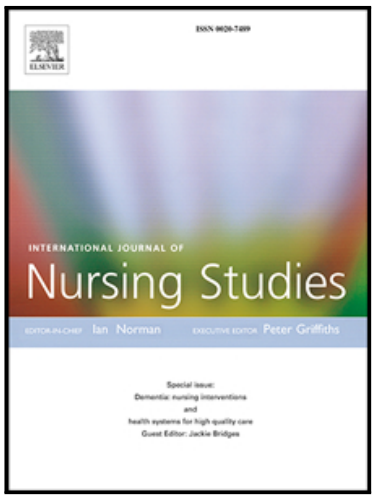

Family ward rounds in Intensive Care: an integrative review of the literature

Kalliopi Kydonaki , Mari Takashima , Marion Mitchell

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Title page

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Author names:
Kalliopi Kydonaki:
Lecturer Adult Nursing (PhD, MSc, BSc, RN, FHEA), School of Health and Social Care, Edinburgh Napier University, Sighthill Campus, 9 Sighthill Court, EH11 4BN, Edinburgh, UK
Email: C.Kydonaki@napier.ac.uk

Mari Takashima:
PhD Candidate, Research assistant, epidemiologist (MSc, Post Grad certificate, BSc)

School of Medicine, Centre for Applied Health Economics

Griffith University| Nathan campus| QLD 4111| Australia

N16 -1.10K

Email: m.takashima@griffith.edu.au

Marion Mitchell:

Professor Critical Care (RN, PhD, FACCCN, Centaur Fellow),

School of Nursing and Midwifery I Menzies Health Institute Queensland I **Griffith University**

Address N48 2.14, Nathan Campus, 170 Kessels Road, Nathan, QLD, 4111.

Email: marion.mitchell@griffith.edu.au

Corresponding author:
Kalliopi Kydonaki: Lecturer Adult Nursing (PhD, MSc, BSc, RN, FHEA), School of Health and Social Care, Edinburgh Napier University, Sighthill Campus, 9 Sighthill Court, EH11 4BN, Edinburgh, UK
Email: C.Kydonaki@napier.ac.uk

ABSTRACT

Background: The involvement of family members in the ward rounds is a novel but under-researched family-centered care intervention in adult intensive care units, with limited evidence on the impact it has on patient and family-centered outcomes.

Objectives: This integrative review aimed to understand how family rounds are implemented in critical care and to appraise the evidence on outcomes for patients, family members, and healthcare professionals.

Design: An integrative review methodological framework permitted the inclusion of all research designs.

Data sources: MEDLINE; CINAHL; PsycINFO; Cochrane Library; Web of Science Current Contents Connect; Web of Science—Core Collection; The Joanna Briggs Institute EBP Database; ProQuest Sociological Abstracts; and ProQuest Dissertation and Theses Global, Embase were systematically searched.

Review Methods: We reviewed studies that referred to or used as an intervention the involvement of family members in daily critical care team rounds. We included primary research in adult intensive care units regardless of patients' length of stay. We excluded patients receiving end-of-life care. We considered any outcome related to the critically ill patient and/or their family member, outcomes related to the healthcare professionals, and outcomes related to clinical and/or nursing treatment. The Mixed Methods Appraisal Tool was used to appraise the quality of the studies. The review was registered in the Prospero database.

Results: From the 541 articles initially retrieved, 15 studies met the inclusion criteria and were included in the review. Studies originated from the United States of America and Canada since 2003, and a variety of designs were used. Four before and after studies and a non-randomized experimental study explored the impact of structured family rounds on family and staff satisfaction, showing limited improvement in satisfaction. Six

cross-sectional survey studies explored family members' and clinicians' perceptions and demonstrated a positive attitude towards family-centered rounds, but some concerns were raised from the nursing staff. Three qualitative studies and a mixed-methods study identified structural and cultural factors influencing healthcare professionals' and families' acceptance of family rounds. Most studies were of poor to moderate quality, with limited confidence in the outcomes reported.

Conclusions: Most studies reported improved family satisfaction as the main outcome. Future research should focus on longitudinal patient and family-centered outcomes, including mental health outcomes, and on qualitative data to understand the processes, barriers, and facilitators to implement family-centered rounds in intensive care units.

What is already known about the topic?

- The involvement of family members in the ward rounds is a novel but under-researched family-centered care intervention in adult intensive care units.
- Despite the positive attitude of family members and patients involved in the ward rounds, there is limited knowledge on the impact this involvement may have on patient and family-centered outcomes.

What does this paper add?

- There is a lack of rigour in the studies that investigated the impact of family rounds on patients, family members, and staff outcomes as an approach to enact family-centered care in adult intensive care units.
- Future research should focus on the design of theoretically-based interventions to improve family engagement in ward rounds with the health care professionals and to identify the appropriate patient and family-centered measures.

Keywords: systematic review, nursing, family members, relatives, critical care, family involvement, Family-Centered Rounds, ward rounds.

INTRODUCTION

International (IHI, 2014; WHO, 2007) and national organizations (CQC, 2008) emphasize the increasing need to promote family-centered care across the health and social care sector to improve the service user experience. The term family-centered care is defined as a dynamic, values-based approach to health care, respectful of and responsive to individual families' needs and values, where therapeutic relationships are formed and fostered among patients, family members and healthcare providers (Davidson et al., 2017; McCormack & McCance, 2010). Principles developed to foster family-centered care include information sharing, respect, honouring of differences, having equal partnerships and mutual collaborations, negotiations, and involving the family community (Kuo et al., 2012).

In adult critical care settings, family members act as surrogates of critically ill patients. They are often a significant resource to influence patient care as they can communicate the values and preferences of the patient and provide information on behalf of the patient who may be unable to communicate (Azoulay et al., 2005). However, a critical illness admission of a loved person triggers a stressful experience for family members resulting in high levels of depression, anxiety, post-traumatic stress symptomatology and caregiver burden, conditions that have been described with the term post-intensive care syndrome-family (Davidson, Jones & Bienvenu, 2012; Pochard et al., 2005). It is only in the last ten years that clinicians have recognized the real need to include family members as partners in care provision and decision-making in adult critical care and to provide support through family-centered approaches during the critical illness journey to reduce post-intensive care syndrome-family and improve patient care.

The challenge to operationalize family-centered care is in identifying strategies to shift the unconsciously encouraged paternalistic attitude of healthcare professionals towards the patients and families into a mutually beneficial partnership (Kean, 2010). Interventions that aimed to introduce family-centered care have focused on improving information flow and overall satisfaction with care by reshaping the design of intensive care settings (Redden & Evans, 2014; Thompson et al., 2012), re-constructing

multidisciplinary teams (Arora et al., 2006), and allowing family presence in procedures, such as cardiovascular resuscitation (Jabre et al., 2013; Jabre et al., 2014) and ward rounds, mainly in pediatric settings (Azoulay et al., 2002; Azoulay & Pochard, 2003; Latta et al., 2008; Lautrette et al., 2007; Muething et al., 2007; Pochard et al., 2005; Rappaport et al., 2012).

A scoping review by Davidson (2013) on family presence on rounds in neonatal, pediatric and adult intensive care units suggested that family members view their involvement positively, as it improves communication, reduces family anxiety, and increases family and patient satisfaction. In contrast, healthcare professionals have expressed concerns about including families in patient rounds, such as the prolongation of rounds, reduced medical education for trainees, concerns about the maintenance of confidentiality, and increased fear and confusion for family members (Curtis & White, 2008; Davidson, 2013). Families should nonetheless be given a choice to participate in rounds, which currently is not common practice worldwide (Davidson, 2013).

The involvement of family members in rounds in adult critical care is novel and is an under-researched family-centered care intervention with limited evidence on its impact on patient and family outcomes. This integrative review aimed to understand how family rounds are implemented in critical care and to appraise the evidence on outcomes for patients, family members, and healthcare professionals.

MATERIALS AND METHODS

Research questions

1. How are family rounds implemented in adult critical care?
2. What is the effect of family involvement in rounds in adult critical care for patients, family members, and healthcare professionals?

Design

A comprehensive integrative methodological framework (Whitemore & Knafl, 2005) was employed to permit the inclusion of all research designs, including experimental and non-experimental studies. The review process was designed and conducted in consultation with the PRISMA statement and Cochrane Handbook for Systematic Reviews.

Definition of variables

The recognized Setting – Perspective – Intervention – Comparison – Evaluation (SPICE) framework was used to define the terms and present the inclusion and exclusion criteria (Table 1). There were no date or language restrictions applied.

Table 1. SPICE framework and definitions

Focus	Conceptual question	Features
Setting (S)	Where is ……?	Inclusion: Critical care settings. The term refers to the department in a hospital that provides intensive and specialized medical and nursing care. MESH/ key terms: "intensive care unit", "critical care unit", “high dependency unit”. Exclusion: Pediatric intensive care units/ wards, general wards,

		end-of-life care.
Perspective (P)	Who is affected by …?	Inclusion: Studies of critically ill adult patients (>18 years old), male or female, admitted to a critical care unit regardless of their length of stay. Family members: broadly defined as whomever the patient considers his/her family, and/or someone with a lasting and sustained relationship with the patient. MESH/key terms: "next of kin", relative, "loved one", carer, family, "family member", "significant other". Exclusion: Pediatric patients, palliative, or terminally ill patients.
Intervention (I)	What is the intervention?	The involvement of family members in ward rounds in intensive care units. Inclusion: Interventions of any involvement of family members in ward rounds, as described or explored in the studies. The term family is included in the definition of ward round. MESH/ key terms: "patient rounds", "teaching rounds",

		round*. Exclusion: ward rounds or rounds that included only healthcare professionals and there was no reference to the involvement of family members.
Comparison or control (C)	Which intervention is compared with….[the intervention stated above]?	Usual care, normally described as clinicians' ward round or medical ward round.
Evaluation	What are the outcomes or results measuring family-centered rounds?	All outcomes related to the patient, the family members, and the healthcare professionals, including nursing care and clinical outcomes.

Search methods

A wide variety of databases were searched in November 2019. Hand searches were performed to identify relevant studies for inclusion. Nine databases were searched, including the Cumulative Index to Nursing and Allied Health Literature (CINAHL; 1980-2019), U.S. National Library of Medicine (PUBMED and MEDLINE; 1950-2019), Excerpta Medica database (EmBase; 1980-2019), PROQUEST, Joanna Briggs, PsychInfo (1950 – 2019), Cochrane Library and Web of Science (core collection and current contents; 1990-2019). MESH terms and key terms were used in the title and abstract to increase the coverage of the search and were combined using Boolean (Table 2). Articles were screened for relevance regarding the inclusion and exclusion criteria. The authors of the articles with only abstracts were contacted for full text published articles, where possible. Grey literature, editorial comments, and abstracts were excluded.

Table 2. Examples of database searches.

Database	Boolean search
Proquest	(ab(intensive care) OR ab(critical care) OR ti(intensive care) OR ti(critical care)) AND (ab(round*) OR ti(round*)) AND (ab(Family) OR ti(Family) OR ab(partner) OR ti(partner) OR ab(“loved one”) OR ti(“loved one”) OR ab(“next of kin”) OR ti(“next of kin”) OR ab(spouse) OR ti(spouse) OR ab("significant other") OR ti ("significant other*"))
PubMed	Search ((((intensive care[Title/Abstract]) OR critical care[Title/Abstract]) OR (intensive[Title/Abstract] OR critical[Title/Abstract]))) AND (((((round*[Title/Abstract]) OR family centered rounds[Title/Abstract]) OR ward round*[Title/Abstract])) AND (family[Title/Abstract] OR partner[Title/Abstract] OR "loved one"[Title/Abstract] OR "next of kin"[Title/Abstract] OR spouse[Title/Abstract] OR "significant other*"[Title/Abstract]))
PsychInfo	1. round*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 2. (Family or partner or spouse).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 3. (intensive care or critical care).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] 4. 1 and 2 and 3
Joanna Briggs	(critical care or intensive care).mp. [mp=text, heading word, subject area node, title] (Family or partner or spouse).mp. [mp=text, heading word, subject area node, title] round*.mp. [mp=text, heading word, subject area node, title] adult.mp. [mp=text, heading word, subject area node, title]

Methodological quality appraisal

The Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018) was used to assess the methodological quality of all included studies. The MMAT tool is a valid and reliable tool that permits the methodological appraisal of the most common types of study methodologies and designs and allows a more detailed presentation of the ratings of each criterion to inform an assessment of the quality of the studies. No studies were excluded based on the MMAT rating. The review was registered in the PROSPERO database (registration no: CRD42018088020).

Data abstraction

Two of the researchers (KK, MT) extracted the data using a data extraction tool that we devised. Regarding the Cochrane guidelines, we extracted data on author, year, country, design, sample, sample demographics, unit characteristics, cohort, intervention, usual care, measures, main outcomes (primary and secondary), limitations, and MMAT assessment. Two authors (KK, MT) assessed each study independently and compared the results. Where consensus could not be reached, the third author (MM) was consulted, and a consensus was achieved collaboratively amongst the three authors.

Data analysis

Inductive thematic analysis and narrative synthesis using the Cochrane Consumers and Communication Review Group guidance for narrative synthesis was undertaken to develop emergent themes from the patterns identified in the chosen studies. The included articles were read, re-read, and coded by two authors (KK, MT), and categories were created to compare codes while referring to the existing literature to finally conclude on the main themes that were agreed by all three researchers. A codebook was developed, which was discussed, revised, and verified by all researchers. This ensured that the themes emerged from different codes and were linked to the data from all the studies included in the analysis. We conducted a narrative synthesis that involved the exploration of relationships within and between studies to answer our research questions, together with an assessment of the robustness of the evidence. First, we compared studies of a similar design, identifying differences in intervention characteristics, settings, and outcomes measured. Second, we examined methodological differences between and across studies and the impact of the design on the outcomes. We aimed to conceptually triangulate the data to understand the effectiveness of family rounds on outcomes for patients, families, and healthcare professionals.

Ethical considerations

This integrative review is an analysis of secondary research; hence, no ethical approval was required. However, all studies included had obtained ethical approval.

RESULTS

The PRISMA chart is presented in Figure 1. From a total of 541 articles retrieved from the initial database searches and additional resources, there were 400 unique records. Of these, 33 (8.25%) met the inclusion criteria. Eighteen articles were excluded with reasons, leaving 15 articles in this review.

As per MMAT ratings of each criterion, most studies were of moderate to poor quality (supplementary file). All studies were generated from only two countries, the USA and Canada. A variety of research designs were used, and most studies were conducted in a single setting (Table 3). No studies were conducted outside intensive care units, for example, in a high dependency unit.

Five of the studies involved only family members in their sample (Cody, Sullivan-Bolyai & Reid-Ponte, 2018; Jacobowski, Girard, Mulder & Wesley, 2010; Mangram, McCauley, Villarreal, Berne, Howard et al., 2005; Weber, Johnson, Anderson, Knies, Nhundu et al., 2018; Wysham, Mularski, Schmidt, Nord, & Mosen, 2014), five studies involved only healthcare professionals (Allen, Pascual, Martin, Reilly, Luckianow et al., 2017; Au, Roze des Ordons, Parson Leigh, Soo, Guienguere et al., 2018; Holodinsky, Hebert, Zygun, Rigal, Berthelot et al., 2015; Ingram, Kamat, Coopersmith & Vats, 2014; Reeves, McMillan, Kachan, Paradis, Leslie et al., 2015; Santiago, Lazar, Jiang & Burns, 2014), and five studies had a mixed sample of patients, family members and healthcare professionals (Au, Roze des Ordons, Soo, Guienguere, Stelfox et al., 2017; Cao, Tan, Horn, Bland, Giri et al., 2018; Reeves et al., 2015; Schiller & Anderson, 2003; Stelson, Carr, Golden, Martin, Richmond et al., 2016). Samples of patients and family members ranged from 20 to 234 participants, and samples of healthcare professionals ranged from 10 to 335 participants. All studies considered patients who spent more than 24 hours in intensive care as their participant group. No study distinguished between mechanically ventilated patients or non-mechanically ventilated patients apart from one (Cao et al., 2018), which reported that 53% of the patients were mechanically ventilated. Most family member participants were female and spouses/ partners.

Aims of the studies

The four before and after studies (Allen et al., 2017; Jacobowski et al., 2010; Weber et al., 2018; Whysham et al., 2014), and the prospective parallel-group study (Cao et al., 2018) aimed to determine the impact of a structured approach to inviting family members' participation in rounds and to measure their satisfaction with the care of the patient, communication with the healthcare professionals and the care team, and knowledge of the care planning.

The six cross-sectional surveys (Au et al., 2017; Holodinsky et al., 2015; Ingram et al., 2014; Mangram et al., 2005; Santiago et al., 2014, Schiller & Anderson, 2003) aimed to describe and compare patients', family members' and healthcare professionals' perspectives, experiences, and perceptions of family member involvement in rounds in intensive care units. Finally, the three qualitative studies (Cody et al., 2018; Reeves et al., 2015; Stelson et al., 2016) and the mixed methods study (Au et al., 2018) aimed to observe the implementation of family rounds and family involvement, to identify factors that affect family involvement in rounds and explore family members' perspectives.

Five studies (Cao et al., 2018; Jacobowski et al., 2010; Mangram et al., 2005; Weber et al., 2018; Wysham et al., 2014) measured family satisfaction as their primary or secondary outcome, of which only three (Jacobowski et al., 2010; Weber et al., 2018; Wysham et al., 2014) used a validated version of the Family Satisfaction-Intensive Care Unit survey tool (FS-ICU or FS-ICU 24R). Cao et al., (2018) and Mangram et al. (2005) used a bespoke family satisfaction tool, which was not validated, and Schiller and Anderson (2003) measured family member opinions and experiences of rounds with a non-validated tool. Common components of satisfaction among these tools were satisfaction with information provision, communication with healthcare professionals, satisfaction with the level of care, and a feeling of inclusion. Staff satisfaction was measured in three studies (Allen et al., 2017; Cao et al., 2018; Ingram et al., 2014) using non-validated survey tools.

Table 3. Characteristics of included studies.

Author/ Year/ Location	Design	Setting/ Sample	Intervention/ Family round practice	Measure	Main findings	Limitations
Methodological quality (MMAT rating 2018) High						
Au et al/ 2018/ Canada	Mixed methods	Seven medical-surgical adult ICUs (up to 36 beds), in seven hospitals across three Canadian cities. Sample: 300 individual patient care rounds (non-participant observation of MDT). Observations were conducted on 33 different lead physicians.	Each ICU had one to three rounding teams (11-13 patients per team), consisting of critical care physician, charge nurse, bedside nurse, respiratory therapist, frequently a pharmacist. MDT rounds held in the morning either inside or outside the patient's room. No visiting restrictions.	To describe family participation in ICU rounds and its association in rounding processes, including nature of communication, trainee teaching, and quality.	Eight themes identified: 1) Establishing relationship with ICU team; 2) Learning about family and patient; 3) Patient and family education; 4) Changes in team dynamics; 5) Impact on future family meetings; 6) Altered workflow during rounds; 7) Shared decision-making, consent, and updates; 8) Potential risks for families with offensive comments made by the ICU team. FM witnessed uncertainty and conflict among the ICU team.	Potential observation bias although research assistant not part of ICU team. Not focused on participation in decision-making, but just the processes of rounds. Limited observations to rounds only. Intrinsic bias. Limited transferability.
Jacobowski et al/ 2010/ USA	Before and after study	26-bed tertiary academic-medical ICU. Patients ICULOS >24h. Sample: FM of survivors (98 before vs. 89 after). FM bereaved (18 before vs. 22 after). 56% response rate.	Additional steps in existing FCR: a) Physician summary using lay language and (b) Opportunity to ask questions to the team. FCR included up to 2 FM per patient. Extended family conferences arranged as needed.	FS-ICU, communication items, and decision-making sub-score.	Frequency of physician communication (excellent in 38% of historical rounds versus 60% of family rounds; p=.004). Feeling supported in decision-making significantly changed for FM of survivors, but not for the bereaved (49 in historical rounds versus 69 in family rounds, p=0.005). No significant changes in all items of FS-ICU for the bereaved FM group. No difference in overall measures of satisfaction.	Single site study. Small sample size. Selection bias as not explained how FM were invited and refusal rate high. Possible ceiling effect as baseline satisfaction was already high.

Santiago et al/ 2014/ Canada	Cross-sectional survey	24-bed adult medical-surgical ICU. Sample: 12 MD, 95 nurses, 48 AHP, four managers	FM call from the waiting room and await permission by RN to visit. FM leaves the room during ward-round.	Comparison of attitudes and perceptions of family rounds between nurses, MD, and managers on the impact during first 48h from admission and after 48h from admission.	Family presence at rounds (54% RN strongly disagreed versus. 50% MD, p=0.024). Family presence in rounds increases duration of rounds and reduces medical education (36.8 - 44.2% nurses versus. 30.8 – 40.4% healthcare managers versus. 8.3 – 25% MD, p=0.003).	Single site study. Small sample size.
Stelson et al/ 2016/ USA	Qualitative study	Surgical adult ICU in university hospital. Patients ICULOS>72h Sample: 20 FM of patients 12 HCP (nurses, ANP, physicians)	FM invited to participate in rounds by the bedside nurse upon first contact and then daily thereafter if they are present at the bedside. No telemedical platform available at the time of the study.	Description of ICU rounds and family participation. Barriers and Facilitators to family-Provider interactions. Perception of Telemedicine.	Both FM and HCP described inconsistent rounding practices and family participation. Barriers: fear of being bothersome, medical comprehension, and sharing difficult news, distance to hospitals, work/family commitments, rounding schedule for FM. Facilitators of communication in rounds: time spent in ICU, familiarity with medical concepts, desire to understand prognosis, trust in medical team. Both FM and HCP were receptive to telemedicine for increasing participation in rounds.	Response bias, low sample size of providers, and FM Selection bias as only FM able to visit were interviewed. Not clear participation of FM in rounds.
Methodological quality (MMAT rating 2018) Moderate						
Cody et al/ 2018/ USA	Qualitative study	Two medical adult ICUs (15 beds ICU1 and 16 beds ICU2) in academic medical center. Sample: 19 FM (15 FM participated in rounds, 4 did not participate in rounds).	Critical care team meets daily with FM at bedside. Bedside rounds include attending physician, bedside nurse, nurse practitioner, respiratory therapist.	FM perspectives of ICU bedside rounds between FM who chose to participate and others who did not.	Experiences of participants in rounds: 1) the process provided a road map; 2) aware of plan of care and main concerns; 3) ask questions; 4) alleviate fear and anxiety; 5) make a connection and share the frustration and uncertainty; 6) maintain consistency with communication; 7) get prepared and set expectations; 8) frustration when rounds did not happen. Experiences of non-participants: 1) lack of communication on timing of rounds and FM not having the opportunity; 2) timing of rounds not always convenient for FM; 3) FM frustrated for lack of information.	No information about organization of rounds and role of FM in rounds. Limited to two medical ICUs. Selection bias caused by the small number of participants.

Holodinski et al/ 2015/ Canada	Cross-sectional survey with follow-up interviews	111 adult ICUs. Sample: MD (n=107, response rate 62%) Follow-up interviews from 9 of 10 provinces: 7 MD		Describe rounding practices, opportunities for improvement (i.e., Role of inter-professionalism; Patient and family involvement in rounds; Factors influencing productivity; Opportunities for teaching and Learning; Self-reported rounding quality.	Rounding practices varied across ICUs. Most MD welcome FM to attend rounds. Half of ICUs used tools to facilitate rounds. Interruptions were common. Factors influencing family Rounds. were: Role of inter-professionalism including the inter-professional team, interactions, an open and collaborative environment, communication and leadership and roles; Patient and family involvement. Factors influencing productivity: interruptions, timing of rounds, inconsistent attendance and rounding practice, inefficiencies, and tools to facilitate rounds. Opportunities for teaching and learning: engagement of essential participants, clearly defining participant roles, establishing a standardized approach to the rounding process, minimizing interruptions, modifying the role of teaching, utilizing a structured rounding tool, and developing a metric for measuring rounding quality.	Not family-centered round focused. The results represent the perspectives of MD in ICU and not other professionals.
Ingram et al/ 2014/ USA	Cross-sectional survey	One adult 93-bed mixed ICU, one pediatric 30-bed ICU in two University hospitals. Sample: 31 intensivists (67% response rate): 16 participants in family rounds and 15 non-participants in family rounds.	Family rounds left at the discretion of ICU medical director. In adult ICUs, intensivists participated in family rounds. In pediatric ICUs, intensivists do not participate in family rounds.	Intensivists' perception of comfort, staff satisfaction, teaching, and efficiency with family-centered rounds (FCR). 5-point Likert scale.	Physician comfort with FCR (participants 4.4+1.0 versus non-participants 2.7+1.7; p=0.002). Positive impact of FCR on staff (participants 3.6+1.2 versus non-participants 2.3+1.2; p=0.003). Positive perception of effect of FCR on patient outcome (participants 3.8+1.1 versus non-participants 2.9+1.3; p=0.05).	Two-site study. Possible selection bias. Small scale study with ambiguous sampling strategy. Non-validated staff satisfaction survey tool.
Reeves et al/ 2015/ USA	Ethnography	Eight ICUs in USA and Canada but data based on four adult	Family involvement in rounds	Exploration of usual care and factors impacting on inter-professional teamwork using Reeves et	Relational: 1) Positive ICU experience for FM facilitated by trusting relationship. 2) FM as advocates for patient. 3) FM often engaged in conversation about	Sample not described—Hawthorne effect.

		ICUs (2 academic hospitals and two community hospitals) in USA. Sample: 56 interviews with nurses, doctors, pharmacists, social workers, and FM.		al. 2010 conceptual framework.	patient care. 4) Continuity of communication between providers and between teams at times fractured. Processual: 1) Little involvement of FM in formal uni-professional rounds (rounds felt troubling for FM in the absence of information). 2) Collaboration facilitates improved patient care, but limits face to face interaction with providers. 3) Physical ICU space affects FM involvement. Organizational: 1) FM admittance to ICU enforced unevenly and affected FM involvement. Contextual: 1) Language and cultural differences shape how FM can engage in care decision-making in the ICU.	Questions were not directly focused on ward rounds, but there was reference to the involvement of FM in rounds.
Weber et al/ 2018/ USA	Before and after study	Single 14-bed neuroscience adult ICU at large academic medical center. Sample: 146 FM pre-intervention vs 141 FM post-intervention.	Supplemental standard family support with two scheduled afternoon rounds per week for FM led by ICU attending intensivist and a member of the ICU nursing leadership team.	FS-ICU 24	No significant change in the Global score or sub-scores of FS-ICU 24 (i.e., general ICU care and decision-making) (89.2±11.2 pre-intervention versus. 87.4±14.2 post-intervention, p = 0.60).	Single site. Ceiling effect with subsection of FS-ICU 24. Powered to detect a small improvement.
Wysham et al/ 2014/ USA	Before and after with three-year follow-up Q.I. project	Single 18-bed medical-surgical ICU, non-academic community hospital. Sample: 38 patients & FM pre-intervention vs 27 patients &	Implementation of VALUE mnemonic to improve communication with families.	Process measures: a) Daily update of FM b) Nurse participation in update. c) Change of goals noted. d) Documentation of goals. e) FM conference rate. f) FS-ICU	Process measures of communication showed improvement across the evaluation periods: a) Daily updates with FM improved from 62% daily updates pre-intervention versus 76% post-intervention versus 84% in follow-up period (p<.001) b) No change to nurse participation in update post-intervention but in follow-up. c) Documentation of goals increased post-intervention (50% to 61%, p<0.001) and at follow up (97%;	Single site study. High response bias (response rate 39%). No randomization. Not powered to show significant effect on family satisfaction. No

		FM post-intervention vs 42 patients & FM at follow-up			p<0.001). d) FM conference rate increased post-intervention but not at follow up. e) FS-ICU no significant change in median.	description of rounds at pre-intervention phase.
Methodological quality (MMAT rating 2018) Low						
Allen et al/ 2017/ USA	Before and after study - survey	Single surgical ICU: Patient ICULOS>24h Sample: 412 surveys before, 427 surveys after Nurses: N=49 before, N=47 after Physicians: N=5 before, N=6 after	FM invited to participate in rounds between 8 and 12am	Nurses' and physicians' satisfaction with planned family interactions. FM knowledge of care and plans. Number of family meetings per week outside of rounds. Goals of therapy, including end-of-life care discussed in rounds.	Nurses were uniformly satisfied (18.4% versus 97.9%; p<0.001) FM knowledge of care and plans increased significantly (35% pre-intervention versus. 88% post-intervention, p<.0001). Goals of therapy, including end-of-life care, were frequently discussed on rounds with FM (9.4% pre-intervention versus. 82.5% post-intervention, p<.001). FM knowing who the doctor is (59.9% pre-intervention versus. 89.9% post-intervention p<.01). Reduced number of meeting post-intervention (mean 5.3 meetings pre-intervention versus. 0.3 meetings post-intervention; p<0.01).	Single site study. Poor response rate (50%). Non-validated staff satisfaction survey tool. Response bias as intensivists not anonymized.
Au et al/ 2017/ Canada	Cross-sectional survey	Four medical-surgical adult ICUs. ICULOS>48h, 63 FM attended rounds (62%), 258 HCP (43%)	FM invited to participate in rounds by charge nurse. Visiting hours not restricted, but lack of policy regarding FR and increased variation in practice.	Experiences, preferences, and perceptions of FM participation in rounds	Differences in opinions between providers and FM regarding interest in participation. Providers estimated moderate interest, FM expressed high interest. FM and providers agreed on indicated roles of FM during rounds as listening, sharing patient information, asking questions, but significantly disagreed about participating in decision-making (36.4% FM versus 58.5% providers, p= 0.003). Nurses more likely to avoid prognosis discussions with FM than physicians (26% physicians versus 60% nurses and other professionals, p=0.008). Providers were more likely than FM to perceive family participation in rounds	High response bias as only FM who attended rounds were invited to participate, low response rate of staff, physicians, were a minority in the sample, and there was high number of part-time staff. Risk of social desirability bias.

					as stressful (7% versus. 22%; p=0.02) and confusing (0% versus. 28%; p<0.001).	
Cao et al/ 2018/ Canada	Prospective, nonblinded parallel-group study	One adult 25-bed medical ICU. Sample: 367 patient encounters PCSIBR vs. 301 patient encounters non-structured IBSR, HCP, and FM	PCSIBR team. Physicians, bedside nurses, RT, pharmacists were educated about their roles and the protocol. All HCP attended rounds at the bedside with the patient and/or FM (s).	Rounds completion, quality of rounds, satisfaction with rounds.	Total rounding and interruption time were significantly shorter on PCSIBR compared to non-structured IBR (17.6±9.3 minutes in structured family rounds versus 23.6±14.6 minutes in historical rounds; p<0.01). Improved communication of care plans (91% historical rounds versus 96.7% family rounds, p<0.01), increased input from medical team, clarity on task assignments, and teaching opportunities improved (4±0.8 in structured family rounds versus 3.8±0.9 in historical rounds, p=0.02). No difference in FM satisfaction between the groups. PCSIBR provided a venue for increased rounding efficiency, provider satisfaction, and consistent teaching, without impacting on patient/ family perception.	Single site study. No randomization. Possible contamination between groups due to the study design. Sample size and duration limited. Non-validated FM satisfaction survey tool. Hawthorne effect.
Mangram et al/ 2005/ USA	Cross-sectional survey	One adult 16-bed trauma ICU. Patients ICULOS>3days. Sample: FM (n=55, response rate 22%)	FM scheduled to visit at 10:45 and invited to ask questions. Single opportunity for FM to communicate with MDs. Family rounds happen at bedside.	FM satisfaction of family rounds (% agreement). 5-point Likert scale.	FM look forward to having a specific time of day to meet with trauma team (86.5%). FM liked having rounds by the bedside (90%). FM believed all concerns were addressed during FR (75.4%). FM overall experience excellent (84.9%).	Single site survey. Non-validated FM satisfaction survey tool. High recollection bias as mailed survey. Low response rate. No report on off-hours requests for family discussions.
Schiller & Anderson/ 2003/ USA	Cross-sectional survey	One adult ICU & one pediatric ICU in a 400-bed	FM informed at admission about participation in	FM and nurses' opinions and experiences with rounds and	Importance of seeing the doctor daily (6.7). Importance to ask questions (6.6).	Single site survey. Non-validated FM

		community-academic hospital. Patient ICULOS>24h. Sample: Convenience sample of FM (n=34, response rate 29%) and ten nurses.	rounds for information exchange and be present in the rounds at 8am. FM were asked to confirm their understanding and to ask questions. Supplementary meetings scheduled to discuss complex interventions if required.	communication (mean score agreement).	FM's knowledge of care plans improved (6.3).	and staff survey tool. Not complete presentation of the data, as nurses' surveys not presented fully. No correlation made between opinions and sample characteristics. High response bias.

FM: Family member, MD: Medical Director, AHP: Allied Health Professionals, HCP: Healthcare Professionals, FR: Family Rounds, ICULOS: Intensive Care Unit Length of Stay, RT: Respiratory Therapists, PCSIBR: Patient-centered Structured Inter-professional Bedside Rounds. FS-ICU: Family Satisfaction – Intensive Care Unit, ICU: Intensive Care Unit

Themes

The thematic analysis identified three main themes that answered our research questions about the involvement of family members in rounds and the effect this has on patients, family members and healthcare professionals; *Interactions and communication*, *Organization of rounds*, and *Intensive Care Unit Culture*, with subthemes as described below. These themes may inform an operational framework for the design, implementation, and measurement of the effect of family-centered rounds in adult intensive care units in future practice and research and are depicted in Figure 2.

1. *Interactions and communication*

Interactions and communication were concepts that referred to the relationships developed amongst clinicians and between clinicians and family members/patients during the ward rounds, with a focus on improving care delivery. There was agreement that interactions had a positive effect on improving family member satisfaction by increasing situational awareness about the patient's condition and care, the feeling of support in decision-making, and by advancing their emotional experience of critical care.

a. Increase of situational awareness and involvement in decision-making

All qualitative and mixed methods studies explored the interaction between the family and the healthcare professionals. Interactions enabled the sharing of valuable information about the patient and their care, increased both family members' and healthcare professionals' awareness of uncertain clinical situations, and helped to inform future steps in care provision (Au et al., 2018; Cody et al., 2018; Reeves et al., 2015; Stelson et al., 2016). During this interaction, a connection and relationship were built, and if both parties engaged in a trustful and continued conversation, it marked positive experiences for both. In contrast, when little involvement of family members in formal professional rounds was observed, it resulted in increased anxiety and an onerous experience, due to the limited information received (Reeves et al., 2015).

In three of the cross-sectional survey studies (Au et al., 2017; Mangram et al., 2005; Schiller & Anderson, 2003) more than 75% of family members considered the rounds informative and felt comfortable to ask questions to improve their knowledge. Topics reviewed in rounds included discussion of diagnoses, daily plans, goals of care, prognosis, and emotional support (Au et al., 2017). All before-and-after studies demonstrated improvements in interaction and communication post-intervention. The findings of a study conducted by Jacobowski et al. (2010) demonstrated that the frequency of communication between family members and physicians was statistically significantly improved with family rounds in the critical care survivors' groups and remained sustainable during the follow-up assessment period, according to a study conducted by Wysham et al. (2014).

Allen et al. (2017) observed statistically significant improvements in family members' knowledge of the care plans and support in decision-making, the knowledge of the team's care goals, and communication between the family members and the doctor. In Wysham et al.'s study (2014), there were similar clinically significant improvements in the documentation of daily goals and understanding of the patient as a person.

Cao et al. (2018) also showed an increase in family member situational awareness, albeit with no significant difference between the intervention and control groups; however, discussing and summarizing care plans with the entire team showed significant improvement. All qualitative studies identified that family members' involvement in rounds worked as a road map to understand the clinical situation of the patient, the goals of treatment, and expectations; furthermore, the family members felt included in the decision-making when they had the opportunity to be involved. For clinicians, the interaction between family and healthcare professionals improved their understanding of the patient and their family and provided an opportunity to share uncertainty, goals, and care with the family.

b. Advancing the emotional experience

Family satisfaction and experience were assessed in most studies as a primary or secondary outcome. Jacobowski et al. (2010) and Wysham et al. (2014) commonly

measured family member satisfaction using the Family Satisfaction-Intensive Care Unit summary score, including the satisfaction with care and decision-making sub-scores, and showed a trend towards increased family satisfaction, but with no statistical significance. In contrast, Weber et al. (2018) found no difference in the Family Satisfaction-Intensive Care Unit 24 score between the pre- and post-intervention phases after implementing additional bedside visits to families two afternoons per week to the existing family rounds.

Allen et al. (2017) measured only staff satisfaction when involving families in rounds and found no significant changes. In the cross-sectional surveys (Au et al., 2017; Holodinsky et al., 2015; Mangram et al., 2005; Schiller & Anderson, 2003), family members, patients, and healthcare professionals considered family involvement positively, and most family members rated their encounter with the physicians as good or excellent (Mangram et al., 2005). Family members felt included, respected, and comfortable with physicians, but these feelings were diminished when there was a lack of clarity about the goals of care (Holodinsky et al., 2015). Feelings of gratitude, emotional support, and reassurance were also described in Au et al.'s (2018) observational study. Cao et al. (2018) showed a trend towards increased patient and family satisfaction in structured rounds for being included and listened to, albeit with no statistical significance. None of the studies was powered to demonstrate a significant effect on advancing emotional experience, despite satisfaction being the primary outcome of most studies.

2. *Organization of rounds*

Clinicians considered the organization of rounds, their structural and procedural elements, the roles during the rounds, and the available strategies to improve productivity and work efficiency. The process and structure of family rounds may affect interactions and planning of care interventions. They may affect the emotional experience and satisfaction of the participants and the efficiency of rounds about care delivery and outcomes.

a. Structure and process of rounds

An informal or formal invitation by the bedside nurse or the physician to the family member to actively participate or be present during the round facilitated interactions between family and healthcare professionals. In eight studies (Allen et al., 2017; Au et al., 2017; Cao et al., 2018; Jacobowski et al., 2010; Mangram et al., 2005; Schiller & Anderson, 2003; Weber et al., 2018; Wysham et al., 2014) family members were formally invited to participate in the rounds at specific times during the day and usually in the morning between 8 a.m. and 12 midday. Jacobowski et al. (2010) and Allen et al. (2017) imposed limitations on the duration of the communication and number of family members present, but in the study conducted by Au et al. (2017), there were no restrictions. Neither healthcare professionals nor family members objected to the restrictions. If family members required extra consultation time, this needed to be arranged with the physician.

In both intervention studies (Allen et al., 2017; Cao et al., 2018), where a structured approach to the process of the round was used, there was a statistically significant positive effect on the efficiency of the rounds. In Cao et al.'s study (2018), a significantly higher percentage of rounds was completed by noon in the structured versus the non-structured rounds; rounds were more efficient, quick, and focused on the main problem. The authors attributed the significant reduction of round-time to the structured manner based on the checklist. Allen et al. (2017) showed a significant reduction in the additional team meetings with the family and post-family rounds, but physicians' and nurses' workflow with rounds remained unchanged.

In comparison, the remaining studies did not provide any structured approach to family members' participation in rounds. They showed variation and inconsistency in inviting families to participate, and family inclusion depended on the attending physician's style and discretion, the composition of the rounding team, and the time of the day when rounding occurred (Ingram et al., 2014; Santiago et al., 2014; Stelson et al., 2016). The Canadian survey (Holodinsky et al., 2015) highlighted the impact of non-standardized approaches on frequent interruptions, reduced productivity, unidentified roles and leadership, and reduced time for teaching.

b. Use of communication tools

Often, most studies neither referred to nor described the use of communication tools as a method of enabling family-healthcare professionals' interaction and communication of care plans and decisions during the ward rounds. Holodinsky et al.'s (2015) results in the 110 Canadian intensive care units highlighted that half of the included units (48%) used a tool to facilitate rounds (31 used a checklist, 16 a goals sheet, 17 used other tools). In Wysham et al.'s (2014) study, clinicians introduced a communication tool (the VALUE pneumonic pocket card), which was added to the daily intensivist electronic note form during rounds to serve as a point of care reminder with significant and long-term improvement of documentation of daily updates and goals. Stelson et al. (2016) assessed family members', patients', and healthcare professionals' perceptions of telemedicine as a tool to facilitate interactions and communication. There was agreement that telemedicine can be used as an adjunct to communication as it allows family members to participate in the care plan development conveniently, especially for those with difficulty travelling; however, it may become practically cumbersome for staff to coordinate.

c. Roles in rounds

The role that the nurses had in rounds was to provide a summary of the patient's progress. There was no information on their role in supporting family members during the process of rounds. Family members remained submissive during the rounds. In studies conducted by Schiller and Anderson (2003), and Mangram et al. (2005), family members provided feedback when asked and were invited to ask questions. Au et al. (2017) assessed participants' perceptions of the role of the family, and there was an agreement, although not significant, between healthcare professionals and families that the family member's role was to listen during the rounds, to share patient information, and ask questions, but there was significant disagreement about their being involved in decision-making. However, in the Canadian survey (Holodinsky et al., 2015), 66% of family members actively participated in rounds, provided information about the patient's baseline functional and medical status, expressed wishes, and provided input in decision-making.

3. Intensive Care Unit Culture

Intensive care unit culture refers to the value participants assign to family-centered care and the various barriers identified to enact such care.

a. Value in Family-Centered Rounds

Overall, healthcare professionals had a positive attitude towards family-centered care and participation of families in rounds, but there were surprising differences in their attitudes to enact it. Santiago et al. (2014) compared the opinions of medical directors with those of nurses and allied health professionals during the first 48 hours of the patient being in the intensive care unit and after the first 48 hours. Medical directors expressed more liberal attitudes towards family presence at the bedside during rounds, compared to nurses, who expressed greater reservation, especially the more experienced nurses. Significant differences were detected regarding offering family members the option to attend the bedside rounds during the first two days of the patient's arrival, whereby 41% of medical directors and up to 54% of allied health professionals agreed, compared to 64% of nurses who disagreed (p=0.008). There was significant agreement among most nurses and healthcare managers that family presence increased workload, teaching time, and prolonged bedside rounds, compared to medical directors, who disagreed or remained neutral.

There were similar positive attitudes expressed by the medical directors in a study conducted by Ingram et al. (2014), who accepted the potentially positive impact of family rounds on family outcomes, although that was not directly measured. There were no significant mean score differences in concerns over a lack of privacy and confidentiality, perceptions on teaching, or round efficiency between medical directors participating in family rounds and those not participating.

There was a considerable difference in healthcare professionals' and family members' opinions of family participation in rounds. In Au et al.'s (2017) study, healthcare professionals perceived that less than half (38%) of family members (95%, CI: 32-44%) would be interested in participating; whereas, 97% of family members (95%, CI: 89-99%) expressed a high degree of interest. More healthcare professionals compared to family members considered family participation in rounds statistically significantly more

stressful and confusing for the families, although they acknowledged that it would improve their relationship with families. Responses from nurses and other healthcare professionals differed from physicians. Nurses and other healthcare professionals were more likely to avoid open and honest discussions about prognosis when the family was present, compared to physicians. However, Mangram et al. (2005) and Schiller and Anderson (2003) demonstrated improved relationships and communication with physicians, which resulted in less stress. Reeves et al. (2015) suggested that spending more time in intensive care units made family members feel more comfortable with participating; they also became familiar with medical concepts; they experienced an increased desire to understand the prognosis, and their trust in the medical team increased. This indicates the positive effects of rounds as it was highlighted in the before and after studies.

b. Barriers in enacting family rounds

Both qualitative studies described considerable barriers to the implementation of family rounds. Reeves et al. (2015), reported that the physical intensive care unit may be overwhelming for family members and could impact negatively on their willingness to participate in rounds, particularly when admission was unexpected. Health literacy, family members' fear of being bothersome, and contextual differences shaped the way in which family members engaged in care decision-making. Reeves et al. (2015) concluded that the culture of inter-professional collaboration did not facilitate clinical rounds, as discussions were viewed as isolated professional procedures rather than collaborative activities with limited interactions. Some logistical considerations of participation were the long-distance and travel time for family members, work and family obligations, and the lack of a predetermined rounding schedule. These factors were not considered in any of the intervention studies that implemented a structured approach to family involvement in rounds. Cody et al. (2018) highlighted the lack of communication regarding the schedule of rounds to allow family members the flexibility to attend.

DISCUSSION

This integrative review allowed the inclusion of diverse primary research methods and the presentation of varied perspectives on family presence in rounds in the adult critical care population and expanded on an earlier review by Davidson (2013). The advantage of our review is that the integrative review methodology allowed the rigorous synthesis of varied evidence on the topic and the narration of the results to inform the development of a conceptual framework for enacting family-centered rounds, specifically in adult intensive care units. Adult intensive care units present differences to neonatal and pediatric units concerning the interactions and engagement with family members, as the family-patient dynamics and relationship are distinctive to the parent-child dyad. Hence, the perceptions of family members, healthcare professionals, and patients are also distinctive.

There is increasing awareness that improving outcomes for family members can also improve patient outcomes (Adelman, Tmanova, Delgado, Dion & Lachs, 2014; Lynn, 2014). To inform the operational procedures to engage and support family members in the care of critically ill patients, innovative frameworks should consider the three identified themes from this review.

1. Interaction and communication

Ensuring family members are present in intensive care units and at the patient's bedside facilitates interaction and communication. The most recent family-centered care recommendations by the American College of Critical Care Medicine (Davidson et al., 2017) suggest that family members should be offered an open and flexible family presence at the bedside, the option to participate in rounds to increase family engagement and communication, and the opportunity to work in partnership with the staff to improve family satisfaction. The studies included in this review suggested that there is increasing evidence that supports such family-centered care interventions. Family presence has also been preferred by patients who have gone through cardiac resuscitation (Bradley, Keithline, Petrocelli, Scanlon & Parkosewich, 2017; Krochmal et al., 2017). Our review highlighted the moderate quality of evidence to demonstrate the

impact of family presence in rounds on family and patient-centered outcomes. Nevertheless, it is reasonable to suggest that allowing family to be present enables the experience of 'being there' for the family, and creates a sense of normalcy in the patients' and family members' lives, which have been disrupted by the critical illness (Kydonaki, Kean & Tocher, 2020).

The studies included in this review highlighted the need for communication pathways to increase family members' awareness and engagement with the care of the patient. Scheunemann, McDevitt, Carson and Hanson (2011) previously advocated timely and intensive communication with family members in adult critical care, with suggested trigger points at 24, 72 and 96 hours after admission. They showed significantly improved family member satisfaction due to their involvement in decision-making and effective teamwork with healthcare professionals (Huffines et al., 2013; Scheunemann et al, 2011).

We suggest that regular interactions and scheduled communication with family members are required to improve their engagement in decision-making and care, and should be integral components of future strategies and interventions to enact family-centered care.

2. Organization of rounds

Structured approaches to family members' participation in rounds demonstrated positive effects on family and staff satisfaction, although not significantly. In most of the studies reviewed, family members were present in rounds by chance or were invited at the discretion of the healthcare professionals. Engagement of family members in rounds is a vehicle to increase their understanding of the critical situation and to make sense of their experience and their new role within the family. To enable this engagement, healthcare professionals needed to consider two elements. First, the visitation policy should reflect the need for family member engagement in important daily processes, such as rounds, where healthcare professionals make decisions. Although visitation policy has been researched and debated for decades, the flexible policy is not universally implemented, which impacts on the level of family engagement.

Second, existing processes to engage family members in rounds lack specificity on the role of the nurse and the family member, and are not theoretically based. In the UK, nurses receive education in communication skills more than medical trainees (Visser, Deliens & Houttekier, 2014). However, they seem to default in an inactive role when active communication and decision-making are happening with family members. In addition to explaining things as they happen, nurses can prepare families for questions before the round, ensure they are listened to during the round, minimize fear, anxiety and helplessness, and clarify misconceptions that may happen at the end of the round to enable the family members to make sense of the situation (Davidson, 2013). In all the studies, there was limited information about the processes used by staff to support family engagement in rounds. Future interventions should consider theory-based processes to ensure consistency in staff approaches to communication and to nurture opportunities for family engagement. The use of communication tools enabled interactions in rounds and showed some positive effects in the studies reviewed. Such communication tools may also assist in the identification of new roles for the family members during the process of clarifying the situation, if they are developed based on family-centered care principles (Davidson, 2013); however, they need to be meaningful to the process and not become an exercise in ticking boxes.

3. Intensive Care Unit Culture

The studies reviewed demonstrated a trend towards favouring family presence; yet, there was resistance in its implementation, which related to several barriers. The identified barriers in this review have been previously reported (Lane, Ferri, Lemaire, McLaughlin & Stelfox, 2013). The unique challenges to information flow because of the multiple teams, the disparate rounding times, the changing team leaders, the rapid changes in the patient's clinical condition, and the unknown machinery and noise, have been reported as liable for causing fear and anxiety among family members, and consequently, restricting their active participation in rounds (Lane et al., 2013).

Healthcare professionals, and in particular nurses, need to recognize their unique role in supporting family members in the process of engagement and participation in rounds by demystifying the environment, using their communication techniques to increase

clarification in decisions, and optimizing the quality of the communication. In a pilot Randomized Controlled Trial, Torke et al. (2016) tested the feasibility and acceptability of a newly developed, distinct role of a family navigator to address family members' unmet communication needs (Torke et al., 2016). The family navigator participated in daily intensive care rounds and completed a structured form to guide daily family communication, including the patient's status, the goals of care, and the clinical plan for the day. This role was well received by both staff and family members, as it increased their contact and communication and allowed a coordinated interaction. Such roles provide a unique opportunity for a nurse-led intervention to impact positively on family members' wellbeing. Communication training programs may increase nurses' understanding of family-centered care and skills in engaging families in the care of the patient. Nurses will recognize the value of family presence in intensive care units. Further investigation on the impact of these roles on staff performance, staff satisfaction, teamwork, and family-centered outcomes is required.

Implications for research

Future researchers should focus on the design of theoretically-based interventions to improve family engagement in the care of critically ill patients and to improve structures and processes that support nurses to guide and enable daily family engagement while enhancing the quality and effectiveness of family rounds. The development of communication tools designed for healthcare consumers should be tested in larger-scale studies, with a focus on measuring their effectiveness in patient- and family-centered outcomes, including psychological wellbeing, the effect on staff workload, and organizational efficiency.

Limitations

We were unable to make any assessment of the effect of family rounds on patient-centered outcomes, as all findings related to family members and healthcare professionals, and the diverse research design, did not allow for any meta-analysis or meta-synthesis. We were unable to assess studies written in languages other than English due to the lack of translation services within the study resources. This may have introduced selection bias. However, we did not identify any published articles written in

a language other than English. Although experienced researchers independently and in consultation selected the studies that were included, we acknowledge that there may be studies beyond the date of the review that have not been included.

All intervention studies were conducted in a single setting, with limited information about their usual practice of ward rounds, the level of involvement of the family members, and nurses' buy-in of the intervention; hence, there is a possible ceiling effect as baseline satisfaction may have already been high. There was increased response bias, as all surveys had a low response rate. In all studies, the sample size was small and inadequate to detect differences between different participants. Only three researchers (Jacobowski et al., 2010, Weber et al., 2018, Wysham et al., 2014) used a validated tool to measure family satisfaction. Hence, limited conclusions can be drawn about the effect of interventions on the various components of satisfaction.

CONCLUSION

This review has highlighted the lack of rigour in the studies that investigated the impact of family rounds on patients', family members' and health care professionals' outcomes as an approach to enacting family-centered care in intensive care units. Protocols for family participation in rounds developed without input from family members have not led to an improvement in overall family satisfaction. To achieve favourable outcomes for care recipients, healthcare professionals should work together with patients and families to co-design approaches for family engagement in rounds. Such approaches should enable successful interaction, collegiality, and reciprocity between clinicians and care recipients to improve teamwork, productivity, and emotional experience for both healthcare professionals and care recipients.

Total: 6083

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Figure 1. Systematic search results.

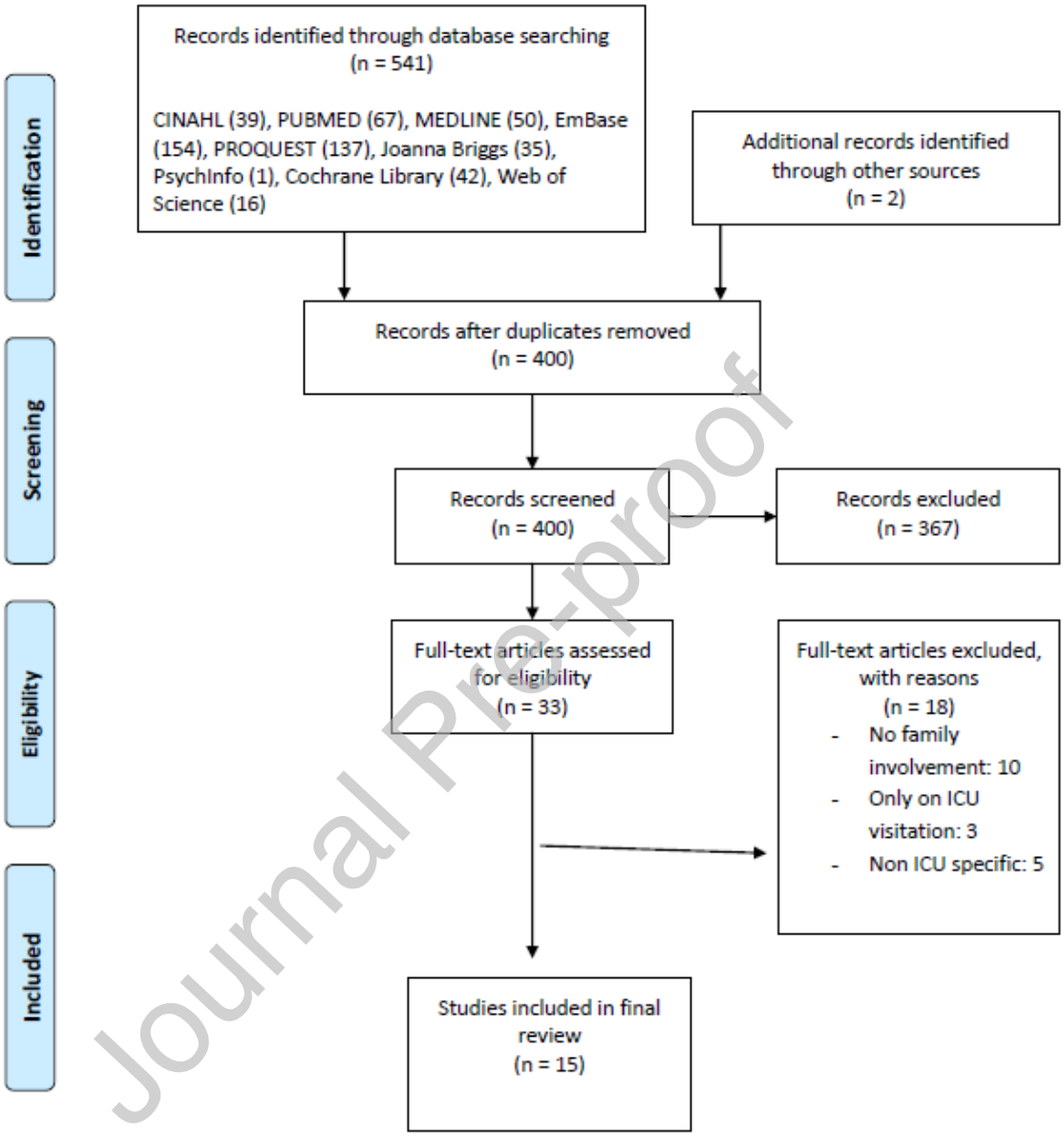
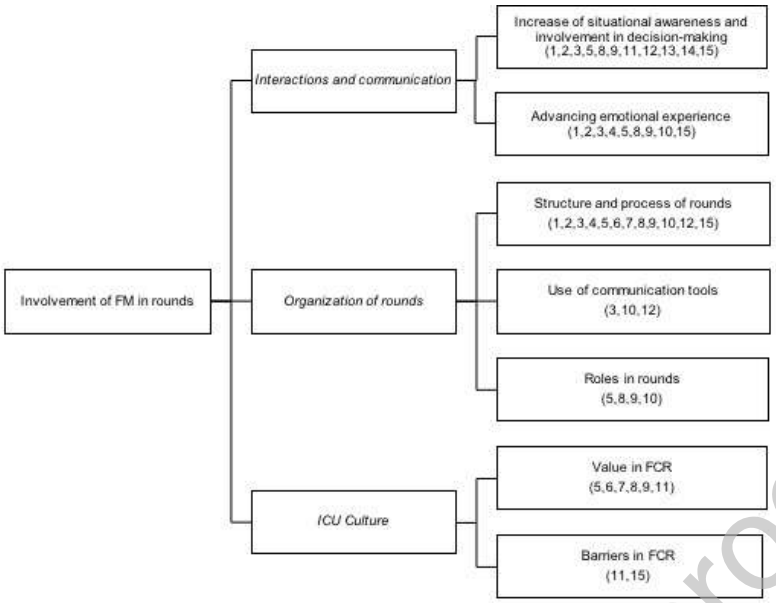


Figure 2. Thematic analysis infographic



Thematic analysis of involvement of FM in rounds. Abbreviation FM: family members; ICU: intensive care unit; FCR: family centred rounds References: 1. Allen et al 2017; 2. Jacobowski et al 2010; 3. Wysham et al 2014' 4. Weber et al 2018; 5. Au et al 2017; 6. Ingram et al 2014; 7. Santiago et al 2014; 8. Schiller & Anderson 2003; 9. Mangram et al 2015; 10. Holodinski et al 2015; 11. Reeves et al 2015; 12. Stelson et al 2016; 13. Cody et al 2018; 14. Au et al 2018; 15. Cao et al 2018.