

Beam me up, Scotty, but not just yet: Understanding generational diversity in the perioperative milieu

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Abstract

Background: The current workforce profile of Australian perioperative nurses comprises three generations: Baby Boomers, Generation X (Gen X) and Generation Y (Gen Y, the Millennials, the Net generation). While diversity within the general nursing workforce has been explored and published over the last two decades, there has been little empirical research to support the existence of generational differences among perioperative nurses.

Aim: This paper reports the results of a national study that examined generational differences in perioperative nurses' perceived competence.

Method: A cross-sectional survey design was used. A census of 3,209 operating room (OR) nurses who were members of the Australian College of Operating Room Nurses (ACORN) was invited to participate. Demographic data and the *Perceived Perioperative Competence Scale – Revised* (PPCS-R), a 40-item survey consisting of six subscales to indicate different dimensions of perioperative competence were used. Analysis of variance was used to identify the generational differences between the Baby Boomers, Gen X and Gen Y in perceived competence across the six subscales.

Results: The response rate across the six subscales and the total PPCS-R scores, demonstrated that generational differences were statistically significant at $p < .0001$, with the Baby Boomers posting the highest scores across all competence domains ($p < .0001$).

Conclusions: Understanding generational differences is important when determining skill mix and roles within the perioperative team. It is also crucial when designing education programmes that may be tailored to meet the unique needs of a diverse professional group.

Keywords: Australian, Baby Boomers, Gen X, Gen Y, operating room, survey.

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Introduction

The perioperative workforce, like many others, is ageing, a trend that has been evident for nearly two decades. There were 19,303 qualified nurses working in the perioperative setting in 2009 (the most recently published data) and their average age was 43.4 years¹. Compare this to 1993, when there were 12,837 perioperative nurses and although the average age of operating room (OR) nurses was not published then, it was 36.6 years amongst all qualified nurses².

Likewise, our surgical and anaesthetic colleagues grow old beside us; the average age of surgeons is 50.3 years and for anaesthetists it is 47.9 years³. The numbers working in these two disciplines have also increased steadily over the years; for example, there were 2904 surgeons and 1865 anaesthetists in 1993; at last count published, these numbers were 4,798 and 3,427 respectively³. In the same vein, the amount of surgery completed nationally has also risen, yet it remains difficult to meet the increasing demands of an ageing population. For example, 1.9 million surgical separations were recorded in 2009–10 and this number increased between 2005 and 2006 by 1.5% for public patients and 4.6% for private patients in each year⁴. At the same time, median waiting times have continued to lengthen⁴. In light of these data, understanding the capabilities of the perioperative workforce, the majority of whom are Baby Boomers, is important, and for several reasons.



Competence for practice

It is trite but true; being a competent practitioner no matter the discipline is fundamental to the delivery of safe, effective health care and the requirement that health care professionals be competent and accountable has been and continues to be articulated^{5,6}. Following on from the articulation of competency standards for beginning nurses in the 1990s, speciality competencies were developed by the major speciality nursing organisations nationally and internationally. The Australian College of Operating Room Nurses (ACORN) developed and published its first set of perioperative nursing competency standards in 1999, then in 2006 issued a revised version.

Research into the use of the ACORN perioperative nursing competency standards demonstrated it is limited⁷, perhaps because they are difficult to translate into practice^{8,9}. Even knowledge of them is not universal among perioperative nurses⁷. Nurses also report being confused about the nature of competence^{8,9}; this is unsurprising, since the literature is replete with various, disparate definitions. Further, there are difficulties applying 'generic' nursing competency statements to the perioperative setting, as they are not sufficiently nuanced to this context¹⁰. The need to further define and clearly articulate the subtleties of perioperative nursing competence necessitated a review of the research literature¹⁰. This identified two broad domains of perioperative nurse competence. These were 'specialised knowledge', comprising theoretical, practical, situational and aesthetic types of knowledge within a technically dominated environment; and 'human factors'. The latter includes communication, coordination, teamwork and clinical leadership¹⁰. The significance of 'human factors' is only just beginning to emerge vis-à-vis perioperative nursing competence; clearly, more research was needed in this area. Concurrent with identifying the meaning of competence in the OR, as found in the literature, has been the development of a self-assessment of competence tool, which arose out of previous research about the role of the perioperative nurse, which was conducted in Australian operating suites (OS) and is published elsewhere¹¹.

Background

Generational diversity is as prevalent within the perioperative nursing workforce as it is within most health-related and other disciplines. Most OS will have three distinct generations; some even have four. Each generation has its own core values and beliefs and these differences present both opportunities and challenges. A constant theme in the literature on generational differences is the need to understand the varying perspectives of each generation to avoid (or at least reduce) conflict and enhance retention¹². Of particular interest to OS managers and educators is the work ethic and associated characteristics of each generation, including competence.

The generations defined

Broadly speaking, membership of any of the four generations currently found in the workplace is determined by birth year (although these are not 'hard and fast'). Each of these generational

cohorts: Veterans (or Traditionalists), Baby Boomers (or Boomers), Generation X (Gen X) or Gen Y (also called the Millennials or the Net Generation) comprise individuals who share historical, social and cultural experiences and these have defining, although variable, effects on their development. That said, it is important to note that specific generational traits are not meant to stereotype individuals¹². Nonetheless, an understanding of the main characteristics of each generation can be insightful¹³.

Veterans (or Traditionalists) (1925–1945)

Perioperative nurses who are veterans were born before 1945 and, although their numbers are small¹⁴, there are still some present and at various levels within the OS. Veterans grew up in difficult times experiencing the great depression in the 1930s and World War 2. They are cautious and conservative and believe that loyalty and hard work will be rewarded. They respect authority and hierarchy¹⁵ and look to the past for insight when faced with new challenges.

Baby Boomers (Boomers) (1946–1964)

These represent the largest cohort in the nursing workforce (as they do in the general workforce) with many in leadership positions within, and beyond, the OS¹⁴. Boomers are the 'me' generation; independent individuals who grew up in times of economic prosperity and who questioned authority¹⁵; indeed they challenged everything. They equate work with personal fulfilment and self-worth; thus they have a strong work ethic¹². They value lifelong learning to improve their performance and still wish to make a contribution, even as they approach retirement. They are motivated by public recognition of a job well done and enjoy group participation, and peer-to-peer teaching and learning. They are team-oriented, expect to be empowered and can be change agents in a dynamic work environment¹³.

Generation X (Gen X) (1965–1980)

Gen X nurses are more likely to have grown up in two-career households or have been raised by a single parent, resulting in this cohort also being known as the 'latchkey' generation^{12,15}. They are independent, self-directed and technologically savvy individuals. Further, they believe in work-life balance, eschew corporate loyalty and dislike micromanagement. They prefer to work alone; they require honest, tactful communication and individual, positive feedback and recognition. They expect career advancement to be based on merit. They comprise a very much smaller cohort than the Boomer cohort and this is reflected in their numbers in the perioperative workforce.

Generation Y (Gen Y, or the Millennials, the Net generation) (1980–2000)

Millennials are the smallest cohort in the nursing workforce. This generation grew up with technology, in a multicultural, global world, where terrorism, violence and abuse were (and remain) a reality. Instant communication is a hallmark of these digital natives¹⁶ and the internet, mobile phones, iPods, iPads and so forth facilitate this. Despite global uncertainty, Millennials are critical thinking optimists¹⁵ who are goal-oriented; they want structure, guidance, and extensive coaching and mentoring in the workplace. They value

personal feedback and flexible scheduling and will move on if their expectations are not met. They enjoy collaborating and learn best by doing; they prefer teamwork and team meetings, rather than reading lengthy procedures or policies^{13,14}.

Methods

Aim

One of the aims of this study was to describe the generational differences of a national sample of Australian OR nurses in relation to six domains of perceived perioperative competence.

Design

A cross-sectional survey design was employed and data were collected during 2010.

Sample/participants

A census of 3,209 nurses who were current members of ACORN was invited to participate. Eligible participants included registered nurses (RN) who worked in clinical (that is, circulating, instrument, anaesthetic and recovery room roles), education, management and/or combined perioperative roles in both public and private hospitals. Survey packets, with a reply-paid envelope were posted to all nurses who were ACORN members during the period this study was undertaken. As we did not have access to the ACORN database, we were blinded to the names of recipients, and those who responded did so anonymously.

Measures and data collection

In this study, the *Perceived Perioperative Competence Scale – Revised* (PPCS-R) was used to measure OR nurses' perceived competence. The incremental development of the 40-item PPCS-R was based on several earlier qualitative and quantitative studies¹⁷⁻²¹. Psychometric testing of the PPCS-R involved assessment of content validity using exploratory factor analysis, internal consistency using Cronbach's alpha, and construct validity using the "known groups" technique. These results for the 40-item scale are reported elsewhere²¹.

The PPCS-R uses a five-point Likert response scale ranging from one representing "never: through to five representing "always". Scale scores range from 40 to 200, with higher scores indicating greater levels of perioperative competence. The PPCS-R comprises six subscales that indicate different dimensions of perioperative competence: *Foundational knowledge and skills*; *Leadership*; *Collaboration*; *Proficiency*; *Empathy*; and *Professional development*²¹.

The subscale *Foundational knowledge and skills* has nine items to indicate technical skills (that is, knowledge of instruments and procedures)²¹. The six items in the *Proficiency* subscale typify skills built on clinical exposure necessary to gain experience. The *Professional development* subscale has six items and describes practice standards based on current knowledge, reading journals and awareness of organisational policies. The *Leadership* subscale contains eight items that indicate behaviours focused on mentoring staff, delegating tasks and conflict management²¹. The six items in the *Collaboration* subscale characterise seeking and

Table 1. Combined demographic characteristics of the sample (n=1,100).

Demographic characteristic	n*	%
Gender, female	996	93.4
Highest education		
Certificate or associate's degree	187	17.6
Baccalaureate	127	11.9
Graduate certificate	443	41.5
Graduate diploma	219	20.5
Masters or doctorate	91	8.5
Received perioperative speciality education	754	71.0
Nursing classification		
RN	359	33.6
Clinical nurse (CN) or CN specialist	389	36.4
Clinical nurse educator/nurse educator	98	9.1
Nurse manager	200	18.7
Other	23	2.2
Employment status		
Full-time	541	50.6
Part-time	463	43.3
Casual	65	6.1
Professional membership		
NSWOTA	370	34.5
VPNG	237	22.1
PNAQ	199	18.6
ORNA	101	9.4
SAPNA	99	9.3
TORN	50	4.7
NTPN	15	1.4

*Missing values not replaced

rendering assistance, tailoring communications to the situation, and demonstrating respect for other team members. Finally, the subscale *Empathy* contains five items that describe behaviours in providing reassurance to perioperative patients, actively listening, and establishing rapport.

In the current study, demographic data in regard to age, gender, years of perioperative experience, speciality education, nursing role, employment status, and state perioperative nursing association (PNA) membership were also collected.

Ethical considerations

Institutional approval was given by the Human Research Ethics Committees of the two universities who employed the Chief Investigators (CIs) and the ACORN Board. Participant consent was implied by the return of the completed survey form.

Data analysis

Data were entered into *Predictive Analysis Software* (PASW Statistics®, version 18.0, Chicago, IL, 2010) for Windows, formerly known as SPSS. Both descriptive and inferential statistics was used. Relative (n) and absolute (%) frequencies were used to describe generational characteristics, gender, education, nursing role, employment status and PNA membership. To enable description of generational differences, the sample was divided into three groups to reflect the ages within each generational group: Gen Y 22–30 years; Gen X 31–46 years; and Baby Boomers 47–65 years. Means and standard deviations were used for continuous data for age, years of OR experience and competence scale score domains. One-way analysis of variance (ANOVA), an inferential test, was used to describe differences among the three generations in relation to each of the six competence domains and the total PPCS-R scores. Post hoc comparisons using Bonferroni's adjustment was used to identify where these differences lie.

Results

A total of 3209 surveys were distributed and 1205 returned. Of those returned, 16 were not completed and another 11 were "return to sender", leaving a total of 1178, which is a response rate of 36.7%. Of the completed surveys, 40 of the respondents were enrolled nurses (EN) and because of differences in scope of practice, these surveys were not included in the analyses. Consequently 1,138 usable surveys were analysed.

Table 1 displays the results for demographic characteristics of the sample. This sample was predominantly female (93.4%), and the average age was 47.6 ±9.4 years with a range from 22 to 65 years. Respondents had considerable OR experience, with an average 19.0 ±10.5 years (range 1 to 40 years). Around 45% of the nurses in this sample worked in clinical nurse, educator, or clinical nurse specialist roles. Most respondents (71%) had perioperative speciality education. In terms of PNA membership, respondents were predominantly from the eastern seaboard states of New South Wales (34.5%), Victoria (22.1%) or Queensland (18.6%).

Table 2 presents results for descriptive statistics, namely the scale scores in each competence domain, including means, standard

deviations, and score ranges for the combined sample. Assessment of observed score ranges, along with theoretically possible score ranges, indicates that scores across all six domains leaned towards the higher end of the Likert scale (one to five). In this sample, Cronbach's alpha was consistently high across each subscale, ranging from .81 to .89. For the total PPCS-R scores, the internal consistency reliability was a high .96.

Table 3 details the results of the PPCS-R scores in all six domains for Gen Y, Gen X, and the Baby Boomer generations. Across all six subscales and the total PPCS-R scores, generational differences were statistically significant at $p < .0001$. The Baby Boomer generation averaged the highest scores across all competence domains ($p < .0001$). Post hoc tests using the Bonferroni correction method indicated that these subscale differences were spread across all generational groups ($p < .0001$ to $p < .003$).

Discussion

One of the overall aims of this study was to identify and describe intergenerational differences in perioperative nurses in relation to the six domains of perceived competence and this was achieved by using the PPCS-R. That there are statistically significant differences between the generations across all of the competence domains is clearly evidenced here; intuitively one would expect that Baby Boomers would score the highest, and in all domains, given their experience and time in the perioperative milieu vis-à-vis Gen X or Gen Y perioperative nurses – they do.

The generational differences found in the competence domains of *Foundational knowledge and skills* and *Proficiency* suggest that Baby Boomers perceive themselves as highly competent across these areas. However, differences in the means were the smallest across the three generations for *Foundational knowledge and skills*. This possibly reflects the necessity for all perioperative nurses to develop 'bread and butter skills' first and foremost, to survive and function in the perioperative milieu, an environment notorious for its reputation "to eat its young"²². Conceivably, this result is also likely to be a function of the Baby Boomers' considerable years of OR experience, so thus, is difficult to disentangle, as confounders have not been controlled for in this type of analysis. In the *Proficiency*

Table 2. Means, variability and reliability for subscales of the PPCS-R for the combined sample.

Subscale name (number of items)	Mean (SD)	Actual range of scores	Possible range of scores	Cronbach's alpha
Foundational knowledge & skills (9)	39.6 (4.7)	11 – 45	9 – 45	.89
Leadership (8)	33.5 (5.3)	11 – 40	8 – 40	.89
Collaboration (6)	27.1 (2.6)	13 – 30	6 – 30	.81
Proficiency (6)	26.7 (3.0)	12 – 30	6 – 30	.84
Empathy (5)	22.4 (2.8)	8 – 25	5 – 25	.86
Professional development (6)	25.4 (3.5)	13 – 30	6 – 30	.86
Total scale (40)	174.7 (18.0)	68 – 200	40 – 200	.96

Table 3. Differences in PPCS-R scale and subscale scores by generation (n=1,100).

PPC-R subscale (1 to 5 Likert scale)	Generational groups						F (p)
	Gen Y (n=35)		Gen X (n=420)		Baby Boomers (n=645)		
	Mean	SD	Mean	SD	Mean	SD	
Foundational knowledge & skills	4.0	(.56)	4.3	(.51)	4.4	(.50)	17.2 (< .0001)
Leadership	3.5	(.73)	4.0	(.71)	4.2	(.60)	33.3 (< .0001)
Collaboration	4.2	(.56)	4.4	(.47)	4.7	(.39)	21.2 (< .0001)
Proficiency	3.8	(.59)	4.3	(.50)	4.5	(.44)	40.6 (< .0001)
Empathy	4.0	(.82)	4.3	(.50)	4.5	(.52)	21.7 (< .0001)
Professional development	3.6	(.62)	4.1	(.60)	4.3	(.52)	37.7 (< .0001)
Total PPC-R subscale	166.2	(25.5)	174.4	(18.9)	175.3	(18.6)	4.3 (= .014)

domain of perioperative competence there was a greater gap in the scores, with both Gen X and Baby Boomers scoring well ahead of Gen Y. Again this reflects the much more limited amount of time that Gen Y nurses have worked in the OS, Clearly, clinical exposure is necessary for novices to develop the knowledge and advanced skills required in recognising and promptly acting in emergency situations and using anticipatory behaviours.

The competence domain of *Leadership* focuses on prioritising activities, managing conflict, coordinating resources, mentoring staff and delegating tasks. It seems that leadership, one of the non-technical skills, is a significant attribute of perioperative competence^{21,23} and this is reflected in the scores. Again, the most experienced group, the baby Boomers, achieved the highest average, though Gen X also scored strongly. In contrast, this was Gen Y's lowest scoring domain and may reflect their limited opportunities, to date, to develop these leadership attributes. Implicitly, this result may also suggest that this generation is somewhat unsure in their direction and so prefer to seek specific direction from those they know and trust, a notion echoed elsewhere¹³⁻¹⁵.

There were small but notable differences across the three generations in the domain *Empathy*, which encompasses behaviours such as providing reassurance to patients, active listening and establishing rapport. The results here are encouraging and while Gen Y scored less here than the Baby Boomers (the highest) or Gen X, this domain was one of the higher scoring ones, and for each of the three generations. This result would seem to suggest that OR nurses in this study believe that patient-centred caring behaviours are an essential facet of perioperative competence, a notion that is increasingly being recognised as an essential attribute of competence^{11,24}. That Gen Y scored the lowest in this domain may be a reflection of their predominant use of technology in their communications. For instance, the use of Short Message Service (SMS or 'texting'), Facebook, Twitter and so on are modes of instant communication and arguably do not

necessarily require interactions involving in-person contact or highly developed interpersonal skills.

In this study, the Baby Boomers scored highest in the domain of *Professional development*, which includes activities such as using available resources, and reading professional journals to keep up to date with the latest practices and technologies – all of which indicate lifelong learning behaviours. This result is certainly in keeping with the generational traits displayed by the Baby Boomers in relation to lifelong learning¹³. It is encouraging that domains that relate to professional development have also been identified in the development and testing of some generic competence measures, too²⁵⁻²⁷ and, further, their inclusion acknowledges the contribution such behaviours have in enhancing nursing practice. It is important to bear in mind that both Gen X and Gen Y nurses will want a much more technologically focused approach to any and all professional development activities including the use of simulation¹³⁻¹⁵. All generations scored highly in the domain, *Collaboration*, which describes behaviours such as giving assistance, communication and respect for other team members. Yet, while the differences among the generations were slight, they were statistically significant and may also be attributed to having such a large sample. Of the six domains of competence, Gen Y posted the highest average scores in the *Collaboration* domain. This may be related to this generation's need for social connection, group support and peer affirmation. The importance of interpersonal relations has been qualitatively described in relation to the OR context^{11,18,28} and in this study it was the highest scoring subscale of the PPCS-R, and for each generation.

The significance of this study vis-à-vis differences in competence of the three generations of nurses working in the OS, is that it demonstrates empirically the experience, nature and capabilities of each of those generations. It identifies the Baby Boomers as the largest and most competent group of perioperative nurses, and consideration should be given to capitalising on, and leveraging this information.

Limitations

We acknowledge that this study has several limitations. Firstly, the accessible population for this study comprised perioperative nurses who were members of ACORN (achieved via their membership of their state PNA). It is possible that selection bias occurred as a result of the inclusion of a specific subset of perioperative nurses that may not be representative of all nurses working in ORs across Australia. Previous research has shown significant differences in relation to age, experience and speciality qualifications in nurses who belong to a professional association and those who do not^{7,19}. Nonetheless, respondents in our study practised in a range of clinical environments, including public and private facilities. Secondly, a response rate of around 36% is less than ideal and responders may in some way be different to non-responders. That said, the sample size was large enough to detect statistically significant differences and, further, this rate is consistent with that of other surveys of health professional²⁹. Thirdly, we measured nurses' perceived perioperative competence rather than their *actual* competence. That is, we did not observe nurses' performance in the clinical setting. Yet, in spite of the criticism given to using self-report measures of competence^{30,31}, these methods promote reflective practice and self-reporting of competence is also acceptable to nurse registering authorities³². Finally, the subsample numbers in

each generational group were disproportionate when compared with the total sample, with Gen Y being grossly under-represented. However, these differences in subsample numbers were taken into consideration in the ANOVA analysis.

Recommendations for practice, education and research

Practice

These results offer new insights into how contemporaneous perioperative competence is conceptualised in terms of generational differences and is, thus, of some significance. The PPCS-R as a measure of perioperative competence has the potential to be used by individual perioperative nurses for self-assessment and for personal reflection. The information garnered from it could assist nurses across all generations in determining their ongoing professional development needs; no small thing given that the latter is now mandatory, following the move to national registration in 2010³². Perioperative managers or nurse peers could also use the PPCS-R to co-assess an individual, thus aiding in data triangulation, for the purposes of performance development or peer progression¹⁰. Additionally, knowing and understanding the generational mores of the OS workforce presents an opportunity to undertake longer term staffing/nurse succession planning. Capitalising on the capabilities of the Baby Boomers, the largest,



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most competent cohort on staff, requires a systematic approach to using them as mentors and trainers of younger staff¹⁶, in particular Gen Y nurses. Given the rate that the former will retire and exit the workplace over the next decade indicates that there is some urgency in this notion.

Education

There were discernible intergenerational differences across all competence domains, consequently, the ability to identify where these points of difference lie in terms of staff profiling is essential. Undoubtedly, Gen Y nurses require an appropriate level of educational support. Moreover, the mode of delivery of such perioperative programmes to this generation may also warrant evaluation and review, if this group of nurses' full potential is to be realised across these competence domains. For instance, using real-time, high-fidelity simulation which taps into the techno-savvy nature of Gen Y^{14,15} nurses may be beneficial. Perioperative managers and educators could use the PPCS-R to target their educational endeavours to meet identified deficits among their own staff based on generational differences¹⁰. This would be an efficacious way to make maximum use of a limited education budget. Its use as a diagnostic measure for informing the ongoing development of education programmes and interventions in perioperative nursing would also be more desirable than the imposition of educational interventions following a major adverse event, which, anecdotally, happens frequently now.

Research

Generational differences in relation to perceived perioperative competence needs further investigation in other samples of nurses using the PPCS-R. This measure enabled detection of generational differences in this large sample and, thus, may have utility in other perioperative nurse samples. The rigorous process of psychometric assessment that the original PPCS-R underwent resulted in it being reduced from 94 to 40 items. The outcome was a briefer, more succinct scale that has increased acceptability for use among other populations of perioperative nurses internationally. Such future research endeavours are already on the drawing board.

Conclusions

As the Baby Boomers head off into retirement there will not only be a large reduction in the numbers of staff remaining, there will also be a significant loss of experience. As this study has shown, Baby Boomers are the most highly competent of perioperative nurses in Australia and the most numerous at this time. It behoves all who are concerned with providing high-quality, safe patient care in the perioperative milieu to give serious consideration to these data and to think about how such may best be leveraged. Understanding the key characteristics of each generation of perioperative nurses – Gen Y, Gen X, Baby Boomers – also provides some insights into the most effectual way to educate, support and retain them in the OS. Using a credible tool such as the PPCS-R provides nurses, educators and managers with a means to achieve some of this, and as such it deserves a place in every Australian OS.

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