competence[34,35], self-assessment of competence provides perioperative nurses with an opportunity for self-reflection.

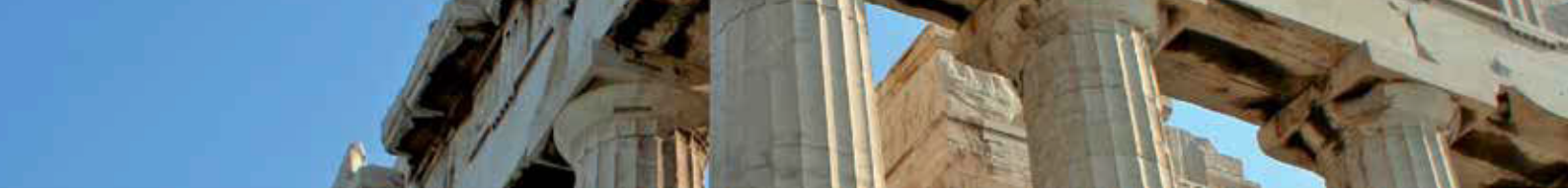
Finally, although the aim of this cross-national study was to compare results of Canadian and Australian nurses' perioperative competence, differences in the context and organisation of care, and variances in processes and protocols, reflect different hospital systems. In examining OR nurses' views, subtle distinctions in work roles, work environments, and education may confound the comparability of findings. Therefore, the responses given by the nurses in our sample may have indirectly been shaped by these contextual factors that we have not measured.

International implications

Increased globalisation and interdependence between nations is inevitable. Many international borders are becoming more open and nurses in countries such as Canada and Australia can no longer expect to practise in isolation. This is true now more than ever. Yet, the variation among countries in nursing education, and professional qualifications, suggests the need for more concerted efforts in regard to international collaboration. Collaborating and pooling of resources, in order to establish international methods for assessing qualifications and equivalence of education for migrating nurses, is a timely first step in policy development[36]. As part of this process, countries need to inform each other about their regulatory systems and practices and exchange ideas, concerns and expertise. Such collaboration is especially relevant in the context of international credentialling comparison of professional qualifications against predetermined standards and practice norms. As global mobility of nurses increases, it is becoming critical to develop policies and processes that enable mutual academic recognition, credit transfer, exchange programmes and joint research.

Cross-national studies of perioperative nurse competence are necessary to gain essential insights into the contextual nuances, and the commonalities and differences in clinical expectations that underpin safe practice. These understandings may be used to generate dialogue between international experts in an effort to further standardise knowledge and attitudinal attributes that characterise perioperative competence. This knowledge may also play a significant role in informing the development of international migration orientation programmes. While generic competency standards have been developed as a means of standardising the variation in scope and levels of practice, it remains unclear where these points of difference lie between countries. Identifying and describing such differences is particularly salient in a world where there is an increasing need for globalisation and internationalisation of nursing expertise.

ORNAC Competencies pertaining to this article can be found in the Operating Room Nurses Association of Canada (ORNAC) (May 2011) *Standards, Guidelines, and Position Statements for Perioperative Registered Nursing Practice (*10th edition). Section 1, pp. 50–58.



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None of the authors have a conflict of interest to declare.

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