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Paediatric nursing research in Australia: A descriptive survey

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ABSTRACT

Background: High-quality paediatric nursing research is needed to inform and advance nursing practice. To date there has not been a systematic description of the current state of Australian paediatric nursing research.
Aim: The aim of this study was to identify and describe demographic, professional, and research characteristics of Australian nurses currently active in paediatric nursing research.
Methods: An Australia-wide cross-sectional online survey was used. Research-active paediatric nursing academics/clinicians completed items relating to demographic characteristics, professional qualifications/roles, clinical/research experience, research focus, role/s within the research team, research output, grant funding, and dissemination strategies.
Findings: Of the 100 survey respondents, there was an average 26.7 years nursing experience, but only 9.4 years research experience. Most were employed in tertiary acute care facilities (40.0%) or universities (37.0%), with backgrounds in intensive/critical care (45.2%), medical/surgical nursing (23.7%) or primary care/community health (22.6%). Most held higher research degree/s (89.9%) and worked within interdisciplinary teams (89.0%) across the spectrum of research activities. Research outputs were: median 20 career-total publications (h-index = 9.5, citations = 200), and an average 5 grants awarded (median AUD$21,000 total funding).
Discussion: Paediatric nursing researchers in Australia have diverse educational and professional backgrounds, research foci, and work locations. Although research output indices place respondents on par with researchers from other health disciplines relative to career stage, total research funding and national funding success is notably lower compared to researchers from other health disciplines.
Conclusion: Paediatric nursing research involves diverse roles, skills, experience and clinical foci. This study represents a first step toward developing a programmatic approach to paediatric nursing research in Australia.

Summary of relevance

Problem or Issue

Paediatric focussed nursing research is necessary to inform care delivery to improve patient outcomes. The current paediatric nursing research capacity and workforce within Australia is unknown.

What is Already Known

Globally, nursing research has grown and continues to grow. However there are difficulties in expanding nurses' capacity to undertake research.

What this Paper Adds

Paediatric nursing research involves diverse roles, skills, experience and clinical foci. Australian paediatric nursing research

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is building in quality. A coordinated approach to advancing the research agenda in this area is needed.

1. Background

Children and their families are heavy consumers of health care, and paediatric nurses play a key role in the provision of care. AIHW (2017) reports 914,190 episodes of annual admitted patient care (for children up to 19 years of age), involving 2,286,711 patient days, mainly in the 0–4 years age group (390,268 episodes of admitted patient care; 1,228,606 patient days), in Australia alone. Nurses are the healthcare providers who provide most care and treatment to children in hospital. Nurses also provide treatment in non-traditional healthcare facilities, with children with chronic and complex health conditions increasingly managed across outpatient and home care settings (Whiting, Caldwell, Donnelly, Martin, & Whiting, 2015). Health promotion during childhood is commonly led by community-based nurse specialists, supporting infancy, immunisation, and other wellness screening and measures (Borrow, Munns, & Henderson, 2011; Turley, Vanek, Johnston, & Archibald, 2018).

Paediatric nursing, like all specialties, requires high quality research to inform evidence-based practices, to prevent harm, promote recovery and encourage wellness. The automatic generalisation of research evidence from adult populations to paediatrics is considered dangerous, due to differences in physiology, pathophysiology, psychosocial development and health services (Harron, Ramachandra, Mok, & Gilbert, 2011; Higgins & Green, 2005). However, in comparison to adult nursing research and other specialties (e.g., oncology, women's health, and critical care), the available research evidence in paediatric nursing is limited. Thus, there are needs to conduct more research specific to paediatric nursing.

Previous Delphi studies have identified priority areas for nursing-related, child health research in specific populations [in Europe (Brenner et al., 2014; Tume, van den Hoogen, Wielenga, & Latour, 2014; Wielenga, Tume, Latour, & van den Hoogen, 2015; Williams et al., 2017) and Australia (Wilson, Ramelet, & Zuiderduyn, 2010)]. The respondents were mainly paediatric nursing researchers, but priorities still varied extensively between studies. They included the recognition of the deteriorating child, supporting parents, safe transfer of the critically ill child, reducing medication errors, pain management, and end of life care.

While some progress has been made toward determining which areas of paediatric nursing research should be prioritised, a systematic description of the current state and workforce of paediatric nursing research in an Australian context is lacking. It is unknown how well paediatric nursing academics have focussed on these areas of priority, where further work is needed, and the resources that have been provided. It is vital to obtain an overview of the Australian paediatric nursing research workforce to assist paediatric researchers, educators and policy makers to develop workforce planning and provide evidence for decisions influencing the future of paediatric nursing in Australia. In order to support priority-driven research and a programmatic approach to paediatric nursing research, a comprehensive description of the current state of paediatric nursing research is necessary (Marshall, Cook, & Canadian Critical Care Trials Group, 2009), including identification and description of the Australian paediatric nursing research workforce and dissemination methods.

This study aimed to:

1 Describe the demographic, role, education, and experience of nurses involved in paediatric research in Australia;
2 Identify the broad topic areas and methodological characteristics of current research projects that involve paediatric nurses in Australia; and
3 Ascertain the method by which Australian paediatric nurses disseminate research results.

2. Methods

2.1. Design

A descriptive study, using a national online survey, was used to identify and describe nursing academics and clinicians, and their research profile, currently active in paediatric healthcare research in Australia.

2.2. Participants

The online national survey was distributed through academic and professional networks, to recruit nurses currently engaged in nursing and interdisciplinary research relating to paediatrics, across all health services (preventative, acute, homecare). This includes professional colleges (including the Australian College of Children and Young People's Nurses [ACCYPN], the Australian College of Critical Care Nurses [ACCCN], the Australian and New Zealand Children's Haematology / Oncology Group [ANZCHOG], Australian College of Operating Room Nurses [ACORN; aka Australian College of Perioperative Nurses], Australian College of Nursing [ACN], Australian Primary Health Care Nurses Association [APNA], Australian Vascular Access Society [AVAS], College of Emergency Nursing Australasia [CENA], Cystic Fibrosis Association, the Medical Imaging Nurses Association [MINA], Thoracic Society of Australia and New Zealand [TSANZ], Australian College of Nurse Practitioners [ACNP], Australian Association of Maternal Child and Family Health Nurses, Australian College of Infection Prevention and Control [ACIPC]). The survey was also distributed via social media (i.e., Facebook and Twitter). The invitation was sent by the organisation on behalf of the researchers. The researchers were not given the names or contact details of any members. University-based nursing academics were identified through a review of School of Nursing university websites and approached directly via their university emails.

2.3. Data collection

The online survey was developed after a review of the literature. The survey contains 28 questions including both open-ended questions and multiple-choice questions which allowed respondents to select as many answers as were applicable. It includes a demographic description of the respondent (age, gender), specialty / research interest, academic or clinical base, methodological skills, academic outputs (h-index, publications, grants), training (including qualification), years of clinical and research experience. Areas of research interest were categorised in accordance with the Australian and New Zealand Standard Research Classification (ANZSRC), Fields of Research (FoR) categories (Australian Bureau of Statistics, 2008).

To ensure the survey's completeness, accuracy and practical utility prior to use (Rattray & Jones, 2007), the survey was assessed for content validity by the investigator group, with minimal changes required. The survey was distributed using an online survey tool (Lime Survey®), via the groups listed above.

2.4. Ethical considerations

Ethics approval was obtained from the Griffith University's Human Research Ethics Committee (GU Ref No: 2018/369) before

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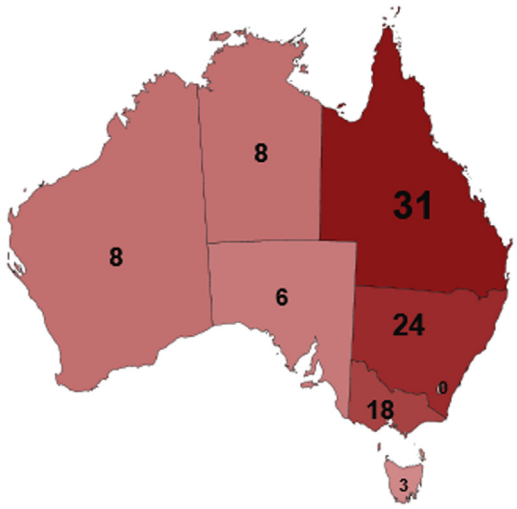

Fig. 1. Distribution of survey respondents (N = 98; missing data = 2).

the study commenced. An information sheet was provided to all participants. Participation in the survey after review of the information sheet was considered as consent. Participation in the study was completely voluntary, and did not affect relationships with the organisation which distributed the link to the survey. All survey responses were kept confidential, with only the research team having access to the de-identified data and participant anonymity guaranteed.

2.5. Data analysis

All results were analysed descriptively according to their characteristics and distribution. Continuous variables are described as mean, median, standard deviation (SD) and interquartile range (IQR) values. Categorical data are described using frequencies and percentages. Response rate calculation was not feasible, due to distribution methods (i.e. mixed paediatric / adult associations, social media). Data were analysed using PASW 22.0 (SPSS Inc, Chicago, IL). Missing data are described throughout the results tables.

3. Results

3.1. Sample characteristics

There were 100 respondents to the national survey. Table 1, and Figs. 1 and 2 display the demographic and professional characteristics of the respondents. The majority of respondents (46%) were between 50–59 years old, with mean 27 years (SD 11) of total nursing experience, and 19 years (SD 10) paediatric nursing experience. Most paediatric nursing researchers worked in Queensland (32%) or New South Wales (24%). The majority of respondents currently work either in clinical roles (i.e. clinical nurse consultants or registered nurses) or academic roles (i.e. professor or lecturer) in either a tertiary health facility (acute care) and/or a university. Respondents reported a broad range of clinical specialities with a high proportion of respondents working in intensive care/critical care. Most respondents held a postgraduate degree such as Graduate Certificate, Masters or Doctorate.

3.2. Research experience

Table 1 and Figs. 3–5 summarise the research-related characteristics of the respondents. The average years of research practice was 9.3 years (SD 7.9), with the majority of respondents having either a relevant research masters and/or PhD degree. More than half of respondents worked in an interdisciplinary team with various research roles (Fig. 3). A wide range of research interest areas were reported with the leading research interests being family care, intensive care, health promotion, and community child health (Fig. 4). Qualitative descriptive / exploratory, mixed method, systematic review and randomised controlled trial (RCT) were the most commonly adopted research methods (Fig. 5).

Table 1
Demographic, professional and research characteristics of respondents (N = 100).

Demographic characteristics	
Age group, N (%)[a]	
< 30 years	4 (4%)
30-39 years	20 (21%)
40-49 years	20 (21%)
50-59 years	43 (46%)
≥ 60 years	7 (7%)
Professional characteristics	
Current employer, N (%)[a]	
Tertiary health (acute care) facility	38 (40%)
University	35 (37%)
Jointly funded position (health facility and university)	7 (7%)
Research Institute	4 (4%)
Primary health provider	3 (3%)
Government department	3 (3%)
Other	4 (4%)
Years of nursing practice (all roles), Mean (SD)[b]	27 (11)
Years of paediatric nursing practice (all roles), Mean (SD)[b]	19 (10)
Clinical Specialities, N (%) [b,f]	
Intensive Care / Critical Care	42 (45%)
Medical / Surgical	22 (24%)
Primary & Community Health	21 (23%)
Emergency	13 (14%)
Rural Health	11 (12%)
Oncology / Haematology	8 (9%)
Perioperative	6 (6%)
Mental Health	6 (6%)
Other	32 (34%)
Qualifications (for clinical expertise), N (%) [b,f]	
Diploma	9 (10%)
Bachelor	42 (45%)
Graduate Certificate	36 (39%)
Graduate Diploma	19 (20%)
Masters	45 (48%)
Doctorate	35 (38%)
Research characteristics	
Years of research practice, Mean (SD) [c]	9.3 (7.9)
Post-graduate qualification relevant to research, N (%) [d]	80 (89.9%)
Graduate Certificate	5 (6%)
Graduate Diploma	2 (2%)
Masters	32 (35%)
PhD	41 (46%)
Work within an interdisciplinary team, N (%)[f]	66 (89%)

Note: Missing data [a]n = 6, [b]n = 7; [c]n = 10, [d]n = 11, [e]n = 26. [f] multiple responses per participant.
SD = Standard deviation.

3.3. Research performance and output

A wide range of publication experience was observed in the national survey with nearly one quarter of participants commencing publishing between 2011 and 2015 (Table 2). Participants reported a median of 15 published peer-reviewed journal articles in the last 5 years (IQR 23), and 20 in their entire career (IQR 42). The self-reported average h-index was 11.5 in Google Scholar and 9.5 using Scopus. In addition, median citations in Google Scholar were 144 in the last 5 years, and 200 in total career.

Regarding research funding, respondents reported median total funding amount of $21,000, with an average five successful grants. Most successful funding was from professional organisations, state government or/and other funding bodies. Most respondents chose to disseminate their research findings by traditional methods such

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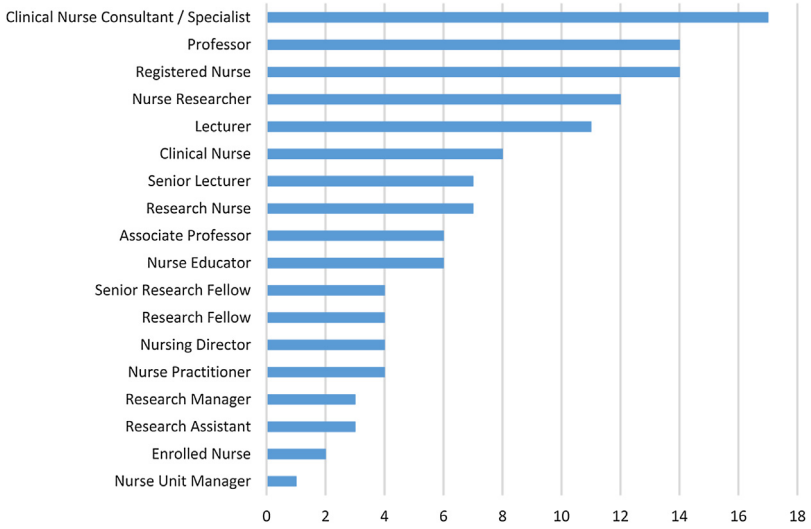

Fig. 2. Current role / job title in % (N = 94; missing data = 6); respondents could choose >1.

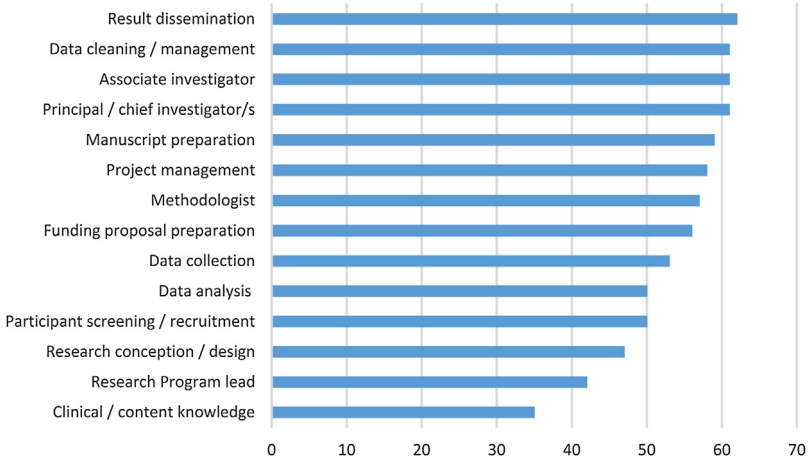

Fig. 3. Role within research in % (N = 74; missing data = 26).

as peer-reviewed publications, international conferences, local conferences and service presentations (Fig. 6). As a whole, social media such as LinkedIn, websites and podcasts, were not commonly reported methods to disseminate research findings, however Twitter was the exception with almost half the respondents utilising this.

4. Discussion

This study describes the demographic and professional characteristics of 100 nurse respondents involved in paediatric research in Australia, identifying the topical and methodological properties of current research activity and popular methods of dissemination of research findings. It demonstrates the breadth, diversity and emergence of the Australian paediatric nursing research agenda and workforce.

The average age of paediatric nursing researchers (majority of participants were between 50–59 years old) were older comparing with the average age of Australian nurses (44.6 years) (Health Workforce Australia, 2014). The average total nursing experience of paediatric nursing researchers (27 years) is more than the participants in a previous nursing research priority study (62% participants had 0–15 years' experience) in the United States (Schmidt, Montgomery, Bruene, & Kenney, 1997). There was a dichotomy between those surveyed, with most either based in complete clinical (i.e. at tertiary health facility or equivalent) or academic positions (i.e. at university or equivalent), and only 7% in jointly funded health service-university appointments. This detachment between clinical and academic facilities and roles may be associated with a reduced capacity to develop a nimble, clinically-focussed research program, receive research training, and/or ensure knowledge translation (Squires et al., 2011; Walsh et al., 2012). Joint research-clinical positions, such as those seen in other disciplines are emerging in nursing. These positions provide an exciting opportunity to improve this potential disconnection between clinical and academic facilities (Smith, Gullick, Ballard, & Perry, 2018; Wallis & Chaboyer, 2012). Results also indicate that nurses participating in paediatric research had a high level of clinical experience, especially within paediatrics. These findings may be suggestive of a move toward a career in research following an initial period of practice in clinical roles within the nursing workforce, which is a significant advantage when designing, leading and participating in clinically-focussed research. The competency standards for practice for R Registered Nurses clearly states that "the Registered Nurse contributes to quality improvement and relevant research" (NMBA, 2016, pg. 4). In Australia, we are also driven to integrate research into our clinical practice through reports such as the McKeon review which provides a strategic overview

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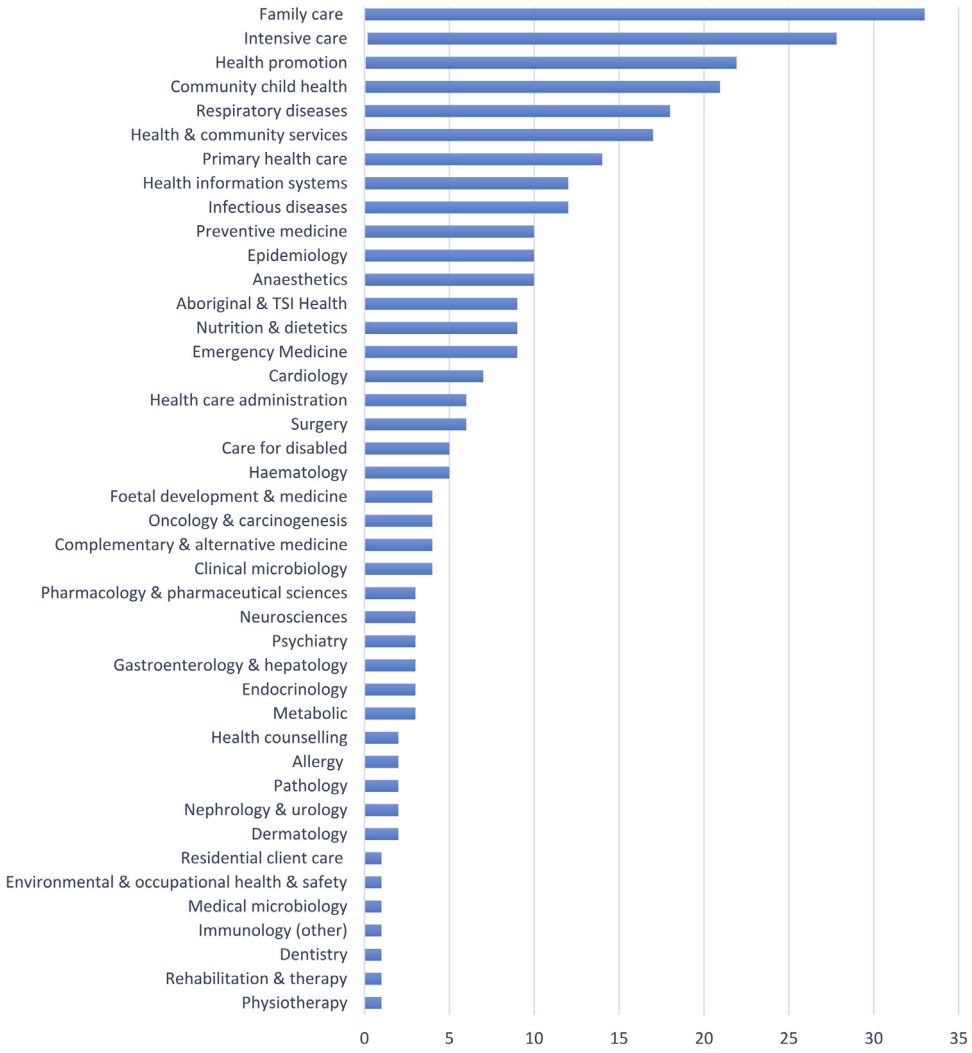

Fig. 4. Areas of research interest (N = 74; missing data = 26).

of health and medical research (Department of Health & Aging, 2013).

The areas of research reported by the survey respondents demonstrate the breadth of paediatric research being led by nurses in Australia, however the ANZSRC Field of Research (FoR) categories do not allow for an in-depth reporting of clinical content. Overall, the responses were similar to the outcomes of previous Delphi studies (Brenner et al., 2014; Williams et al., 2017; Wilson et al., 2010) and non-specialised Australian nursing research (Wilkes & Jackson, 2011). Community child health, family care, intensive care and health promotion were the leading areas of research interest reported by this study sample. Other areas of research interest were widely varied and reflected the diverse clinical backgrounds of the nurses surveyed.

Methodological characteristics were also heterogeneous in this cohort with qualitative descriptive/exploratory, mixed methods, systematic reviews and RCTs reported as common methods of research. The methods of approach to research reported in this survey are consistent with popular methods of health research (Brink, Van der Walt, & Van Rensburg, 2006), which are necessary to inform complex healthcare practice. The use of high quality and impactful research designs is likely to be as a direct result of research training, with over one third of the survey participants reporting a PhD or equivalent. Previously Australian nurses relied more on surveys as their data collection method (Borbasi, Hawes, Wilkes, Stewart, & May, 2002) but there is a trend of increasing research quality and complexity (Wilkes & Jackson, 2011). Recently, paediatric nursing studies have been described as having the same scientific creditability and rigor as medical studies (Devos et al., 2018).

Publication experience and citations varied widely, demonstrating contrasting levels of research experience. The amount of research funding awarded to the respondent paediatric nurses ranged between $0 and over $36 million (AUD), with a median of only $21,000 within their entire career. There were a notable amount of data missing from the academic outcomes section of the survey which may be indicative of novice track records in publication, emerging experience in funding applications, and an overall lack of focus on traditional academic outputs. However, the data received demonstrates the challenges for nurses to compete for large program funding able to significantly impact practice change, when the majority of funding opportunities are targeted toward other health disciplines. Reviewing Australian Government NHMRC funding from the previous three years (2016–2018) using 1110 Nursing FoR code, demonstrated the small proportion of funding given to nursing research (Nhmrc, 2019). It was less than 1% of total funding, however this may not account for nurses in teams, or nurses recording other FOR. Paediatric nursing does not have its own field within Nursing FoR, as does other areas of nursing (e.g. 111,001 Aged care nursing). Multiple factors contributed to

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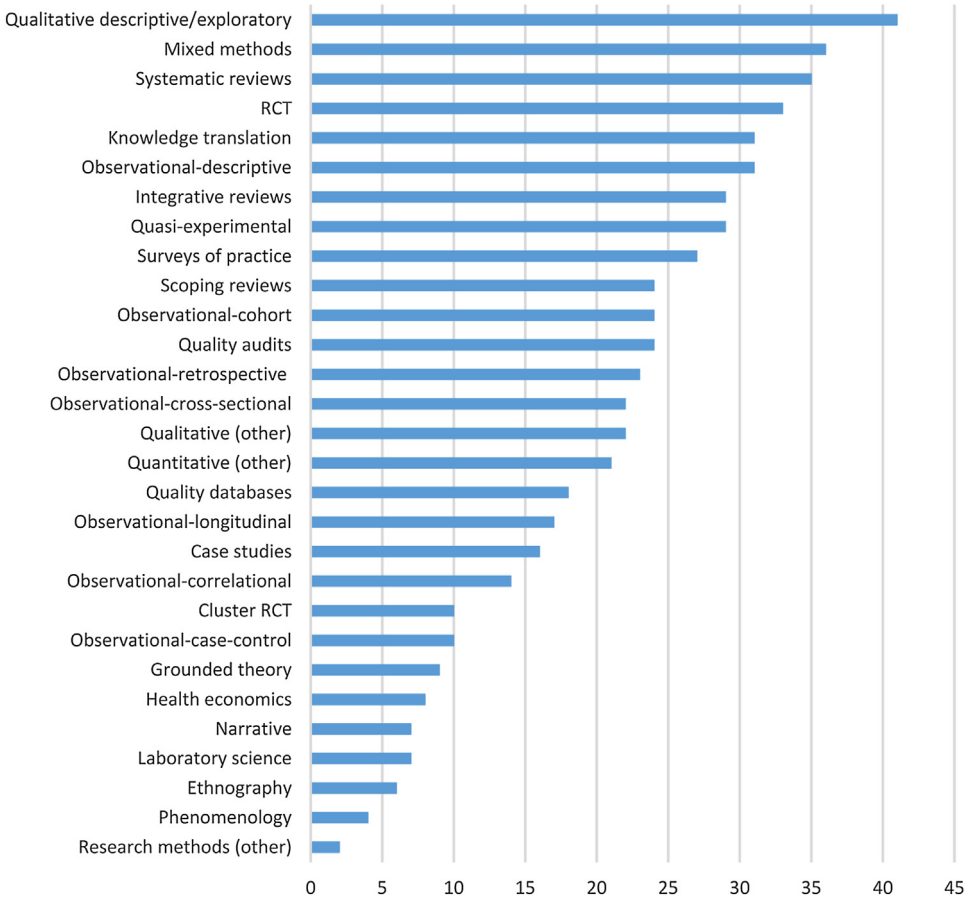

Fig. 5. Research methods used (N = 74; missing data = 26).

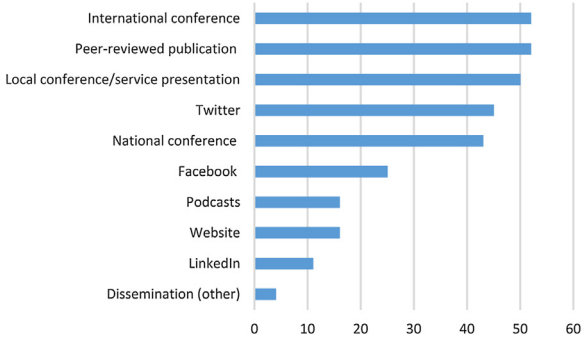

Fig. 6. Dissemination methods (N = 64; missing data = 36): multiple responses per respondent.

the limited research funding for nursing research. One reason is a significant volume of nursing research appears to be qualitative and literature review in nature, which may contribute to the difficulties in securing funding, especially when studies were reviewed against medical studies or clinical trials. To help understand and appreciate paediatric nursing research, a new field within Nursing FoR should be created. Low level of funding and organisational constraints have previously been acknowledged as hindering research capacity for nurses (Segrott, McIvor, & Green, 2006).

Although this study has provided new insight into the activities of paediatric research nurses across Australia, some limitations need to be acknowledged. There may be selection bias, as the survey was distributed through academic and professional networks. We are unable to calculate the response rate as we do not know how many nurses it was distributed to. Therefore, the results might not be an accurate representation of all paediatric nursing researchers' activities across Australia. Further research should investigate how nurses involved in paediatric research in Australia are supported by their peers and institutions to grow research capacity and further research careers, and the perspectives of nurses aspiring towards, or leaving, a career in research may be of interest.

Outcomes of this study suggest that nurses involved in paediatric research in Australia are highly experienced clinicians, with extensive clinical and research backgrounds with considerable post graduate qualifications. Nurses in this field are providing an invaluable contribution to paediatric research in Australia, and are uniquely positioned to offer collaboration and support to their research peers. An Australian network for paediatric nursing researchers would be an important step to improve visibility, grow capacity and improve health outcomes for paediatrics through high level evidence.

The findings of this study provided an important overview of Australian paediatric nursing research, informing potential implementations. Firstly, tertiary education should focus on providing essential research training during both undergraduate and postgraduate education. Secondly, to create a rich research culture in paediatric clinical settings paediatric nurses should be provided with more research practice opportunities and adequate training. This can include involving them in simple research processes (e.g. data collection). This will grow research interest by solving meaningful clinical issues with mentorship by experienced paediatric nurse researchers. In short, a strategic plan is required to develop paediatric research activities.

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Table 2
Research output (N = 100).

Year commenced publishing, N (%) [a]	
Prior to 1990	2 (3%)
1991 – 1995	7 (12%)
1996 – 2000	10 (17%)
2001 – 2005	8 (14%)
2006 – 2010	9 (15%)
2011 – 2015	14 (24%)
After 2016	7 (12%)
Number of peer-reviewed journal articles, Median (IQR), range (min-max)	
Last 5 years [b]	15 (23), 100 (0-100)
Entire career [a]	20 (42), 400 (0-400)
H-Index, Median (IQR), range (min-max)	
Google Scholar [c]	11.5 (15), 52 (0-52)
Scopus [d]	9.5 (13), 33 (0-33)
Citations	
Last 5 years (Google Scholar) [e], Median (IQR), range (min-max)	144 (890), 4500 (0-4500)
Career total (Google Scholar) [f], Median (IQR), range (min-max)	200 (1336), 7600 (0-7600)
In clinical practice guidelines, n (%) [g]	14 (22.6%)
Number of grants awarded (any role, total), Median (IQR), range (min-max) [h]	5 (15), 125 (0-125)
Total funding, Median (IQR), range (min-max) [i]	$21,000 (791,939), 36,668,512 (0-36,668),512)
Successful funding, N (%) [i;j]	
National funding	18 (28.1%)
Hospital foundations	18 (28.1%)
Professional organisations	33 (51.6%)
State government	33 (51.6%)
University funding	22 (34.3%)
Other funding	34 (53.1%)

Missing data: [a]N = 43; [b]N = 40; [c]N = 64;[d]N = 70; [e]N = 67; [f]N = 66; [g]N = 38; [h]N = 47; [i]N = 52; jmultiple responses per participant.

5. Conclusion

This study has provided some insight into paediatric nurses' research activities in Australia. The major differences between this study and previous studies include the diversity of sub-speciality areas being researched by experienced nurses, despite the majority being early career researchers.

Key challenges were recruitment of participants by being reliant on dissemination of the survey through professional bodies and personal contacts. However we believe that we achieved a reasonable cross-sectional representation of the research being undertaken by paediatric nurses in Australia.

Australian nursing research continues to grow and the methodologic quality is improving. Paediatric nursing research in Australia is diverse and there are opportunities for collaboration leading to improved health outcomes.

Research ethics statement

This paper reports the findings of a research study that adhered to the National Statement on the Conduct of Human Research by the Australian National Health and Medical Research Council, and has been approved by the Griffith University Human Research Ethics Committees (GU Ref No: 2018/369).

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