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A scoping review of nursing research priorities in pediatric care

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ABSTRACT

Problem: Priority setting for pediatric nursing is important to plan, coordinate and direct future research. The aim of this scoping review was to systematically identify and synthesise the nature, range and extent of published pediatric nursing research priorities.
Eligibility criteria: English language full text publications focusing generic nursing research priorities for the child or adolescent, indexed in CINAHL, EMBASE, The Cochrane Database of Systematic Reviews, AMED, MEDLINE and PsycINFO and published from 2008 to 2019.
Sample: A total of 789 citations were identified, 44 full text articles were retrieved and assessed for eligibility and eight studies were finally reviewed, quality assessed (CREDES) and synthesised.
Results: All eight studies used a consensus building method to identify research priorities reported by nurses. Six used Delphi technique, one Nominal Group Technique (NGT) and one consensus workshop. CREDES score range was 10–14 of a possible 16. Synthesis of the 234 nursing research priorities generated four themes; evidenced-based practice, pediatric context, child and family-centered care; pediatric nursing, with 14 subthemes.
Conclusion: The nursing research priorities reported appear to be still current and important to nurses. There was a focus on acute care, with fewer priorities reflecting areas of child-, school-, or mental- health. Consumer and community priorities have not been reported.
Implications: These nursing research priorities can be used to inform the national or local research agenda, although there is a need to establish priorities from the perspective of all stakeholders and in particular, identify what is important to consumers.

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Introduction

In many countries nurses and midwives constitute more than 50% of the health workforce, and worldwide there are estimated to be 21 million nurses and midwives (World Health Organisation, 2017). By way of example, in 2015 in the United States there were 2.7 million nurses, in the United Kingdom 545,000 nurses and Australia 273,000 nurses (World Health Organisation, 2017). The expected competencies or capabilities for registration as a nurse are articulated by Practice Standards (American Nurses Association, 2004; Nursing and Midwifery Board of Australia, 2016). While some countries e.g. Ireland, UK and USA offer children's nursing education at undergraduate level, a majority of countries offer preparation for specialty practice such as pediatric or children's nursing as a post registration or post graduate level. Pediatric or children's nursing involves working in partnership with children and their families to negotiate, plan and deliver child and family-centered care, education and support (Nursing & Midwifery Council, 2010). Whilst pediatric nursing is a small specialty within the overall workforce; fewer than 5% of Australian Registered Nurses (Australian Institute of Health and Welfare, 2018), they make a unique and important contribution to children and their families' health outcomes and their healthcare experiences.

Thinking critically and analysing evidence for nursing practice is a core requirement for nurse registration (Nursing and Midwifery Board of Australia, 2016). For pediatric nurses to deliver Evidenced-based child and family-centered care, being able to access, interpret and apply best available evidence is key. Delivery of evidence-based practice is context based and is a combination of the nurse's clinical experience as well as the child's and family's values, circumstances, preferences and the availability of relevant research findings (Hoffmann, Bennett, & Del Mar, 2013). The rapidly increasing volume of research findings available means that in order to use evidence to guide their clinical practice, nurses are informed by practice guidelines. Development of clinical practice guidelines can be undertaken at international, national, local health service, hospital or department level and involves synthesis and translation of research findings. These offer specific recommendations to help health practitioners, including nurses, decide on most appropriate care (National Health and Medical Research Council, 1999).

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Key to clinical practice guideline development is the methodological approach used to assess the quality of the research reviewed. Determination of levels of research evidence was once sufficient, but in recent years quality appraisal includes consideration of the strength of recommendations that take into account context, health benefit versus harm, burden and cost. The GRADE process has become the international standard for assessment of quality to guide the strength of recommendations for practice (World Health Organisation, 2016). Despite the abundance of research available, clinical practice guidelines are rarely developed on research evidence alone. There is often insufficient evidence to answer a specific practice question in a specific practice setting or population. In combination with the available evidence, the consensus views of a group of "experts" are often integral to the development process. The consensus building method used requires the same level of rigor and transparency employed to review the evidence. Commonly used consensus building techniques include the Delphi, nominal group technique or a combination approach. The Guidance on Conducting and REporting DElphi Studies (CREDES) was developed to allow critical appraisal of the Delphi methodology (Jünger, Payne, Brine, Radbruch, & Brearley, 2017).

The process of developing clinical practice guidelines commonly results in identification of gaps in research evidence. Areas of practice where insufficient evidence exist can also be identified through purposeful activities such as research priority setting. Identification of research priorities has often been undertaken by professional colleges, organisations, groups or funding agencies who wish to be armed with the best information to be able to either allocate research funding or set a research agenda. Taking a systematic approach to research priority setting has also been emphasised (World Health Organisation, 2016), and there have been calls to precede investment in any additional research by first systematically assessing the existing evidence (Chalmers et al., 2014).

In Western Australia, pediatric nursing research priorities were identified (Wilson, Ramelet, & Zuiderduyn, 2010) and provided insight into the views and priorities of nurses working at the children's hospital at that time. The priorities set the local research agenda for the next 10 years focusing on safety of care and the well-being of children and their families. Reduction of medication errors, pain management and best practice models for children with complex care needs were the top ranked topics and research programs were developed and informed practice changes as a result (Gill et al., 2012; Peter et al., 2011). Understanding the contemporary priorities for pediatric nursing will enable planning and future research to be coordinated and directed to areas of high priority.

A starting point for this work is to synthesise existing knowledge by undertaking a literature review to identify published pediatric nursing research priority areas. A scoping review is especially suitable for an area that had not been comprehensively reviewed before. The aim of this scoping review was to systematically identify the nature, range and extent of published pediatric nursing research priorities and synthesise them into themes.

Methods

Design

The scoping review was undertaken following the PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist (Tricco et al., 2018) that is consistent with the Joanna Briggs Institute guidance for scoping reviews (Joanna Briggs Institute, 2011). A protocol was developed apriori but was not published.

Eligibility criteria

Any studies where the focus of care was primarily on generic research priorities for the hospitalised infant, child or adolescent from a nursing perspective. To be included papers needed to be in English language, full text and published between January 2008 and May 2019. The 2008 date was chosen to identify contemporary research priorities (published within the last decade), and to extend on the locally developed research priorities (Wilson et al., 2010). Excluded were studies that reported on diagnoses specific research priorities, neonatal intensive care or where nursing research priorities could not be extrapolated from the data.

Information sources

Searches were undertaken using six computerized databases (EMBASE, MEDLINE, The Cochrane Database of Systematic Reviews, PsycInfo, CINAHL and AMED) in consultation with a senior nursing library consultant. The search strategies were tailored to each database and the search strategy for CINAHL is represented in Fig. 1. The keywords nursing; research priorities; children and healthcare were used in the first search. A review of the papers gained from this search indicated that the following terms infant; child; adolescent; nursing; research priorities; Delphi studies; healthcare and hospitalisation should be explored further. These terms were used in all possible combinations with mappings to headings wherever possible. The reference lists were reviewed on all included and excluded papers and authors were checked for further publications and citations through the Scopus and PubMed databases.

Selecting sources of evidence

Two reviewers independently reviewed all abstracts of papers found through the search strategy against the inclusion criteria. All the articles, included and excluded studies were independently and then jointly assessed by two authors and a final decision for inclusion was resolved through consensus by all three authors (Fig. 2).

Data charting and item extraction

The three authors agreed on and established an extraction table where the research priorities, including research priorities represented more than once (Wilkes, Cummings, & McKay, 2013; Wilson et al., 2010), from all studies were placed. A general inductive approach was used to understand how things connect and interact and to draw conclusions or findings based on common elements across heterogeneous studies (Thomas, 2006). If a Delphi technique was reported, priorities from the third round were used (Jünger et al., 2017).

Critical appraisal

All eight studies used a consensus building method to identify the research priorities; six used a Delphi technique, one a Nominal Group Technique (NGT) and one a consensus workshop. The CREDES was used to assess the quality and transparency of reporting for every study (Jünger et al., 2017). The studies were independently assessed by two authors and a final decision for inclusion was resolved by the third author's review of those items (Joanna Briggs Institute, 2011; Jünger et al., 2017). The 16th recommendation was specific to guiding dissemination in the palliative care setting and was considered not relevant to any study.

Synthesis of results

In the first step, all priorities were coded independently by two authors, then grouped into sub-themes and themes based on similarity of meaning. Second, differences and similarities were discussed and agreed on between two authors. Third, the codes, sub-themes and themes were discussed, agreed and refined by three authors.

Trustworthiness of analysis included two authors analysing all priorities, crosschecking the codes, subthemes and themes, comparing the content for each sub-theme and continually reviewing the analyses process to ensure the overall priorities were represented by the themes and subthemes Moreover, providing a clear description of the decision making trail and third author checking added to trustworthiness (Thomas, 2006).

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1. nurs* (n=822,178)

2. research* (n=858,533)

3. research priorities* (n=6114)

4. TI resear* priori* (n=417)

5. health* (n=1,665,708)

6. hospital* (n=455,142)

7. hospitalis* (n=90,075)

8. child* (n=686,102)

9. pediatric* (n=143,758)

10. paediatric* (n=16)

11. adoles* (n=482,310)

12. quant* (n=45,533)

13. qual* (n=188,794)

14. mix* meth*(n=5,662)

15. Delp* (n=2,106)

16. delphi* (n=2,091)

17. S2 or S3 or S4 (n=863,353)

18. S5 or S6 or S7 (n=1,927,448)

19. S8 or S9 or S10 or S11 (n=1,053,450)

20. S12 or S13 or S14 or S15 or S16 (n=222,520)

21. S1 and S17 and S18 and S19 and S20 (n=2,133)

22. Limit 2008-2019, Published English Language (n=781)

24. Limit Full Text (n=778)

23. Abstracts reviewed (n=778)

Fig. 1. CINAHL Search Strategy from 2008 to May 2019.

Results

Selection of sources of evidence

After duplicates were removed, a total of 789 citations were identified (Fig. 2). Based on the title and the abstract, 745 were excluded, with 44 full text articles retrieved and assessed for eligibility. Of these 36 were excluded due to the following reasons: three had a mixed data set where nursing priorities could not be extrapolated, eight were diagnosis specific research priorities and 25 did not directly focus on pediatric nursing research priorities (Fig. 2). The remaining eight studies were critically appraised and considered eligible for the review (Table 1). The studies' CREDES scores were between 10 and 14 of a possible maximum 16 (Table 1).

Characteristics

Two studies were from USA (Green et al., 2014; Sawin et al., 2012), two from Australia (Wilkes et al., 2013; Wilson et al., 2010), one from Australia and New Zealand (Ramelet, Gill, & Group, 2012), one from Ireland (Brenner et al., 2014) and two from Europe (Tume et al., 2014; Tume et al., 2015). The participants ($n = 897$) represented Registered Nurses (Brenner et al., 2014; Green et al., 2014; Ramelet et al., 2012; Wilson et al., 2010), Nurse Specialists (Brenner et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013), Advanced Nurse Practitioners (Brenner et al., 2014; Sawin et al., 2012; Tume et al., 2014), Directors of Nursing (Brenner et al., 2014), Clinical Nurse Managers (Brenner et al., 2014; Tume et al., 2014), Nurse Educators (Green et al., 2014; Tume et al., 2014) and Nurse Researchers (Green et al., 2014; Tume et al., 2014; Tume et al., 2015). No studies included other stakeholders or community or consumer participants. Of the eight studies, six used a Delphi technique, one a consensus workshop and one NGT where 13 research priorities from a previous priority setting study (Wilson et al., 2010) were included (Wilkes et al., 2013) (Table 2). These 13 research priorities are therefore included twice in the present review. Three studies reported on research priorities for pediatric intensive or critical care nurses (Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015), one for acute care children's nursing (Brenner et al., 2014), one for nurses working in a children's hospital (Wilson et al., 2010), one for members of an association of pediatric Nurse Practitioners (Sawin et al., 2012), one for members of a pediatric nursing society (Green et al., 2014), and one for clinical nurse consultants in generalist pediatric practice (Wilkes et al., 2013).

Thematic synthesis

From the eight articles, 234 research priorities were identified. The synthesis generated 119 codes, 14 sub-themes and four themes: evidenced-based practice, pediatric context, child and family-centered care (CFCC) and Pediatric Nursing (Table 3). Themes and sub-themes are described below along with examples.

Evidenced-based practice

The theme evidence-based practice includes the sub-themes safety, clinical practice and health promotion, generated from 65 research priorities (Table 4).

Safety. All eight articles included statements ($n = 22$) about safety (Brenner et al., 2014; Green et al., 2014; Ramelet et al., 2012; Sawin et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013; Wilson et al., 2010). The statements touched on priorities such as child neglect and abuse, safe transfer within and between hospitals, strategies to reduce medication errors, prevention of hospital acquired infections, clinical deterioration and critical incidents. Two of the suggested priorities were “Strategies that effectively reduce risk of childhood injuries and child maltreatment” (Sawin et al., 2012 p. 12) and “Develop and evaluate discharge planning in collaboration with community nursing services (especially child and school health)” (Wilson et al., 2010 p. 1925).

Clinical practice. Six articles included statements ($n = 25$) about Clinical Practice topics (Brenner et al., 2014; Green et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Wilkes et al., 2013; Wilson et al., 2010). The priorities were about technology, IV lines, outcomes of care, wound care, and documentation. The suggested priorities included “Determine the efficacy of MET on patient's outcomes” (Ramelet et al., 2012 p. 51), “Impact of technology on bedside care” (Wilkes et al., 2013) and “Implementing evidence-based practice” (Green et al., 2014 p. 405).

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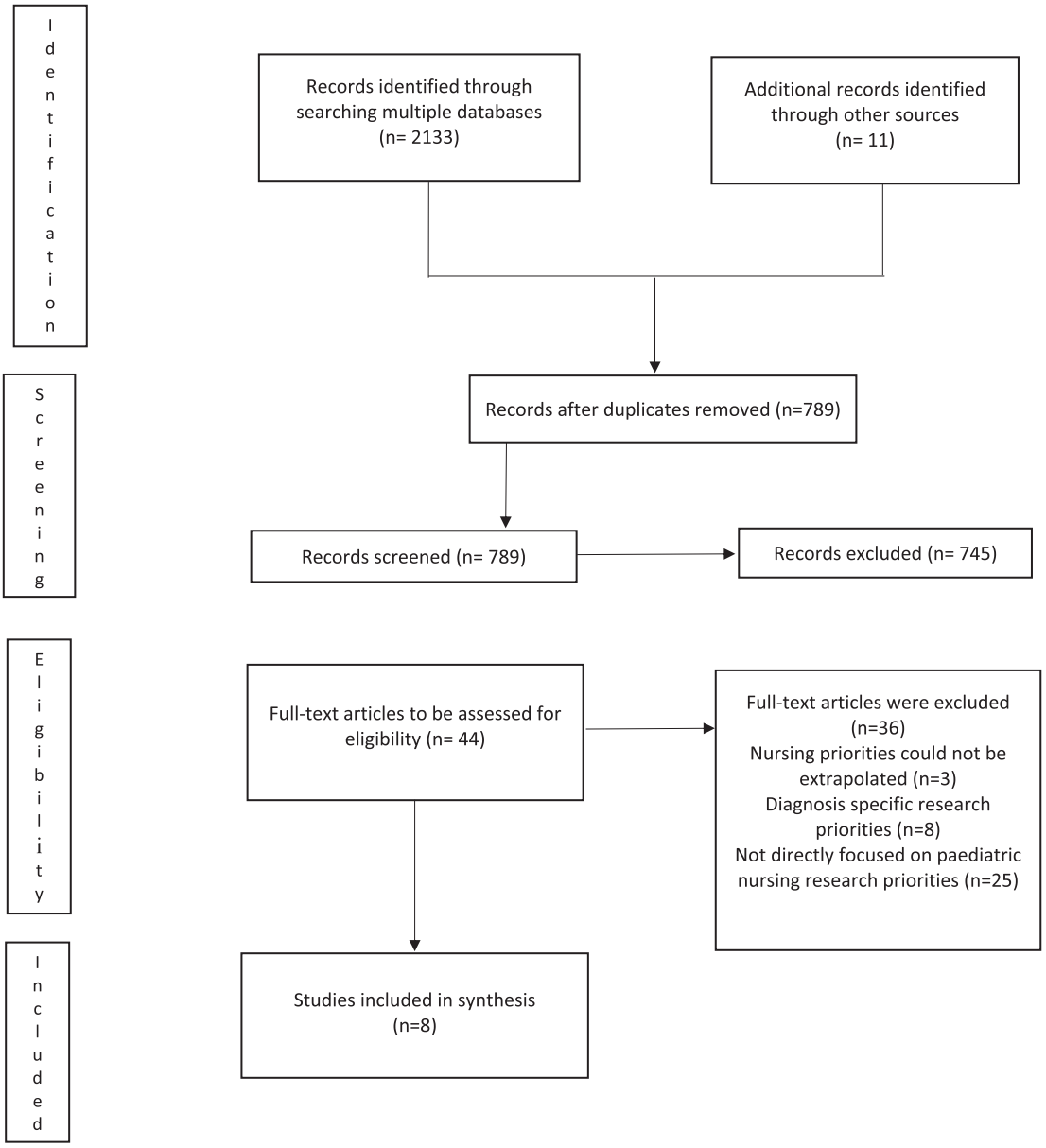

Fig. 2. Inclusion and Exclusion Process.

Table 1
Conducting and REporting of DElphi Studies (CREDES) scores for included articles.

CREDES recommendations	Wilson et al., 2010	Ramelet et al., 2012	Sawin et al., 2012	Wilkes et al., 2013	Green et al., 2014	Brenner et al., 2014	Tume, van den Hoogen, Wielenga, & Latour, 2014	Tume et al., 2015
1 Justification	x	x	x	x	x	x	x	x
2 Planning and processes	x	x	x	x	x	x	x	x
3 Definition of consensus	x	x	0	x	x	x	x	x
4 Informational input	x	x	x	x	0	x	x	0
5 Prevention of bias	x	x	0	0	0	x	x	0
6 Interpretation and processing of results	x	x	x	x	x	x	x	x
7 External validation	0	0	x	0	0	0	0	0
8 Purpose and rationale	x	x	x	x	x	x	x	x
9 Expert panel	x	x	x	x	x	x	x	x
10 Description of the methods	x	x	x	x	x	x	x	x
11 Procedure	0	x	0	x	0	x	x	0
12 Definition and attainment of consensus	x	x	x	x	x	x	x	x
13 Reporting of results for each round	x	x	0	0	x	x	x	x
14 Discussion of limitations	0	0	x	x	0	x	x	x
15 Adequacy of conclusion	x	x	x	x	x	x	x	0
16 Publication or dissemination	0	0	0	0	0	0	0	0
Total	12	13	11	12	10	14	10	10

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Table 2
Studies on pediatric nursing research priorities.

Author, year, country	Design & method	Participants	Data collection	Findings
Wilson et al., (2010), Australia.	Delphi study, 1 hospital, Western Australia, 2005–2006, content analysis Round I data, descriptive statistics Round II and III data.	Random sample of 217 baccalaureate trained nurses (Round I, $N = 47$; Round II, $N = 63$; Round III, $N = 47$) with a minimum of one year's experience.	Modified Questionnaire, LOI, 7 point Likert (1 study) – ASRQ, DD	Round III – research topics of greatest value to patients, n = 10, LOA 76.6–97.9%, Median 7 (Mean 5.31–6.47; SD 0.88–1.65); research topics of greatest value to families, n = 8, LOA 70.2–85.1%, Median 6 (Mean 5.33–5.89; SD 1.1–1.7); research topics that would most facilitate health in children and young people and reduce hospitalisation, $n = 10$, LOA 78.7–89%, Median 6, (Mean 5.48–5.81; SD 1.18–1.58).
Aims: To identify research priorities for the care of infants, children and adolescents at the sole tertiary referral hospital for children in Western Australia; To stimulate nurses to explore clinical problems that would require further inquiry.				
Ramelet et al., (2012), Australia and New Zealand.	Delphi study, 6 pediatric intensive care units (PICUs), tertiary pediatric hospitals, Australia and New Zealand, 2007–2008, content analysis Round I data, descriptive statistics Round II and III data.	Convenience sampling of 217 specialist level trained nurses (Round I, $N = 84$, 5 PICUs; Round II, $N = 166$, 6 PICUs; Round III, $N = 88$, 6 PICUs) with a minimum of two year's PICU experience.	Modified Questionnaire, LOS, 7 point Likert, LOA (4 studies) - ASQR, DD	Round III – top research priorities of greatest value to patients and family and professional needs that received strong support, $n = 82$, LOS & LOA, LOS Mean 6, (LOA Median 0.41–0.89; SD 0.82–1.25); top 9 priorities included patient clinical issues related to neurological care ($n = 2$), pain/sedation/comfort ($n = 3$), professional issues about nurses' stress burnout and professional needs ($n = 2$), best practice at the end of life (n = 1) and ventilation strategies (n = 1).
Aims: To Identify research priorities for the care of patients and their families as well as for the professional needs of PIC nurses; To foster nursing research collaboration; To develop a research agenda for PIC nurses.				
Sawin et al., (2012), USA.	Delphi study, National Association of Pediatric Nurse Practitioner (NAPNAP) members, America, 2007–2007, descriptive statistics Round I data.	Convenience sample of 324 NAPNAP members within acute, primary and specialty pediatric areas.	Author Developed Questionnaire, LOA, 5 point Likert (3 stages) – ASRQ, online, DD	Round III – top 10 clinical research priorities, n = 10, LOA, (Mean 4.14–4.33; SD 0.71–0.86); 3 of the top 10 clinical priorities differed by area of practice (acute, primary, specialty).
Aims: To describe the development, implementation and analysis of the survey tool used to determine the NAPNAP members' ranking of research priorities; To describe the top priorities ranked by participants; To determine if priorities differed by area of practice (primary, acute, or specialty care) or participant age.				
Wilkes et al., (2013), Australia.	Delphi study, 1 hospital, New South Wales Child Health Networks (CHN) pediatric clinical nurse consultant (CNC) members, Australia, 2012, descriptive statistics Round I data.	Convenience sampling of 16 CHN CNC group members, specialist level trained nurses.	Modified Questionnaire, LOI, 3 point Likert (2 studies, 4 stages) – ASRQ, focus group, DD	Round III – top research priorities, $n = 30$, 13 repeats from Wilson et al., (2010), LOI, (Mean 1.0–1.75; SD 0.44–0.81); research categories were reduce hospitalisation (n = 11), patient (n = 17) & family (n = 2).
Aim: To identify research topics for investigation which were considered a priority for improving children's healthcare.				
Green et al., (2014), USA.	Delphi study, Society of Pediatric Nurses (SPN) members, America, 2011–2012, content and thematic analysis Round I data, descriptive statistics Round II and III data.	Convenience sampling of SPN members (Round I, $N = 274$; Round II, $N = 141$; Round III, $N = 104$).	Author Developed Questionnaire, LOI, 5 point Likert – ASRQ, online, DD	Round III – 10 top research priorities topic areas: chronic medical conditions ($n = 4$), mental health and forensic issues (n = 1), health promotion and preventative care (n = 2), workforce issues (n = 2) and quality and safety (n = 1). Six of the challenges to practice were congruent with topic areas for research priorities.
Aims: To identify consensus on the top 10 pediatric nursing priorities for the next 10 years; To identify the key challenges facing pediatric nursing research.				
Brenner et al., (2014), Ireland.	Delphi study, 1 hospital, Ireland, thematic content analysis Round I data, descriptive statistics Round II and III data.	Convenience sampling of 587 pediatric nurses (Round I, $N = 107$; Round II, $N = 231$; Round III, $N = 249$).	Author Developed Questionnaire, LOI, 7 point Likert – ASRQ, online, DD	Round III – research priorities ($n = 27$), LOI (Mean 5.14–6.64; SD 0.75–1.22); 9 themes: clinical care concerns ($n = 7$), family centered care (n = 4), end of life (n = 3), infection control delivery ($n = 3$), adolescent concerns (n = 3), resuscitation concerns (2), childhood pain (n = 2), nurse's role in care delivery (n = 2) and chronic illness (n = 1).
Aim: To identify research priorities for children's nursing.				
Tume et al., (2014), Europe.	Delphi study, European Society of Pediatric and Neonatal Intensive Care (ESPNIC) members, 3 European regions, 20 countries, 2012, thematic content analysis Round I data, descriptive statistics Round II and III data.	Random selection of 90 pediatric intensive care nurses (Round I, $N = 90$; Round II, N69; Round III, $N = 64$).	Author Developed Questionnaire, LOI, 6 point Likert (3 stages) – ASRQ, online, DD	Round III – research priorities (n = 20), LOI (Mean 4.77–5.26; SD 0.90–1.18); 4 top priorities were improving end of life care and palliative care for children and their families (Mean 5.26; SD 1.01), communicating and decision-making around forgoing and sustaining treatment (Mean 5.20; SD 0.98), effective interventions to reduce and prevent pain (Mean 5.15; SD 1.04) and the effect of continuous education and training methods

(continued on next page)

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Table 2 (*continued*)

Author, year, country	Design & method	Participants	Data collection	Findings
				on nursing competence and knowledge (Mean 5.12; SD 0.96).
Aim: To identify and establish research priorities for pediatric intensive care nursing science across Europe.				
Tume et al., (2015), Europe.	One day consensus conference, World Federation of Pediatric and Critical Care Societies (WFPICCS) members, 10 countries, 2014, Benner's conceptual framework, descriptive statistics Round II and III data.	Convenience sampling of WFPICCS members (Round I, N = 9; Round II, III *N* = 33).	9 conference presentations, interactive multi-voting process, LOI, 10 point Likert, conference, DD	Round III – research priorities (n = 27), LOI (Mean 6.25–8.80); 9 domains, 4 top research priorities were facing death: end of life care and decision-making (Mean 8.69, domain 8), caring for patient's families (Mean 8.48, domain 4), making a case: communication clinical assessments and improving teamwork (Mean 8.33, domain 7) and diagnosing and managing life-sustaining physiologic functions (Mean 7.96, domain 1.
Aim: To identify and prioritize research questions of concern to the practice of pediatric critical care nursing practice.				

ASRQ author self-report questionnaire, CHC Child Health Networks, CNC clinical nurse consultant, DD demographic data, ESPNIC European Society of Pediatric and Neonatal Intensive Care, LOA level of agreement, LOI level of importance, LOS level of support, NAPNAP National Association of Pediatric Nurse Practitioner, PICU pediatric intensive care units, SPN Society of Pediatric Nurses, WFPICCS World Federation of Pediatric and Critical Care Societies.

Health promotion. Health promotion was referred to ($n = 18$) in five articles (Green et al., 2014; Ramelet et al., 2012; Sawin et al., 2012; Wilkes et al., 2013; Wilson et al., 2010). This sub-theme included suggestions for interventions to promote health care and prevent adverse health. Priority areas were obesity, mental health, children with special needs, behavioural problems and complicated family structures. Three of the suggested priorities were "Strategies that address developmental, cognitive, and psychosocial challenges of infants born at risk (e.g., premature, small for gestational age, drug/alcohol exposed)" (Sawin et al., 2012 p. 12), "To analyse the co-ordination between hospital and primary care settings for the continuity of care" (Wilkes et al., 2013 p. 6) and "Health promotion and preventative care" (Green et al., 2014 p. 405).

Pediatric context

The theme pediatric context includes the sub-themes critical care, long-term illness and end-of-life care, generated from 65 research priorities (Table 5).

Critical care. Five articles included statements ($n = 36$) about critical care (Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013; Wilson et al., 2010). Several of the priorities referred to PICU patients and included resuscitation, nurse-led interventions, pressure related tissue damage, ventilation, outcome measures, technology, transfer and discharge. Some of the suggested priorities were "Determine best practice for nurse-led ventilation weaning" (Ramelet et al., 2012 p. 50), "What is the most effective method for implementing and evaluating a new technology in the PICU?" (Tume et al., 2015 p. e177) and "Identify best practice to minimise stress associated with PICU discharge" (Ramelet et al., 2012 p. 52).

Table 3
Themes and sub-themes created from eight articles of nursing priorities and the number of priority statements included in each theme and sub-theme.

Theme	Sub-theme
Evidenced-based practice *n* = 65	Safety n = 22 Clinical practice n = 25 Health promotion n = 18
Pediatric context n = 65	Critical care n = 36 Long-term illness n = 20 End-of-life care n = 9
Child and family-centred care *n* = 55	Involvement in care n = 14 Comfort *n* = −13 Psychological health n = 17 Communication n = 11
Pediatric nursing *n* = 49	Workplace n = 14 Education n = 10 Quality improvement n = 16 Nurses' health n = 9

Long-term illness. Long-term illness was referred to ($n = 20$) in six articles (Brenner et al., 2014; Green et al., 2014; Ramelet et al., 2012; Sawin et al., 2012; Wilkes et al., 2013; Wilson et al., 2010). The sub-theme included priorities related to family needs, complex care, compliance to treatment and transition, transfer and discharge. Examples of priorities were "Support of families of children with chronic illness and special health care needs" (Green et al., 2014 p. 405), "Access to services for children with life limiting conditions" (Brenner et al., 2014 p. 305), and "Explore models of ambulatory care/hospital in the home/community services to assist in care of children with chronic/complex care needs" (Wilson et al., 2010 p. 1926).

End-of-life care. This sub-theme was built on statements ($n = 9$) from four articles (Brenner et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015). These priorities touched areas such as experiences and perceptions of care, symptom management and bereavement. Examples of prioritised research questions were "How can we improve palliative care in PICU?" (Ramelet et al., 2012 p. 50), "Parent's/Family's perceptions of care at end of life" (Brenner et al., 2014 p. 305) and "How can nurses best help families cope with the impending death of a child?" (Tume et al., 2015 p. 177).

Child and family-centered care (CFCC)

The theme CFCC includes the sub-themes involvement in care, psychological health, comfort and communication, generated from 55 research priorities (Table 6).

Involvement in care. Seven articles included statements ($n = 14$) about involvement in care (Brenner et al., 2014; Ramelet et al., 2012; Sawin et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013; Wilson et al., 2010). Involvement in care included the concepts of parent, adolescent/child involvement and support needs. This encompassed decision making, perceptions, presence during resuscitation, management, role, interventions and tool development to measure involvement and the impact of parental involvement in care. Some examples include "Explore the impact of parental involvement in hospital care including decision–making (impact on child, parent and staff)" (Wilkes et al., 2013 p. 5; Wilson et al., 2010 p. 1924), "Involvement of adolescent in decision making about their care" (Ramelet et al., 2012 p. 50), "Family witnessed resuscitation" (Brenner et al., 2014 p. 305) and "Develop, implement and test interventions that facilitate parent involvement in the PICU" (Tume et al., 2015 p. e177).

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Table 4
Priority statements from reviewed articles included in the theme Evidence-based Practice.

Authors	Sub-theme
	Safety
Wilson et al., 2010	Identify strategies to reduce medication errors
Wilson et al., 2010	Evaluate effect of critical incidents feedback on subsequent occurrence of critical incidents
Wilson et al., 2010	Determine the impact of length of nursing shift on patient safety
Wilson et al., 2010	Develop and evaluate discharge planning in collaboration with community nursing services (especially child and school health)
Ramelet et al., 2012	Review MET/Code Blue calls—can ward education help reduce the preventable incidents?
Ramelet et al., 2012	Identify and implement strategies to reduce medication errors
Ramelet et al., 2012	Identify a strategy plan to minimise critical incidents
Ramelet et al., 2012	Develop an evidence based clinical guideline for nursing care to minimise the incidence of complications
Ramelet et al., 2012	Are there behavioural patterns we should recognise when nursing families of non-accidental injury?
Ramelet et al., 2012	Explore retrieval transport nursing
Ramelet et al., 2012	Determine the best oral hygiene practices to reduce hospital acquired infection
Sawin et al., 2012	Strategies that effectively reduce risk of childhood injuries and child maltreatment
Wilkes et al., 2013	Evaluate effect of critical incidents feedback on subsequent occurrence of critical incidents
Wilkes et al., 2013	Identify strategies to reduce medication errors
Wilkes et al., 2013	Reasons why there is a delay in contacting NETS when a child needs retrieval
Wilkes et al., 2013	Identify the needs of rural paediatrics in NSW
Brenner et al., 2014	Safe transfer of critically ill children in hospital and between hospitals
Brenner et al., 2014	Child protection- disclosure
Brenner et al., 2014	Improving hand hygiene compliance in paediatric settings
Green et al., 2014	Child abuse and neglect
Tume et al., 2014	Interventions to reduce health care associated infections
Tume et al., 2015	What new tools and technologies can be developed to drive nurses' cognitive capacity to deliver safer care?
	Clinical practice
Wilson et al., 2010	Investigate the impact of nurse led care in acute care settings
Ramelet et al., 2012	Determine best practice for postoperative and trauma pain management
Ramelet et al., 2012	Determine the risks/benefits ratio of spinal lifting
Ramelet et al., 2012	What are the best infection control measures to use to manage central and intravenous lines
Ramelet et al., 2012	Determine nurses' interpretation of ABGs and impact on their practice
Ramelet et al., 2012	Determine the efficacy of MET on patient's outcomes
Ramelet et al., 2012	Evaluation of the MET?
Ramelet et al., 2012	How to maintain or restore patency of IV/CVC lines
Ramelet et al., 2012	How often do we need to change central and intravenous lines?
Ramelet et al., 2012	Determine best practice for temperature measurements
Ramelet et al., 2012	What is the best way to use infant warmers to control temperature?
Ramelet et al., 2012	Explore the medico-legal implications for nursing documentation
Wilkes et al., 2013	Non-compliance of clinical practice guidelines by doctors?
Wilkes et al., 2013	A comparison of the use of high-flow and low-flow nasal prongs in children with bronchiolitis
Wilkes et al., 2013	How frequently are observations preformed on paediatric patients in Emergency Departments?
Wilkes et al., 2013	Impact of technology on bedside care
Wilkes et al., 2013	How do paediatric nurses interpret a paediatric AVPU score?
Wilkes et al., 2013	Investigate the impact of nurse led care in acute care settings
Brenner et al., 2014	Timely recognition, communication and intervention of the deteriorating child
Brenner et al., 2014	Wound care in children
Green et al., 2014	Implementing evidence-based practice
Tume et al., 2014	Identifying and implementing strategies to improve evidence-based nursing practice
Tume et al., 2014	Identifying best practices for preventing analgesia and sedation withdrawal
Tume et al., 2014	Identifying best practices in sedation assessment
Tume et al., 2014	Identifying effective sedation strategies
	Health promotion
Wilson et al., 2010	Explore new health promotion strategies within PMH, e.g. the impact of having a child health nurse on site on parenting education, health promotion; in-house TV station dedicated to health information
Wilson et al., 2010	Explore family knowledge of nutrition and impact on health (including quality and cost of food available at PMH)
Wilson et al., 2010	Develop programmes (e.g. school health, antenatal) with emphasis on long-term changes – educating the next generation of parents (reducing alcohol abuse, preventing accidents, child abuse, etc.)
Wilson et al., 2010	Investigate ways to reduce obesity that promote children's health (reduce sleep apnoea, slipped femoral epiphysis, constipation, etc.)
Wilson et al., 2010	Examine practices, community treatments and prevention of common causes of childhood hospitalisation (e.g. otitis media, dental caries)
Wilson et al., 2010	Develop strategies to increase staff awareness and facilitation of community-based programmes for improving children's health
Ramelet et al., 2012	Explore extending liaison role to regional hospitals
Sawin et al., 2012	Interventions that optimize child and family adherence to health care practices (e.g., medication administration, appointment keeping, therapy)
Sawin et al., 2012	Strategies that address developmental, cognitive, and psychosocial challenges of infants born at risk (e.g., premature, small for gestational age, dru/alcohol exposed)
Sawin et al., 2012	Interventions that optimize management of behavioral problems
Sawin et al., 2012	Strategies to screen for drug/alcohol use and interpersonal violence (e.g., child abuse, dating violence, etc.)
Sawin et al., 2012	Interventions to eliminate health disparities with particular attention to rural settings, minority status, and underserved populations
Sawin et al., 2012	Clinical interventions that optimize mental health for at-risk children (e.g., acutely ill, chronically ill, in time of transition)
Sawin et al., 2012	Strategies to promote optimal health in complicated family situations (e.g., families adapting to foster care, with special needs children, military families dealing with deployment or reintegration, homeless families)
Wilkes et al., 2013	Examine practices, community treatments and prevention of common causes of childhood hospitalisation (e.g. otitis media, dental caries)
Wilkes et al., 2013	To analyse the co-ordination between hospitals and primary care settings for the continuity of nursing care
Green et al., 2014	Health promotion and preventative care
Green et al., 2014	Obesity prevention

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Table 5
Priority statements from reviewed articles included in the theme Pediatric context.

Authors	Sub-theme
	Critical care
Wilson et al., 2010	Explore families' reasons for presenting to the emergency department
Ramelet et al., 2012	EBP for neuroprotection post hypoxic arrest
Ramelet et al., 2012	EBP for the management of post-cardiac arrest patients
Ramelet et al., 2012	Determine best practice for nurse-led ventilation weaning
Ramelet et al., 2012	Determine best practice for endotracheal tube suctioning
Ramelet et al., 2012	Impact of PICU staffing issues on patient outcomes
Ramelet et al., 2012	Determine the safety and efficacy of different modes of cooling therapy in children
Ramelet et al., 2012	Explore nursing decision making in critical/emergency situations
Ramelet et al., 2012	Investigate the impact of nurse-led extubation on patient's outcome
Ramelet et al., 2012	Development of a resource for or determine compatibilities of drugs commonly used in the PICU
Ramelet et al., 2012	Determine best practice for pressure sore wound care in PICU patients
Ramelet et al., 2012	Effect of early pressure relieving interventions on incidence of pressure related tissue damage in PICU patients
Ramelet et al., 2012	Determine the sleep patterns and sleep deprivation in ventilated PICU patients
Ramelet et al., 2012	Is the PICU liaison nurse an effective role?
Ramelet et al., 2012	Determine the impact of closed versus open PICU environment on hospital acquired infection
Ramelet et al., 2012	Identify best practice to minimise stress associated with PICU discharge
Ramelet et al., 2012	Determine patients at risks for pressure-related tissue damage in the PICU and impact of regular risk assessment
Ramelet et al., 2012	Planning for optimal ward transfer/discharge of long term patients/Develop and test the efficacy of a standardised discharge plan for the PICU patient
Wilkes et al., 2013	Reasons for children representing to the emergency department
Wilkes et al., 2013	Explore families' reasons for presenting to the emergency department
Tume et al., 2014	Identifying and improving quality indicators for PICU nursing
Tume et al., 2014	Identifying best practices in weaning mechanical ventilation
Tume et al., 2014	Identifying best practices in non-invasive ventilation
Tume et al., 2014	Advanced life support practices to improve patient outcomes
Tume et al., 2015	Can nurse-led bundled interventions improve the clinical outcomes of pediatric critically ill patients?
Tume et al., 2015	What educational strategies best prepare pediatric critical care nurses to intuitively respond to the emerging needs of the critically unstable child?
Tume et al., 2015	Develop and test parent reported outcome measures that are sensitive to the quality and safety of PICU care.
Tume et al., 2015	What is the most effective method for implementing and evaluating a new technology in the PICU?
Tume et al., 2015	Can manipulations of the PICU environment optimize a critically-ill patient's recovery?
Tume et al., 2015	What new technologies are needed to enhance our capacity to more effectively evaluate a patient's response to PICU therapy?
Tume et al., 2015	Can effective team communication models improve patient and family outcomes in pediatric critical care?
Tume et al., 2015	How best can pediatric critical care nurses communicate their clinical understanding and judgments in the critically ill child?
Tume et al., 2015	What team communication models facilitate a shared clinical understanding of the critically ill child?
Tume et al., 2015	Determine what level of nursing education and experience in pediatric critical care has a protective effect on mortality and morbidity of critically ill children.
Tume et al., 2015	What models or standards of nursing care practice enhance pediatric critical care nurses' capacity to prevent and manage practice breakdowns?
Tume et al., 2015	How best can nurse leaders build and disseminate critical care nursing science beyond their home institution?
	Long-term illness
Wilson et al., 2010	Determine best practice for children requiring complex care (both technologically dependent and non-technologically dependent, including home care)
Wilson et al., 2010	Explore the impact on a family of a child requiring long-term care (complex care, disability, burns, cystic fibrosis, scars, allergies, etc.) and identify supportive measures for families (e.g. case managers, respite care)
Wilson et al., 2010	Explore the health outcomes for hospitalised children from non-English speaking and diverse cultural backgrounds
Wilson et al., 2010	Identify reasons for parental non-compliance of treatment and explore strategies to increase compliance (e.g. asthma prevention and management, children with psychiatric disorders)
Wilson et al., 2010	Explore models of ambulatory care/hospital in the home/community services to assist in care of children with chronic/complex care needs
Ramelet et al., 2012	How can we streamline transfer for long term patients?
Ramelet et al., 2012	Identify specific needs of oncology families and strategies to support them
Sawin et al., 2012	Strategies to facilitate effective transition to adulthood for adolescents with chronic conditions
Wilkes et al., 2013	Do foster kids differ from nonfoster kids when going home with a chronic respiratory condition? Does the hospital in the home work for foster kids?
Wilkes et al., 2013	Explore models of ambulatory care/hospital in the home/community services to assist in care of children with chronic/complex care needs
Wilkes et al., 2013	Identify reasons for parental non-compliance of treatment and explore strategies to increase compliance (e.g. asthma prevention and management, children with psychiatric disorders)
Brenner et al., 2014	Access to services for children with life limiting conditions
Brenner et al., 2014	Parental participation in the care of children at home with a chronic condition – their perceptions
Brenner et al., 2014	Chronic pain in children – prevalence and its impact on child and family
Brenner et al., 2014	Compliance with medication/treatment regimes
Brenner et al., 2014	Effect of prolonged hospitalisation on child/parents quality of life
Green et al., 2014	Adherence in chronic illness
Green et al., 2014	Asthma family and self-management
Green et al., 2014	Long-term consequences of care for children with chronic illness and special health care needs
Green et al., 2014	Support of families of children with chronic illness and special health care needs
	End-of-Life care
Ramelet et al., 2012	EBP for end of life care
Ramelet et al., 2012	How can we improve palliative care in PICU?
Ramelet et al., 2012	What is best practice for bereavement care?
Brenner et al., 2014	Parent's/Family's perceptions of care at end of life
Brenner et al., 2014	Symptom management in end of life care – healthcare professional's knowledge
Tume et al., 2014	Improving end-of-life and palliative care for children and their families
Tume et al., 2015	What nursing interventions directly impact the child and family's experience during the withdrawal of life-sustaining therapy in the PICU?
Tume et al., 2015	How can nurses' best help families cope with the impending death of a child?
Tume et al., 2015	What models of ICU communication impact child and family support during end of life decision making?

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Table 6
Priority statements from reviewed articles included in the theme Child and Family-centred Care.

Authors	Sub-theme
	Involvement in care
Wilson et al., 2010	Explore the impact of parental involvement in hospital care including decision-making (impact on child, parent and staff)
Wilson et al., 2010,	Explore parents perceptions of aspects of family-centred care (particularly family involvement in care and/or decision-making)
Ramelet et al., 2012	Involvement of adolescent in decision making about their care
Ramelet et al., 2012	Impact on family of being present or not present during procedures/resuscitation
Sawin et al., 2012	Strategies that enhance self−/family management for children with acute and chronic conditions
Wilkes et al., 2013	What are parent expectations of nursing care in emergency departments and paediatric units?
Wilkes et al., 2013	Explore the impact of parental involvement in hospital care including decision-making (impact on child, parent and staff)
Brenner et al., 2014	Adolescent's understanding of their chronic illness
Brenner et al., 2014	Nurses' role in supporting/guiding parents
Brenner et al., 2014	Adolescent involvement in care
Brenner et al., 2014	Children's involvement in care
Brenner et al., 2014	Family witnessed resuscitation
Tume et al., 2014	The role and involvement of parents in the care of the critically ill child
Tume et al., 2015	Develop, implement and test interventions that facilitate parent involvement in the PICU.
	Communication
Wilson et al., 2010	Assess parent understanding and usefulness of information provided (printed and other modes) regarding child's care and discharge, including long-term outcomes
Wilson et al., 2010	Determine parents' readiness for discharge
Ramelet et al., 2012	How effective and appropriate is communication with non-English speaking parents?
Ramelet et al., 2012	What are the most effective communication strategies?
Ramelet et al., 2012	What are parental perceptions of our communication?
Ramelet et al., 2012	How to optimise nursing-medical communication
Wilkes et al., 2013	Assess parent understanding and usefulness of information provided (printed and other modes) regarding child's care and discharge, including long-term outcomes
Brenner et al., 2014	Effective communication with children in hospital
Brenner et al., 2014	Adolescent's communication needs in relation to their condition
Brenner et al., 2014	Children's/Parent's perspectives on transition to adult service
Tume et al., 2014	Communicating and decision-making around forgoing and sustaining treatment
	Psychological health
Wilson et al., 2010	Investigate effects of therapeutic play/distraction on children's anxiety and outcomes in hospital (effects on clinical holding)
Ramelet et al., 2012	Impact of the PICU environment on long-term PICU children
Ramelet et al., 2012	Experience of PICU and its psychological impact
Ramelet et al., 2012	Explore the incidence and characteristics of children experiencing PICU psychosis
Ramelet et al., 2012	Psychological outcomes of PICU patients
Ramelet et al., 2012	Determine best practice to deal with family guilt
Ramelet et al., 2012	Determine non-pharmacological strategies to reduce stress in PICU children
Ramelet et al., 2012	Is there a healthy way of adapting to having a child in PICU?
Wilkes et al., 2013	Investigate effects of therapeutic play/distraction on children's anxiety and outcomes in hospital (effects on clinical holding)
Brenner et al., 2014	Psychological preparation of children prior to procedures
Brenner et al., 2014	Deferral of surgery and its impact on child/family
Brenner et al., 2014	Psychological needs of the child and family in isolation
Brenner et al., 2014	Needle phobia in children- strategies for management
Tume et al., 2014	Strategies to support parents and siblings of critically ill children
Tume et al., 2014	Psychosocial outcome and quality of life of the child and family after PICU
Tume et al., 2015	Exploring ways of decreasing allostatic load in children in PICU, particularly by mediating connecting relationships with patients' family and peers.
Tume et al., 2015	Evaluate the long-term psycho-social impact of a child's critical illness on family outcomes.
	Comfort
Wilson et al., 2010	Explore the impact of pain and anxiety in children who regularly require surgery
Wilson et al., 2010	Identify the parents' perception/satisfaction of pain management for their child
Ramelet et al., 2012	Assessment of drug withdrawal
Ramelet et al., 2012	Opioids and benzodiazepines weaning strategies
Ramelet et al., 2012	Impact of pain and sedation assessment on patient's comfort
Ramelet et al., 2012	Determine the level of noise in the PICU environment and its impact on patients' comfort
Wilkes et al., 2013	Determine how pain assessment impacts on pain management (including nurses' perceptions of pain assessment, effectiveness of different analgesic groups, and postoperative pain management)
Wilkes et al., 2013	Explore the impact of pain and anxiety in children who regularly require surgery
Wilkes et al., 2013	The role of intranasal fentanyl in post-operative tonsillectomy pain management
Brenner et al., 2014	Pain assessment and management in children's nursing
Tume et al., 2014	Effective interventions to reduce and prevent pain
Tume et al., 2015	Using objective ANS parameters to assess stress and to increase awareness of comfort and discomfort in PICU.
Tume et al., 2015	Implementation research to refine pain and sedation protocols to anticipate pain and discomfort in PICU.

Comfort. Six articles included statements ($n = 13$) about comfort (Brenner et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013; Wilson et al., 2010). Comfort included the management (interventions and assessments), impact (comfort and anxiety) and perceptions or knowledge (satisfaction, role, parameters and protocols) on areas (noise, pain and medication withdrawal) that cause discomfort. Two examples of the suggested nursing priorities were "Assessment of drug withdrawal" (Ramelet et al., 2012 p. 50) and "Effective interventions to reduce and prevent pain" (Tume et al., 2014 p. e211).

Psychological health. Psychological health was built on statements ($n = 17$) from five articles (Brenner et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilson et al., 2010) and included the needs (preparedness and relationships), impact (allostatic load, guilt, quality of life, stress, psychosis and outcomes) and management (play

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and non-pharmacological) of the child and family's psychological wellbeing within various scenarios (intra-venous cannulation and clinical holding) and settings (isolation, dentistry and PICU). Some given examples were "Psychological needs of the child and family in isolation" (Brenner et al., 2014 p. 305), "Impact of the PICU environment on long-term PICU children" (Ramelet et al., 2012 p. 51) and "Strategies to support parents and siblings of critically ill children" (Tume et al., 2014 p. e211).

Communication. Communication was referred to ($n = 11$) in four articles (Brenner et al., 2014; Ramelet et al., 2012; Tume et al., 2015; Wilson et al., 2010). Communication included effective strategies to optimize understanding and health outcomes in areas on forgoing or sustaining treatment, the adolescent's needs, discharge and/or transition to adult services and the child's care. Examples of priorities were "Assess parents understanding and usefulness of information provided (printed and other modes) regarding child's care and discharge, including long-term outcomes" (Wilkes et al., 2013 p. 5; Wilson et al., 2010 p. 1925) and "Children's/Parent's perspectives on transition to adult service" (Brenner et al., 2014 p. 305).

Pediatric nursing

The theme pediatric nursing includes the sub-themes workplace, education, quality improvement and nurses' health issues, generated from 49 research priorities (Table 7).

Workplace. Seven articles included statements ($n = 14$) about the workplace (Brenner et al., 2014; Green et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013; Wilson et al., 2010). The priorities included workload, communication between staff, nursing role, orientation and employment. Two examples of

Table 7
Priority statements from reviewed articles included in the theme Pediatric Nursing.

Authors	Sub-theme
	Education
Ramelet et al., 2012	Education needs for nurses at different stages of development
Ramelet et al., 2012	Evaluate the learning benefits of clinical simulation
Ramelet et al., 2012	How should CPR be taught?
Ramelet et al., 2012	Identify PICU nurses' professional development needs
Ramelet et al., 2012	Does postgraduate education positively affect patient care?
Wilkes et al., 2013	Skill and knowledge retention following paediatric resuscitation education programs for health professionals
Brenner et al., 2014	Impact of infection control education on practice
Tume et al., 2014	The effect of continuous education and training methods on nursing competence and knowledge
Tume et al., 2014	Education and training to prepare new nurses to work in PICU
Tume et al., 2015	Does frequency and format of SIM/CRM training affect nurse confidence and competence to manage crisis situations?
	Workplace
Wilson et al., 2010	Identify where nurse-practitioners can be employed within children's health care
Ramelet et al., 2012	*Re*-evaluate the current impact of shift work on morale/retention/lifestyle/maintenance of clinical expertise
Ramelet et al., 2012	Should nurses have more influence in patient care decision making?
Ramelet et al., 2012	Identify the optimal preceptorship program
Ramelet et al., 2012	Explore flexible employment opportunities
Ramelet et al., 2012	Re-examine optimal patient/nurse ratios in the current nursing shortage climate
Ramelet et al., 2012	What is the most effective method to communicate information to staff?
Green et al., 2014	Effective orientation for nurses
Wilkes et al., 2013	Should there be any difference between nurse ratios and acuity for paediatrics and adult patients?
Wilkes et al., 2013	Identify where nurse-practitioners can be employed within children's health care
Brenner et al., 2014	Factors influencing advocacy, confidence of children's nurses' in the clinical area
Tume et al., 2014	Identifying appropriate nurse staffing levels and recruitment strategies
Tume et al., 2014	Improving healthcare team communication
Tume et al., 2015	Does local healthcare hierarchy & culture impact team performance during crisis situations?
	Quality improvement
Wilson et al., 2010	Determine how pain assessment impacts on pain management (including nurses' perceptions of pain assessment, effectiveness of different analgesic groups, postoperative pain management)
Wilson et al., 2010	Identify the nurse-practitioner role in paediatrics to improve care delivery and outcomes
Wilson et al., 2010	Identify nurse sensitive clinical indicators in paediatrics
Ramelet et al., 2012	Does increasing nursing autonomy result in improved patient care?
Ramelet et al., 2012	Development of nurse led weaning competency standards
Ramelet et al., 2012	Utility and safety of nurse-led pain and sedation management protocols
Ramelet et al., 2012	Determine how nursing care impacts on neurological outcomes
Ramelet et al., 2012	How can nurses improve their practice?
Ramelet et al., 2012	How can we measure quality of nursing care?
Wilkes et al., 2013	Why paediatric nurses do not use pain scores for children?
Wilkes et al., 2013	Does a nurse-initiated pain assessment lead to better pain management?
Wilkes et al., 2013	Identify the nurse-practitioner role in paediatrics to improve care delivery and outcomes
Green et al., 2014	Pediatric nursing sensitive outcomes and core measures
Tume et al., 2015	Articulate core nursing competencies that prevent unstable situations from deteriorating into crises in pediatric critical care.
Tume et al., 2015	Does authentic pediatric nursing leadership create healthy work environments that optimize patient and family outcomes?
Tume et al., 2015	Does a formal organizational structure with dedicated mentors impact the advancement of critical care nursing science?
	Nurses' health
Ramelet et al., 2012	Management of nursing stress/burnout
Ramelet et al., 2012	Explore the impact of perception of futility of treatment on nurses
Ramelet et al., 2012	How can the disadvantages of working nights be minimised?
Ramelet et al., 2012	What support do nurses need?
Ramelet et al., 2012	How do nurses deal with death?
Ramelet et al., 2012	Explore the value of group debriefing after critical events
Ramelet et al., 2012	Impact of environment on occupational health and safety issues
Tume et al., 2014	Reducing stress and burnout in PICU nurses
Tume et al., 2015	Does shared responsibility for continuous quality improvement and crisis preparedness improve junior nurse confidence and job satisfaction?

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research questions were "Should there be any difference between nurse ratios and acuity for pediatric and adult patients?" (Wilkes et al., 2013 p. 5) and "Does local healthcare hierarchy & culture impact team performance during crisis situations?" (Tume et al., 2015 p. e177).

Education. Five articles referred to ($n = 10$) nursing education (Brenner et al., 2014; Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015; Wilkes et al., 2013). This sub-team was about education, training, and the effects on patient care, retention and nurse confidence, competence and knowledge. Two examples of research questions were "Does postgraduate education positively affect patient care?" (Ramelet et al., 2012 p. 52) and "Does frequency and format of simulation/crisis management training affect nurse confidence and competence to manage crisis situations?" (Tume et al., 2015 p. e177).

Quality improvement. Five articles included statements ($n = 16$) about quality improvement (Green et al., 2014; Ramelet et al., 2012; Tume et al., 2015; Wilkes et al., 2013; Wilson et al., 2010). This sub-theme included priorities about nursing core quality indicator measurements, nurse-led activities and leadership. Examples of research questions were "Does authentic pediatric nursing leadership create healthy work environments that optimize patient and family outcomes?" (Tume et al., 2015 p. e178), "Why paediatric nurses do not use pain scores for children?" (Wilkes et al., 2013 p. 5) and "Identify nurse sensitive clinical indicators in pediatrics" (Wilson et al., 2010 p. 1924).

Nurses' health. Three articles included statements ($n = 9$) about nurses' health (Ramelet et al., 2012; Tume et al., 2014; Tume et al., 2015). The priorities included stress, shift-work, work environment and debriefing. Two of the research questions mentioned were "How can the disadvantages of working nights be minimised?" (Ramelet et al., 2012 p. 50) and "Reducing stress and burnout in PICU nurses" (Tume et al., 2014 p. e211). See Table 7.

Discussion

This scoping review identified eight articles reporting on pediatric nursing research priorities from the perspective of nurses in the last ten years and synthesised the priorities to create international themes and sub-themes to direct future research. All articles had used consensus building methods to report priorities which were appraised as high quality according to the recently developed CREDES recommendations (Jünger et al., 2017). The findings confirm that no matter the setting, nurses need to deliver evidence-based practice and collaborate with researchers and other team members in order to generate research evidence. In this review, all studies included research priorities about patient safety such as medication errors, critical incidents and hospital acquired infections. Adverse events in pediatric inpatient settings have gained attention during the last decade and remain an important issue (Berchialla, Scaioli, Passi, & Gianino, 2014). A recent study from USA showed that between 2007 and 2012 the number of adverse events did not improve (Stockwell et al., 2018). In a Cochrane review (2015) the authors concluded that there was not enough evidence for best practice to prevent medical errors for children in hospital (Maaskant et al., 2015). Safety also included child protection, child abuse, neglect and maltreatment. Nurses, in hospitals as well as child- and school health, play an important role in the disclosure of child maltreatment (Harding, Davison-Fischer, Bekaert, & Appleton, 2019), yet a study of USA Nurse practitioners showed that 51% of respondents did not ask parents questions about domestic violence (Hornor et al., 2017). Patient safety has also been reported as highly valued by children themselves (Brady, 2009). Thus, research to increase safety for children should remain a priority in all healthcare settings.

Pediatric nurses work with children in all developmental stages and in different contexts no matter the diagnosis. For instance, nurses play a key role in optimising end-of-life care for children and their families. A recent integrated review of parental perspectives in end-of-life care concluded that future research ought to focus on facilitators for development of trust and good communication between family members and health care providers (Bennett & LeBaron, 2019). Thus, long-term illness and end-of-life care research topics identified in this review remain current.

Transfer between settings and transition between contexts are ongoing issues for children and their families. A child may undergo a transition from being well to sick, a child with long-term illness may experience another transition when transferring from pediatric care to adult care or community. A Cochrane review about transition from pediatric to adult care, concluded that there was too few eligible studies to conduct a review (Campbell et al., 2016), which confirms that the priorities about care transition identified in this review are still current.

Family-centered care (FCC) research priorities were strongly represented in this review and there is a plethora of literature about FCC (M. Foster, Whitehead, & Maybee, 2016; M. J. Foster, Whitehead, Maybee, & Cullens, 2013). Perhaps this reflects the ongoing challenges in operationalising FCC in different contexts (Feeg et al., 2016). In this review FCC and Child Centered Care statements were combined into a CFCC theme which reflects more contemporary thinking and terminology (Coyne, Holmström, & Söderbäck, 2018; M Foster, Whitehead, & Arabiat, 2019). Further research is needed to inform how to implement, measure and evaluate CFCC interventions (Guest et al., 2013; Tallon, Kendall, & Snider, 2015).

The theme psychological health encompasses mental health problems such as poor psychological outcomes following hospitalisation as well as distress and anxiety related to family separation in hospital. These are reported as among the leading causes of burden among children and young people (Australian Institute of Health and Welfare, 2018). Regardless of illness severity, diagnosis or disability a child's healthcare trajectory can lead to long-term stress and problems such as poor cognition, poor sleep, fear, pain, anxiety and depression (Alfven, Grillner, & Andersson, 2019; Angelhoff, Edell-Gustafsson, & Mörelius, 2015; Kuba et al., 2019). Therefore, more research is needed about how to prevent stress and mental health problems among children and adolescents.

In addition to conducting research to improve the nursing care for children and their families, identified nursing research areas also included development of the profession, the workplace and working conditions. Interestingly improving or measuring quality of nursing care and implementation of evidence into practice were only briefly referred to in the articles. Implementing clinical practice guidelines is an effective strategy to promote standardisation and uptake of evidence in clinical practice (Emons et al., 2016), yet it remains challenging to ensure consistent and widespread uptake (Almblad, Siltberg, Engvall, & Malqvist, 2018; de Groot et al., 2018). Implementation of evidence into clinical nursing practice is often complex, involves changing behaviours and sustaining change over time (Gill, Leslie, & Marshall, 2019). Implementation research involves the scientific study of methods to promote the uptake of research findings into routine practice and warrants more nursing research attention than was identified from this review.

The themes and sub-themes constituting the findings are common priorities throughout academic programs and clinical institutions today. Evidence-based practice, patient safety, family-centered care, and care surrounding the end of life are broad themes that are already visible throughout nursing literature, possibly reflecting how priorities set over the last ten years have influenced nursing research. However, the research priorities included are still current and important in order to improve pediatric nursing care even further. Many topics are covered in the 234 included research priorities while some were less represented. For instance, considering the increasing number of refugee children and their families in need of health care, perhaps if research priority setting was undertaken today these may also include research priorities addressing communication challenges such as using interpreters in pediatric nursing. Importantly, the most significant gap evident in this review was that research priorities were identified from the perspectives of nurses only. It is unknown if these priorities reflect the priorities of other stakeholders, especially the key consumers of nursing care; children and their families.

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Limitations of this study

The synthesis of the priorities was first undertaken individually by two authors, agreement reached and then discussed among the three authors in order to reach consensus. Although consensus was reached by this method, some statements could have fitted in more than one theme. Five studies reported either acute or critical care nursing research priorities which resulted in an overall acute care focus to the findings. Areas not well covered were child-, school-, and mental health. The eight studies' combined total of 234 research priorities were informed by almost 900 nurses and originated from the USA, Europe, Ireland and Australasia. In future studies, it would be interesting to learn more about research priorities from countries not represented in this review.

Conclusions

This scoping review identified pediatric nurses' research priorities from eight articles and three continents synthesised into themes and sub-themes from the last ten years. All studies used consensus building methods to report priorities and the origin of the included articles resulted in a large focus on critical or acute care. Research to promote patient safety was a theme referred to in all articles. The identified priorities appear to be still relevant for current practice but do not represent all practice areas for pediatric nurses. No reports of community child and adolescent health nursing research priorities were found. In addition and of most importance the identified priorities were reported from nurses' perspectives only. Other stakeholders' views, including children's and the families' perspectives remain unknown.

Implications for practice

This pediatric nursing research priority synthesis can be used as a base for priority setting nationally or locally and for creating research questions directing future studies. It will be important to identify priorities from the perspectives of stakeholders including children and their families.

CRediT authorship contribution statement

Evalotte Mörelius: Conceptualization, Methodology, Project administration, Data curation. **Mandie Foster:** Conceptualization, Methodology, Project administration, Data curation. **Fenella J. Gill:** Conceptualization, Methodology, Project administration, Data curation.

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Declaration of competing interest

None.

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