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Australian perioperative nurses' attitudes, levels of knowledge, education and support needs related to organ donation and procurement surgery: A national survey

Abstract

Objectives: The aim of this study was to examine Australian perioperative nurses' self-reported knowledge, attitudes, levels of education and support in relation to their participation in organ donation and procurement surgery.

Sample and setting: Data was collected from Australian perioperative nurses who are members of the peak national body Australian College of Perioperative Nurses (ACORN).

Methods: An online survey was distributed to ACORN members on behalf of the researchers. The online survey comprised 67 items encompassing open- and closed-ended questions along with graded Likert and ordinal multi-category scales.

Results: Of ACORN's 4000 Australian members, 452 (11.3 per cent) responded to the survey. Participants were broadly represented via each state and territory across metropolitan, regional and rural settings with participation experiences in multi-organ procurement surgery (MOPS). A variety of perioperative nursing roles were represented with varying roles within MOPS. Overall, perioperative nurses reported familiarity with organ and tissue donation in Australia but felt that they required additional knowledge and education on aspects of MOPS. The majority of perioperative nurses supported organ donation and held positive attitudes and beliefs towards procurement surgical procedures; however, they felt they lacked support resources and access to relevant education.

Conclusion: The findings detailed within this study provide a national insight and contribute new knowledge and understanding of Australian perioperative nurses' experiences, attitudes, education, knowledge and support needs when participating in organ procurement surgery. These findings have the potential to inform and influence the perioperative nursing profession, clinical initiatives, education delivery and wider health policy in relation to organ procurement services.

Keywords: organ donation, organ procurement, perioperative nurses, operating room, attitudes, knowledge, education, support

Introduction and background

Deceased organ and tissue donation from donors via both pathways, donation after cardiac or circulatory death (DCD) and donation after brain death (DBD), provide recipient patients an opportunity to improve their quality of life when faced with end-stage organ failure[1–3]. Health care professionals work collaboratively to facilitate these procedures, often at short notice, at the time of a donor's death. In Australia, organ and tissue donation (OTD) procedures are undertaken in metropolitan, rural and regional areas where there are often no perioperative nursing teams dedicated for this purpose[4]. Perioperative nurses can be allocated to assist intra-operatively at the time these procedures are required, working collaboratively with external surgical teams to facilitate the organ procurement procedure[4–6]. This can lead to pressures on perioperative nursing staff who participate at short notice with no prior experience, education or preparation[4–5].

Health professional's attitudes towards OTD have been studied from nursing, medical and student perspectives[7–11]. A common issue identified is emotional and conflicting attitudes and beliefs towards certain aspects of the donation process[1,3,6,12,13–15]. Many health professionals identified varied attitudes and beliefs towards ethical issues, aspects of premortem care from both adult and paediatric donors[16–18] and cultural or spiritual beliefs related to having a whole body at the time of death[14,19,20]. Other literature describes the attitudes of health professionals caring for potential organ donors and their professional roles of advocating for the donation process in order to boost organ donation rates[9–11,15,21–25]. Yet, for some health professionals, attitudes and beliefs about OTD have impacted on their ability to promote and advocate OTD, initiate requests for donation or assist within these surgical procedures due to negative personal beliefs[22,26,27]. Similarly, other studies described the surgical procedure[5,28] as busy, intense with increased stress and creating additional workload for health professionals involved in these procedures[5]. Research examining perioperative nurses' attitudes to and beliefs about organ donation have reported predominantly positive attitudes towards organ donation and willingness to donate their own or a family member's organs[5,6,18,29–31]. Interestingly, recent Australian research[4,5,18] concurred with previous findings of positive attitudes; however, it identified that nurses kept their attitudes and beliefs largely suppressed and hidden and, in so doing, provided a unique understanding and addition to the existing literature about the personal and professional beliefs and attitudes of perioperative nurses. In contrast, the findings of an earlier study[32] found USA perioperative nurses held negative attitudes towards OTD and donation.

Insufficient or no OTD education provided to health professionals who are closely involved in the procurement is reported as a global issue, not only in the nursing arena but also among medical staff, surgical groups and donor coordinators[8,12,14,21,33]. Several authors have emphasised that education was often lacking or brief and limited to attendance at day-long seminars or workshops on donation and transplantation with no emphasis on preparing health professionals adequately for their participation in these procedures[4,7,20,29–31]. The need for professional education has been reported in multiple countries[34–36]. An Australian study[4] highlighted the need for education as perioperative nurses reported uncertainty about their professional role in procurement surgery, the surgical procedure itself and the surgical requirements necessary to undertake these procedures. Although several perioperative nurses reported attendance at the Australasian donor awareness program (ADAPT) course, which is available to all health professionals such as organ donor coordinators, doctors, nurses and social workers[37], recent research identified that the course did not meet the specific needs of perioperative nurses and their respective roles in procurement surgery[4]. These research findings led to a proposal being forwarded to the ACORN board outlining the need to develop a national perioperative guideline pertinent to practice in this area[38,39].

The lack of support for perioperative nurses involved in these surgical procedures both prior to and following participation has been previously documented[4], yet there are no consistent support processes in place to assist this group of health professionals[4,7,29,31,40]. An Australian study[4] indicated that perioperative nurses require immediate support following participation in a procurement surgical procedure to minimise stress-related symptoms. However, support resources were identified as nonexistent or unavailable at the time such a service was required[18,40]. The current study expands on a previous Australian study[4] to quantify the relevant issues faced by perioperative nurses at a national level. The aim of this study is to describe Australian perioperative nurses' self-reported attitudes, knowledge, levels of education and support in relation to their participation in organ donation and procurement surgery.

Research method

Study design

The study design used a national cross-sectional survey of Australian perioperative nurses.

Survey tool

The survey tool developed by Jelinek et al.[10] which incorporated aspects of the attitude survey originally developed by the Donor Action Program[41] was utilised for this study. The survey tool was adapted to suit the perioperative nursing population and their specific roles in the donation process and caring for organ donors within the operating room (OR). Areas within the survey not specific or necessary to the perioperative context were omitted while some sections were adapted to focus on the roles of perioperative nurses during the organ procurement process. New topic areas, including support resources and conscientious objection, were included. The survey tool consisted of 67 items with responses including open- and closed-ended questions and Likert and multi-category scales. Data was also collected in relation to demographic characteristics of the participants, self-reported knowledge, attitudes, levels of education and support in relation to their participation in organ donation and procurement surgery.

Setting and sample selection

The survey was sent to members of the peak national perioperative nursing organisation ACORN through the College member database on behalf of the researchers.

Recruitment procedure and sample

Permission to access the ACORN member database was sought and granted by ACORN. Using a convenience sampling approach, all Australian perioperative nurses who were members of the College were invited to participate by completing the online survey. The online survey was developed using Qualtrics software and potential participants received a link to the questionnaire via an email invitation.

Data collection and analysis

The survey was made available from December 2017 and remained open and accessible through to March 2018. A reminder email was forwarded to members by ACORN in mid-March 2018 prior to the closure of the data collection period.

The quantitative data from the survey was analysed using the IBM Statistical Package for Social Sciences (SPSS-v25). For each survey item, descriptive statistics (*N*, per cent, or mean [standard deviation]) were calculated. Chi-square tests were used to analyse nominal data, while independent-sample t-tests were used to explore the effects of dichotomous demographic data with continuous scores (after reverse scoring negatively worded items). Analysis of variance (ANOVA) was performed to explore the main effects of non-dichotomous demographic variables on continuous responses. Correlational analysis was conducted to test associations between continuous variables. An alpha of <0.05 was considered statistically significant.

Content analysis was used to analyse the free text comments in response to open-ended questions within the four major themes of knowledge, education, attitudes and support. Key meanings or concepts were identified in participant comments and assigned a code. Each code was then regrouped into a category with a similar meaning and checked for fit and relevance. Further, each of the categories was abstracted, merged and classified under the main themes investigated within the quantitative aspects of the survey. The categories and themes were verified by two researchers (ZS and JL) and were approved once consensus was reached among the research team.

Ethical considerations and clearance

Ethical approval was received from the University of New England Human Research Ethics Committee to conduct the study (HE17–239). Participation was voluntary and completion of the survey was considered to have given implied consent. Participants were able to withdraw from the study at any time by exiting the survey. The online questionnaire was anonymous and all open-ended responses naming organisations or individual identifying features were made anonymous with a universal pseudonym, for example ‘hospital organisation’.

Quantitative results

Response rates and demographics

A total of 452 participants started the survey with 300 (66.4 per cent) completing the full survey. Approximately 4000 ACORN members were invited to participate in the study, giving a response rate of 11.3 per cent. Overall, 92 per cent of participants were female, and the average age of participants was 47 years (Table 1). Most participants were registered nurses (88.2 per cent). The primary perioperative nursing role was scrub and scout (51.8 per cent). Most participants worked in a metropolitan setting (61.3 per cent). Over half of the participants (58.3 per cent) worked on average 31 hours or more per week clinically in a perioperative department. Overall, 124 (34.1 per cent) participants had not participated in any MOPS procedures,

Table 1: Participant demographics and MOPS participation rates

		N	%
Demographic characteristics			
Sex	Female	397	91.5
	Male	35	8.1
	Other	2	0.5
Age (years)		47.6 (*M*)	11.3 (*SD*)
Duration of living in Australia			
Born in Australia		331	76.6
Less than 5 years		5	1.2
Between 6 and 10 years		14	3.2
Between 11 and 15 years		9	2.1
Between 16 and 20 years		11	2.5
Between 21 and 25 years		7	1.6
More than 26 years		55	12.7
Hospital setting			
Metropolitan		266	61.3
Regional		124	28.6
Rural		44	10.1
State or territory of majority of perioperative care			
Victoria		114	26.3
New South Wales		122	28.1
Queensland		93	21.4
South Australia		45	10.4
Western Australia		20	4.6
Tasmania		15	3.5
Australian Capital Territory		14	3.2
Northern Territory		11	2.5
Clinical hours and experience			
Average time worked clinically in perioperative department	< 10	44	10.1
	10–20	62	14.3
	21–30	75	17.3
	31 or more	253	58.3
Experience as perioperative nurse (years)		18.9 (*M*)	11.7 (*SD*)

	N	%
Staff classification		
Registered nurse	383	88.2
Enrolled nurse	9	2.1
Other	42	9.7
Primary perioperative nursing role		
Scrub and scout	225	51.8
Anaesthetic nurse	70	16.1
Management	56	12.9
Consultant	7	1.6
Education	43	9.9
Academic/Researcher	3	0.7
Other	30	6.9
Highest nursing qualification		
Hospital certificate	64	14.7
Certificate lll/Vl	14	3.2
Diploma/Advanced Diploma	61	14.1
Bachelor degree	234	53.9
Master's degree	56	12.9
PhD/Doctorate	5	1.2
Length of ACORN membership		
Less than 1 year	71	16.4
1–5 years	142	32.7
6–10 years	73	16.8
11–15 years	64	14.7
16–20 years	28	6.5
20 or more years	56	12.9
Number of organ procurement procedures participated in		
0	124	34.1
1–5	142	39
6–10	45	12.4
11–15	21	4.6
16–20	7	1.9
20 or more	25	6.9

142 (39.0 per cent) had participated in one to five MOPS procedures, while 45 (12.4 per cent) had participated in six to ten procedures, 21 (5.8 per cent) had participated in 11 to 15 procedures, seven (1.9 per cent) had undertaken 16 to 20 procedures and 25 (6.9 per cent) had participated in 20 or more MOPS procedures.

Note: Not all participants completed all of the open-ended questions in the survey. This accounts for the varying values for responses received.

Training or education related to organ and tissue donation

Participants were asked to tick all applicable OTD education or training they had received (see Figure 1). The most common response was that no education or training had been received (38.4 per cent). Whether participants had received education or training was related to primary perioperative nursing role ($\chi^2(6, N = 354) = 23.65$, $p = 0.001$). Post-hoc tests showed a greater proportion of those working in an education role (86.1 per cent) had received training compared to those in a scrub and scout role (60.7 per cent), anaesthetic nurse role (48.4 per cent) and 'other' roles (39.1 per cent). A greater proportion of participants in a management role (70.8 per cent) had received training compared with those in an anaesthetic nurse role and in 'other' roles. Demographic variables and perioperative experience were not associated with whether participants had received OTD education or training.

Participants were asked to nominate all MOPS education or training they had received. Again, the most common response was no education or training had been received (50.3 per cent), followed by Department training (25.1 per cent). Two-thirds of participants (66.0 per cent, *n* = 231) stated that they had received no education or training prior to participating in MOPS. Whether participants had received education or training was related to length of time working as a perioperative nurse. Longer experience (*M* = 20.73 years, *SD* = 11.55) was associated with receiving education or training compared with shorter experience (*M* = 17.82 years, *SD* = 12.06), *t* (339) = -2.28, *p* = 0.023. Demographic variables were not associated with whether participants had received MOPS education or training.

Around one third of participants found MOPS education readily available (32.4 per cent, *n* = 99) and readily accessible (33.7 per cent, *n* = 99). Organisational support of education activities towards MOPS procedures was reported by 40.5 per cent of participants. Satisfaction with the level of education received was reported by 40.9 per cent (*n* = 121/296) of participants, and 48.6 per cent (*n*=139/286) agreed the education was beneficial to participation in MOPS. Less than half (45.3 per cent, *n*=131/289) of participants indicated they felt competent during participation in MOPS.

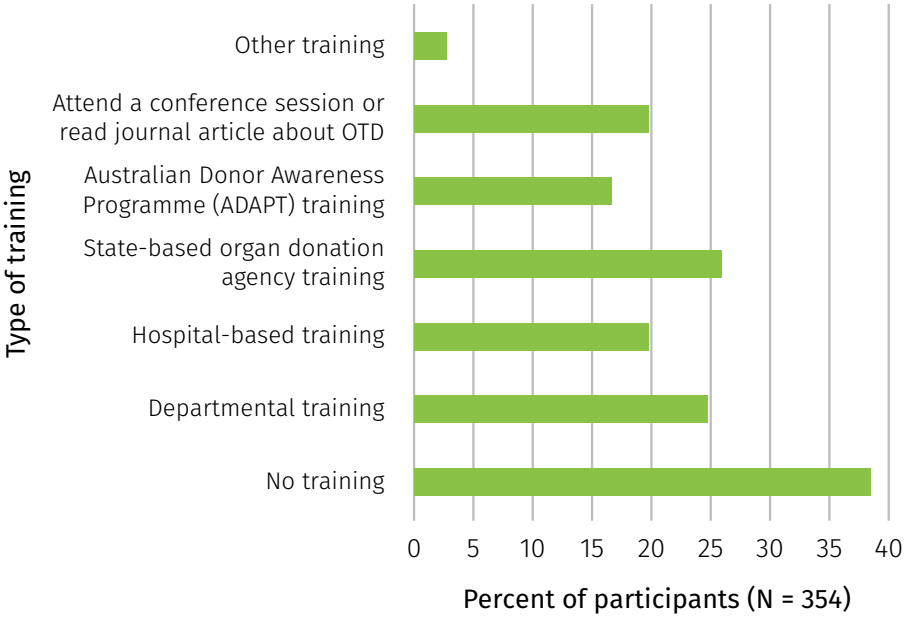

Figure 1: Per cent of participants who have received training or education related to organ and tissue donation

Knowledge

Overall, 76.4 per cent of participants reported familiarity with the organ and tissue donation and transplant process in Australian hospitals. However, only 44.3 per cent reported familiarity with legislation pertaining to organ donation and MOPS. Over half (56.6 per cent) of the participants reported familiarity with policy or protocols pertaining to organ donation and MOPS within their health care facility. Of the 363 participants that completed this section, 60.0 per cent agreed they were familiar with donation after brain death and donation after cardiac death donor pathways. Participants were relatively comfortable (*M* = 5.37) with the brain death diagnosis. However, participants reported a lack of familiarity with the MOPS process and procedure (*M* = 2.51), and the surgical instruments and equipment required to facilitate a procedure (*M* = 2.54). Participants agreed that

Table 2: Knowledge of brain death

	Yes (%)	No (%)	Unsure (%)
Are you aware of the clinical signs of imminent brain death?	47.6	14.1	38.3
Can someone who is brain dead breathe without support of a breathing machine?	21.3	24.2	54.5
Can someone who is brain dead ever wake up (recover)?	2.3	87.1	10.6
Will someone who is brain dead react (grimace, move away or blink) if someone touches their eyeball?	8.4	60.6	31.0
Can a person be brain dead even if the heart is still beating?	89.4	2.6	8.0
Is brain death different from a coma or a vegetative state?	86.1	2.3	11.6

their health care facility had formal guidelines for declaring brain death (M = 3.94), declaring donation after cardiac death (M = 3.88), obtaining consent for organ donation (M = 3.96) and obtaining consent for tissue donation (M = 3.94).

Knowledge of brain death

Less than half of the participants reported awareness of the signs of imminent brain death, and over half were unsure if a person who is brain dead can breathe without the support of a breathing machine (Table 2). Around ten per cent were unsure if someone who is brain dead can ever wake up or recover, and 31.0 per cent were unsure if they would react to touch. Most participants (89.4 per cent) were aware that a person can be brain dead even if the heart is still beating, and 86.1 per cent were aware that brain death is different from a coma or vegetative state. Overall, 83.6 per cent agreed that brain death is a valid determination of death.

Independent-samples t-tests were conducted to assess the relationship between education or training and understanding of brain death diagnosis and comfort with this diagnosis. Participants who had received some type of OTD education or training were more positive about brain death as a valid determination of death (M = 4.51) than those who had not received any education or training (M = 4.16), $t(207) = 3.32$, $p = 0.001$. Those with OTD education or training were also more comfortable with a brain death diagnosis (M = 5.81) compared with those with no education or training (M = 4.69), $t(219) = 5.89$, $p < 0.001$.

Similarly, those who had received any type of MOPS education or training were more positive about brain death as a valid determination of death (M = 4.57) compared with those who had not received any education or training (M = 4.20), $t(296) = 3.92$, $p < 0.001$. Those with any type of MOPS education or training were also more comfortable with a brain death diagnosis (M = 5.87) compared with those with no education or training (M = 4.92), $t(322) = 5.46$, $p < 0.001$.

Attitudes and beliefs in the operating room

On average, perioperative nurses hold positive perceptions towards OTD, particularly that OTD can save lives, and disagree that OTD is something they prefer not to think about (Table 3).

While participants were mainly in favour of OTD, they were less comfortable interacting with families of donors (Table 4). Participants were marginally comfortable communicating with families within the operating room and neutral about providing support or comfort to grieving families. Participants reported they are not comfortable explaining brain death to next of kin,

Table 3: Perioperative nurses' attitudes and beliefs towards OTD

General beliefs towards OTD	*N*	Range of scores	Mean score	Standard deviation
OTD can save lives	311	1–5	4.79	0.51
OTD is not something I think about	307	1–5	2.54	1.29
OTD can help the next of kin cope with grief	308	1–5	3.97	0.94
Facilitating OTD is a rewarding experience	306	1–5	3.92	1.02

OTD = Organ and tissue donation

Table 4: Perioperative nurses' interaction with families

Interacting with families	*N*	Range of scores	Mean score	Standard deviation
I do not feel comfortable explaining brain death to the next of kin.	298	1–5	2.41	1.23
I feel comfortable supporting or comforting grieving families in the operating room.	297	1–5	3.00	1.29
I feel comfortable communicating with families within the operating room.	297	1–5	3.05	1.27
I feel comfortable answering families' questions in relation to OTD procedures.	298	1–5	2.55	1.24
I feel comfortable approaching families that are visibly distressed.	300	1–5	2.97	1.28

answering families' questions about OTD procedures, or approaching visibly distressed families.

Personal attitudes and beliefs

Participants reported they are willing to donate their own organs and tissue for transplant and those of their next-of-kin and their children, and trust that donated organs and tissue will be allocated fairly (Table 5). Most participants would want to receive a donated organ if one were needed. Overall, participants disagreed that beliefs about life after death or religious beliefs, or distrust of a brain death diagnosis, would affect their decision to donate.

A personal attitudes scale (PAS) was derived by summing the first four items in Table 3 (score from 0–5) after verification of internal consistency of the scale using Cronbach's alpha ($\alpha = 0.94$). Correlational analysis was performed to examine the association of personal attitudes with beliefs towards organ and tissue donation (refer to the last five items in Table 5). Positive personal attitudes towards OTD are strongly negatively associated with wanting the body to be intact for life after death, $r(303) = -0.58$, $p < 0.001$ (large effect size), and negatively associated with not wanting to be a donor because of religious beliefs, $r(301) = -0.42$, $p < 0.001$ (large effect size). Positive PAS scores were also negatively associated with

Table 5: Perioperative nurses' personal attitudes and beliefs

Personal attitudes and beliefs	*N*	Range of scores	Mean score	Standard deviation
Would you donate some of your organs after death?	313	1–4	3.47	0.89
Would you donate some of your tissues after death?	312	1–4	3.37	0.93
Would you donate organs or tissues from an adult next of kin after his/her death?	309	1–4	3.32	0.87
If you have children, or were to have children, would you donate his/her organs or tissues after death?	306	1–4	3.24	0.92
I want my body to be intact for the life after death.	311	1–5	2.05	1.26
I don't want to be a donor because it is against my religious beliefs.	309	1–5	1.37	0.86
I don't want to be a donor because I don't trust the diagnosis of brain death.	311	1–5	1.54	0.96
I trust that organs and tissues will be allocated fairly.	309	1–5	4.23	0.12
I would want to receive an organ from someone who died if I needed one.	312	1–5	4.26	1.13

distrust of a brain death diagnosis, $r(303) = -0.47$, $p < 0.001$ (large effect size). Conversely, positive PAS scores are strongly positively associated with the belief that organs will be allocated fairly, $r(301) = 0.47$, $p < 0.001$ (large effect size), and the acceptance of a donated organ if needed, $r(304) = -0.64$, $p < 0.001$ (large effect size).

Positive PAS scores are significantly associated with religious background. Non-religious and atheists (M = 17.99) have a more positive attitude towards OTD compared with those who reported a Christian religion (M = 17.05, $F(2, 292) = 3.03$, $p = 0.045$). Demographic and workplace variables were not associated with PAS scores.

Support during multi-organ procurement surgery

During MOPS, participants reported they felt most supported by organ donor coordinators (38.5 per cent) and their peers (37.6 per cent), and least supported by management (20.4 per cent) and their organisation (17.9 per cent). Most participants (58.9 per cent) perceived that there was an expectation that they should cope with participation in a MOPS procedure.

Support after participation in MOPS

A large proportion of participants (85.9 per cent) reported that they coped moderately to extremely well with their MOPS experience. After participation in a MOPS procedure, 26.1 per cent (n = 57) stated they required support. The most common support was debriefing (78.5 per cent). The most common reason for requiring support was concern about a child (30.0 per cent). Support was most frequently provided by a fellow nursing colleague and least likely to be provided by a psychologist or psychiatrist. Most participants requiring support (n = 51) received it immediately (56.9 per cent) or within one or two weeks (23.5 per cent, 13.7 per cent respectively). The major reason participants (n = 50) sought support was to confide in someone about the emotional impact of participating in MOPS (46.0 per cent). Overall, 84.9 per cent found the support they received to be beneficial to their wellbeing.

Conscientious objection

Eleven participants reported they had expressed a conscientious objection to participating in a MOPS procedure. Seventy per cent (n = 7) reported that conscientious objection was permitted. When asked if they had suffered a negative effect from expressing a conscientious objection, 18.2 per cent (n = 2) agreed they had.

Qualitative results

Participants provided 1046 free text responses to the open-ended questions. The four main themes of knowledge, education, attitudes and support were identified with subthemes (Figure 2). Participant quotes are provided to support each of the subthemes.

Knowledge

Participants were asked if they felt they had adequate knowledge related to organ donation and the procurement process. Overall, 333 responses were received. Of these responses, 49.5 per cent (n=165) reported requiring further knowledge. Three subthemes emerged from the data, conceptualised as 'comprehensive knowledge', 'professional development opportunities' and 'application of knowledge into practice'.

Comprehensive knowledge

A large proportion of participants (89.7 per cent, 201 out of 224) indicated the need for comprehensive knowledge as imperative to their practice of assisting with these surgical procedures, that is, knowledge of the process and procedure as well as the necessary equipment and instrumentation.

> 'Understanding clearly the process from point to point as it is to take place. Knowing that there will be trained personnel attending the theatre suite to support the process and the staff involved, ensuring the proper processes are in place. Assurance via written acknowledgement and signed consent/agreement that all stages of the work-up to point of theatre/ procurement have taken place according to legislation, guidelines and policies. Exactly what

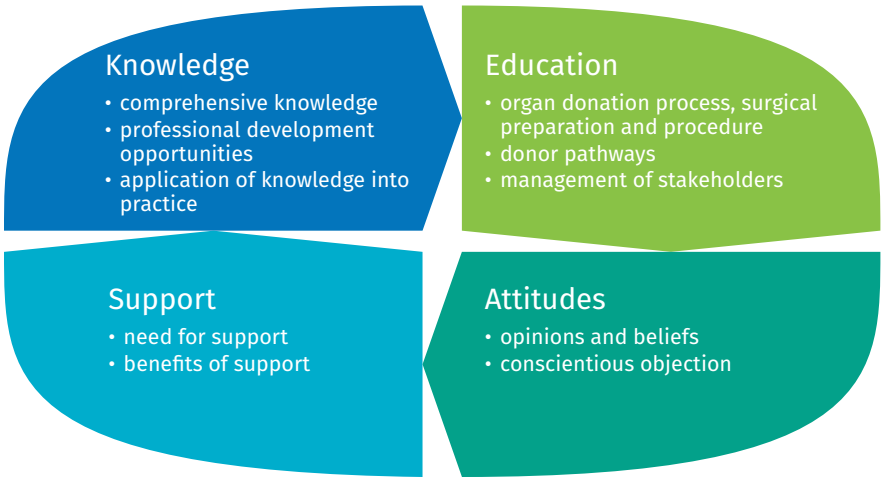

Figure 2: Themes and subthemes identified in qualitative results

> equipment the attending surgeon will require. Anticipated timing plans for staff involved [and] there is clear anticipation of when to be ready for donor patient admission and start time in theatre'. P315

In the absence of knowledgeable staff, participants revealed they would find participation difficult in these surgical procedures.

> 'I have adequate knowledge to be involved in the process with the support of the organ donation and procurement team who debrief staff prior to procurement start and who are available for queries throughout the process. I would not feel I have adequate knowledge if I was involved independently in the absence of this support and these resources.' P73

Professional development opportunities

One quarter of participants (25.7 per cent, 84 out of 333) reported that they had not received training or education in relation to organ donation or the procurement process and that access to professional development opportunities was difficult, particularly in regional and rural areas. Participants who had received some form of professional development opportunities found this knowledge beneficial to their practice; however, they recognised the importance of keeping up to date with current practice in this field.

> 'I have only been involved in the actual organ retrieval process a few times in my career but have attended several education sessions on the subject. Nonetheless, the infrequency of being involved in the procedure does leave me feeling my knowledge could always be improved.' P26

Application of knowledge into practice

Participants emphasised the need to have prior participatory experience in these types of surgical procedures as this provides an opportunity to consolidate their learning and apply their knowledge into practice for subsequent procedures.

> 'I always feel most comfortable when I have scrubbed a few times with [the] same surgeon/surgeons. I get to know their preferences and be ready for the next item, I find it always makes them less irritated! … when everyone is on the same page, it makes the process run more smoothly and less stressful for the team. Knowing the process and guidelines [is] also required'. P350

Education

Participants were asked what knowledge they think is imperative when participating in organ procurement surgery. Overall, 89.7 per cent (201 of 224) of the participants expressed the need for education specific to perioperative nurses. Three subthemes emerged from the data, conceptualised as 'organ donation process, surgical preparation and procedure', 'donor pathways' and 'management of stakeholders'.

Organ donation process, surgical preparation and procedure

As noted by participants, the need for education specific to perioperative nurses centred around the sub-theme 'organ donation process, surgical preparation and surgical procedure' encompassed the organ donation process, consent procedures for donation, how brain death diagnosis is confirmed, how to prepare and set up for the surgical procedure, the key surgical steps and stages of the organ procurement surgery, and how to package organs for safe transport.

> 'I believe the more knowledge the staff have the easier for them to deal with what can be a very confronting situation. I believe that the perioperative nurse needs to be aware of the full journey of the donor – how the decision is made, how they are prepared, how the surgery is done and what happens to the donor at the completion of the surgery. …. Last but not least, what happens to the organs following procurement….' P473

Donor pathways

Participants (37.9 per cent, 85 of 224) also wanted to gain further clarification and understanding of the donor pathways, the differences in procedures and practices along with the care of donors within the operating room.

> 'Understanding of donation pathway[s] and following hospital procedure[s]'. P230

Given the time-critical nature of DCD procedures, limited understanding of the DCD pathway led to reluctance to assist in procedures for this donor pathway compared to the DBD pathway.

> 'The difference in OR procedures between DCD and DBD. Some people here will happily do [assist with a] DBD donor [procedure] but not [a] DCD'. P279

Management of stakeholders

Participants (39.8 per cent, 120 of 301) stated the importance of managing all stakeholders and the difficulty in working with unknown external procurement teams to ensure the surgical event was coordinated successfully. 'Management of stakeholders' also encompassed the inherent personal needs of the donor's family and the relevant staff involved:

> 'Empathy for the patient['s] relatives and all the staff involved – ARE all the staff comfortable and suitable to be there? Knowledge of the [MOPS] procedure [and] compassion for all [staff] in the operating theatre'. P396

Attitudes

Participants were asked a number of questions in relation to their attitudes about organ donation and the procurement process. Two subthemes emerged from the data, conceptualised as 'opinions and beliefs' and 'conscientious objection'.

Opinions and beliefs

Most participants expressed positive attitudes towards organ donation.

> 'It is a life-giving opportunity when there is no hope for the donor.' P668

Negative responses were also reported by some participants. These responses centred around participants' experiences and informed their decision to remove their loved ones from the donor registry list.

> '... the donation process is a horrendous procedure, I would never allow [it] to occur to myself or to anyone I cared about, having been involved with this as a scrub [instrument] nurse over the course of ten years in theatre (and nearly thirty as an RN) ... Yes, donated organs make a difference, but everyone has to die some time, and it is still an expensive process keeping a donor [and] recipient alive, however callous that may sound, and organ donation is not always very successful.' (P648)

When participants were asked about their opinions and beliefs towards OTD after cardiac death most responses were positive (62.3 per cent, 111/178).

> 'I am in favour of donation – clearly life can't be sustained without cardiac function. If a patient's organs can potentially help another person's quality of life, then I am in favour of this.' P615

A small proportion (7.3 per cent, 12/178) reported negative opinions.

> 'I am not comfortable with it [donation after cardiac death]. I almost feel like a vulture, waiting for everything to stop and then swoop in and smash and grab [organs]'. P666

Conscientious objection

Participants' reasons for expressing a conscientious objection in these procedures included personal beliefs, self-preservation and when the donor was known to them. Only 5 per cent (n=11) reported that they had expressed a conscientious objection. Of these 11 requests, 70 per cent (n=7) reported they were supported while nine (82 per cent) reported experiencing a negative effect from expressing a conscientious objection.

> 'All previous answers are in relation to me not participating due to understanding my emotional limits. I didn't conscientiously object for any political reasons per se, just for my own self-preservation. My requests to not be involved were always considered graciously and I was never made to feel like I was letting anyone down.' P709

Support

Two subthemes of support emerged from the data, conceptualised as 'need for support' and 'benefits of support'.

Need for support

The importance of receiving some form of support was identified by 55.6 per cent of participants. Of this number, 93.5 per cent (173 of 185) reported the need for support resources to be made available to nurses before and after participation.

> 'This is extremely important in an ongoing way, as our staff are a very important resource and they should be respectfully given as much (or more assistance) than they need. The contribution perioperative nurses make is unquantifiable. A variety of resources from a variety of sources should be volunteered frequently and as needed.' P872

The need for support was further empathised, in particular, when the donor is a child, and the effects of this on staff.

> '[Support services for staff participating in MOPS are] vital. One needs to be able to work through one's thoughts and emotions. Donors come from every age and background, and some hit home more than others.' P903

Benefits of support

Participants (14 per cent, 26 of 185) who did receive some form of support reported the beneficial effects to their overall well-being and ability to continue within their professional roles. Participants recognised it is vital to manage these situations when they arise to avoid long term mental health issues.

> 'I believe it [support for staff participating in MOPS] is critical, many people may be fine at the time but may not be fine in the future. Affording them support at the time and making them [perioperative nurses] aware of support systems available in the future is essential for their mental health. I think of compassion fatigue or PTSD [post-traumatic stress disorder] and what a difference support resources early on would make.' P893

Discussion

This study has highlighted that this sample of Australian perioperative nurses hold positive attitudes towards OTD and that most are familiar with the organ and tissue donation and transplant process in Australian hospitals. However, a need was identified for education or training in the MOPS process and procedure and in the surgical instruments and equipment required to facilitate a procedure. Over half of the participants reported they did not feel competent during participation in MOPS due to a lack of education or training. Support was also identified as an area that was lacking and needed to be improved.

This study identified that education is a key component for perioperative nurses actively participating in MOPS. Participants who had received some form of education or training had a better understanding of brain death diagnosis and felt more comfortable with this diagnosis. This was also reflected in the study by Jelinek et al.[10] of emergency physicians and nurses. Although participants in the current study had a higher degree of knowledge of brain death diagnosis compared to previous studies of perioperative nurses[4], they indicated that they wanted further knowledge of most aspects of the organ donation process and the surgical procedure to ensure that they were well equipped to undertake their role. Previous studies support this finding[4,10,33,42].

Participants indicated that opportunities for professional development were difficult to access and that knowledge was often acquired at the time of participation. This finding was consistent with other health professionals' experiences of working within organ donation and transplantation teams, where greater professional education is desired rather than relying solely on experiential learning[10,42,43]. An earlier study found a lack of targeted education and training for perioperative nurses and the current study confirms the issue still exists[4].

At present there are educational resources available for perioperative nurses to access, such as the ADAPT program, state-based organ donation agency training and local hospital departmental training along with education provided at conferences and via peer-reviewed publications. However, the current study has identified barriers to staff obtaining education and training such as limited accessibility (e.g. in regional and rural areas or staffing issues) and time constraints because of the time needed to undertake professional development.

Participants within this study reported a willingness to donate tissues or organs at the time of their death. This was similarly identified among other studies of perioperative nurses where willingness to donate organs has been explored[6,29]. However, this view was not compatible with other earlier studies where other health professionals revealed lower levels of commitment towards donating their own organs for a variety of reasons[5,20,24,29]. Individual attitudes and beliefs towards organ and tissue donation were impacted by religious beliefs and religion is an important precursor to how health professionals view OTD. Other studies have also confirmed that intentions to donate were higher among non-religious people[19,20].

While the requirement for support following participation in a MOPS procedure was identified, support resources are often lacking within health care facilities. Only one study has focused on the provision of support and the efficacy of such support for perioperative personnel[18] where similar findings were identified. This indicates the importance of facilitating support to all health professionals involved in this type of work.

Limitations

A number of limitations of this study can be noted. The survey was modified to better represent the perioperative nurse practice environment; however, no pilot or psychometric testing was undertaken. Self-report surveys have a risk of responder bias where responses are based solely on the subjective views of the participants. Also, given the low response rate it was difficult to determine how representative the sample was and how much could be generalised from it. Further, only one reminder was sent out on behalf of the researchers which may have impacted the participation rate.

Conclusion

Overall, perioperative nurses acknowledged the need for further in-depth knowledge and education in all areas of the organ donation process and transplantation procedure. Nurses overall reported positive attitudes and beliefs towards organ donation and facilitating these surgical procedures. Given the stressful nature of their work, further research should focus on support resources to ensure perioperative nurses receive appropriate work-based support. A recommendation from this study is that health services support the implementation of a national OTD perioperative nursing education program.

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