Received: 30 October 2023 | Revised: 4 March 2024 | Accepted: 25 March 2024

DOI: 10.1111/jocn.17155

Journal of Clinical Nursing WILEY

SCOPING REVIEW

Experiences of healthcare professionals, patients and families with video calls to stimulate patient- and family-centred care during hospitalization: A scoping review

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Abstract

Aim: To synthesize the literature on the experiences of patients, families and healthcare professionals with video calls during hospital admission. Second, to investigate facilitators and barriers of implementation of video calls in hospital wards.

Design: Scoping review.

Methods: PubMed, CINAHL and Google Scholar were searched for relevant publications in the period between 2011 and 2023. Publications were selected if they focused on experiences of patients, families or healthcare professionals with video calls between patients and their families; or between families of hospitalized patients and healthcare professionals. Quantitative and qualitative data were summarized in data charting forms.

Results: Forty-three studies were included. Patients and families were satisfied with video calls as it facilitated daily communication. Family members felt more engaged and felt they could provide support to their loved ones during admission. Healthcare professionals experienced video calls as an effective way to communicate when in-person visits were not allowed. However, they felt that video calls were emotionally difficult as it was hard to provide support at distance and to use communication skills effectively. Assigning local champions and training of healthcare professionals were identified as facilitators for implementation. Technical issues and increased workload were mentioned as main barriers.

Conclusion: Patients, families and healthcare professionals consider video calls as a good alternative when in-person visits are not allowed. Healthcare professionals experience more hesitation towards video calls during admission, as it increases perceived workload. In addition, they are uncertain whether video calls are as effective as in-person conservations.

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Implications for the Clinical Practice: When implementing video calls in hospital wards, policymakers and healthcare professionals should select strategies that address the positive aspects of family involvement at distance and the use of digital communication skills.

Patient Contribution: No patient or public contribution.

KEYWORDS
hospital units, inpatient, patient–family relations, scoping review, telemedicine

1 | INTRODUCTION

The use of telehealth is rapidly developing as a feasible and effective way to facilitate access to care (Ashwood et al., 2017). Telehealth encompasses a broad application of electronic communications, such as video calls, e-health, remote monitoring of vital signs and medical education (American Telemedicine Association, 2006). Telehealth has frequently been used in outpatient departments, for example, for triage and diagnosis, e-prescriptions, rehabilitation and follow-up care (Dhahri et al., 2021; Doraiswamy et al., 2020; Kebapcı & Türkmen, 2022). However, the use of telehealth, and specifically the use of video calls is also growing in hospital wards. Currently, video call interventions are widely implemented in hospital wards and during the COVID-19 pandemic, these video calls appeared to be a valuable communication tool to involve families during hospital admission and to keep families in contact with patients and their healthcare professionals (Bloemberg et al., 2022; Dhahri et al., 2021; Maaskant et al., 2021).

The collaboration and partnership between patients, families and healthcare professionals are core concepts in patient- and family-centred care (Johnson & Abraham, 2012). Patient- and family-centred care (PFCC) is defined as 'an approach to the planning, delivery and evaluation of health care that is grounded in mutually beneficial partnerships among health care providers, patients and families' (IPFCC). PFCC is known to improve quality of healthcare (Park et al., 2018) and patient safety (Park & Giap, 2020). On a hospital ward, patient- and family-centred care could be promoted by rooming-in opportunities for family members and active involvement of family members in care activities (Schreuder et al., 2019; Wang et al., 2020). Besides physical proximity, nowadays, families could also be involved in patients' hospital admission using video calls. These calls facilitate daily communication and information sharing between patient, family and healthcare professionals resulting in a better-perceived quality of care (Maaskant et al., 2021; Negro et al., 2020; White et al., 2021). By means of visual contact with family, video calls can also be used to reduce patients' anxiety, loneliness and social isolation (Dol et al., 2017; Kebapcı & Türkmen, 2022; Nicholas et al., 2011; Noone et al., 2020). The potential value of video call interventions in relation to PFCC is visualized in a logic model (Figure 1). This model describes the problem, the solutions and intended outcomes.

What does this paper contribute to the wider global community?

- Patients, families and healthcare professionals consider video calls as a good alternative when in-person visits are not allowed.
- Main barriers for implementing video calls are technical issues and increased perceived workload.
- Assigning local champions, training of healthcare professionals and clear instruction guides for healthcare professionals facilitate implementation of video calls in hospital wards and could overcome technical problems.

What is already known?

- Video call services are rapidly developing and are used in a variety of care settings for triage and diagnosis, e-prescriptions, rehabilitation and follow-up care.
- Family could be involved using video calls in hospital wards.
- Patient- and family-centred care improves quality of healthcare and patient safety.

While numerous studies have explored telehealth's role in patient care (Ali et al., 2022; Kruse et al., 2017; Sohn et al., 2022), and specific reviews have examined video calls for certain patient groups like those in the neonatal intensive care unit (NICU) (Dol et al., 2017; Epstein et al., 2017; Ranu et al., 2021) or for end-of-life care (Cherniwchan, 2022), there remains a significant gap in the literature regarding the use of video calls to facilitate family involvement across hospital-wide wards. This knowledge is important for policymakers and healthcare professionals to develop effective strategies for further implementation of video calls in hospital wards. To allow a broad exploration of literature, we conducted a scoping review in which we first aimed to synthesize the literature on the experiences of hospitalized patients (both adults and children), patients' families and healthcare professionals with video calls in hospital wards. Second, we aimed to synthesize facilitators and barriers for the implementation of video calls in hospital wards.

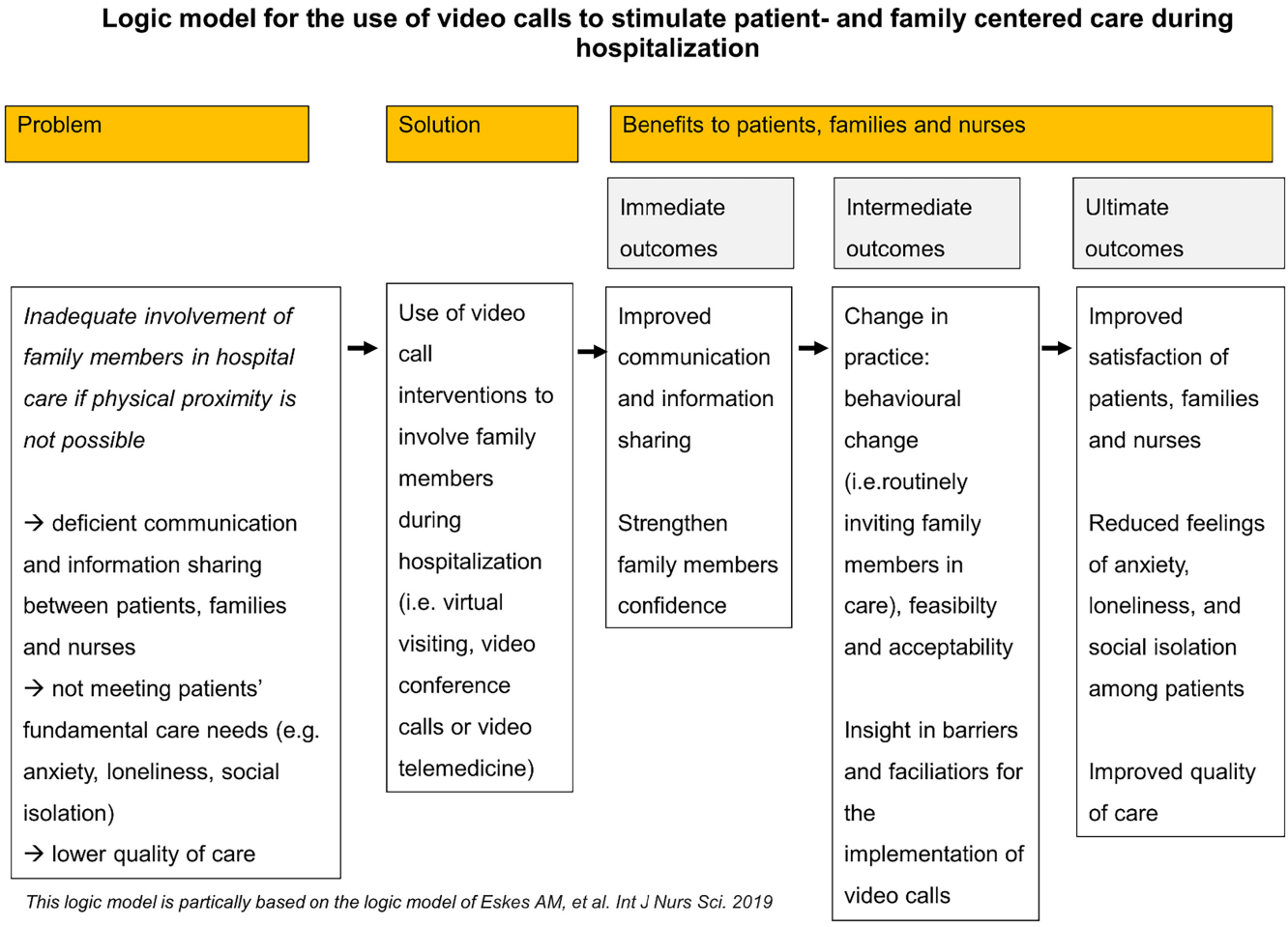

FIGURE 1 Logic model.

2 | METHODS

2.1 | Protocol and registration

A scoping review was conducted using the Joanna Briggs Institute for Scoping Reviews methodology (Peters et al., 2020) and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping review recommendations (PRISMA-ScR) (Tricco et al., 2018).

2.2 | Eligibility criteria

We included research and opinion-based papers, abstracts, reports and guidelines published between 1 January 2011 and 1 August 2023. This period was chosen since there were noticeable developments in telehealth in this period (Furlepa et al., 2022). The inclusion was limited to English and Dutch publications. The search strategy and eligibility criteria were based on the Population, Concept, Context framework (Peters et al., 2020):

1. Population: Studies regarding patients (both adults and children) admitted to hospital wards, patients' families and healthcare professionals (e.g. nurses and doctors) were included in the review.
2. Concept: Studies who investigated video call interventions such as virtual visiting, video conference calls or video telemedicine were included in the review. The video call interventions should be carried out synchronously, meaning they should occur in real-time through live calls, and they should entail bidirectional communication encompassing both audio and video transmission. Additionally, studies were selected if they focused on experiences of patients, families or healthcare professionals with video calls between patients and their families; or between families of hospitalized patients and healthcare professionals. Also, publications were selected if it included information regarding facilitators or barriers for implementation of video calls in hospital wards. Other reported effective outcomes of the included studies were not collected for this scoping review.
3. Context: Video calls needed to take place in hospital ward settings, including adult intensive care units (ICUs), paediatric intensive care units (PICUs) and neonatal intensive care units (NICUs).

Studies investigating video call interventions in other healthcare settings such as residential homes or rehabilitation centres were excluded.

2.3 | Information sources

The databases, PubMed and CINAHL, were searched for relevant studies. Both quantitative and qualitative study design were included. The search strategies were established with help of a clinician librarian, and agreed upon by the research team (see File S1). The keywords included: inpatients, hospital units and video telemedicine OR videoconference OR virtual visiting. An additional literature search was conducted in Google Scholar to identify publications not indexed in the databases listed above. These literature sources included: Google Scholar, Grey Literature Report, Open Grey, World Health Organization, Joanna Briggs Institute, Agency for Healthcare Research and Quality and the Institute for Health Improvement. For these sources the search term 'inpatient telehealth' was used and the first 50 hits were reviewed as recommended (CADTH, 2023).

2.4 | Selection of sources of evidence

After removal of the duplicates, four researchers (SM, CC, AE and JM) independently screened titles and abstracts for potential eligibility. Subsequently, the four researchers screened full texts for eligibility. Any disagreement was resolved by discussion and full texts were assessed in case of disagreement in screening titles and abstracts. The reference lists of all included publications were handsearched to seek for additional relevant publications. When full text was not available, corresponding authors were contacted. Rayyan Systems Inc. was used for managing the selection process (Ouzzani et al., 2016).The selection procedure and results can be found in the flow diagram (Figure 2).

2.5 | Data charting process and synthesis of results

The data were charted independently by five researchers (SM, CC, AE, JB and JM), and they discussed the results in an iterative process every week. In case of disagreement, two other reviewers were consulted (JB and IJ). The leading authors (SM and CC) summarized

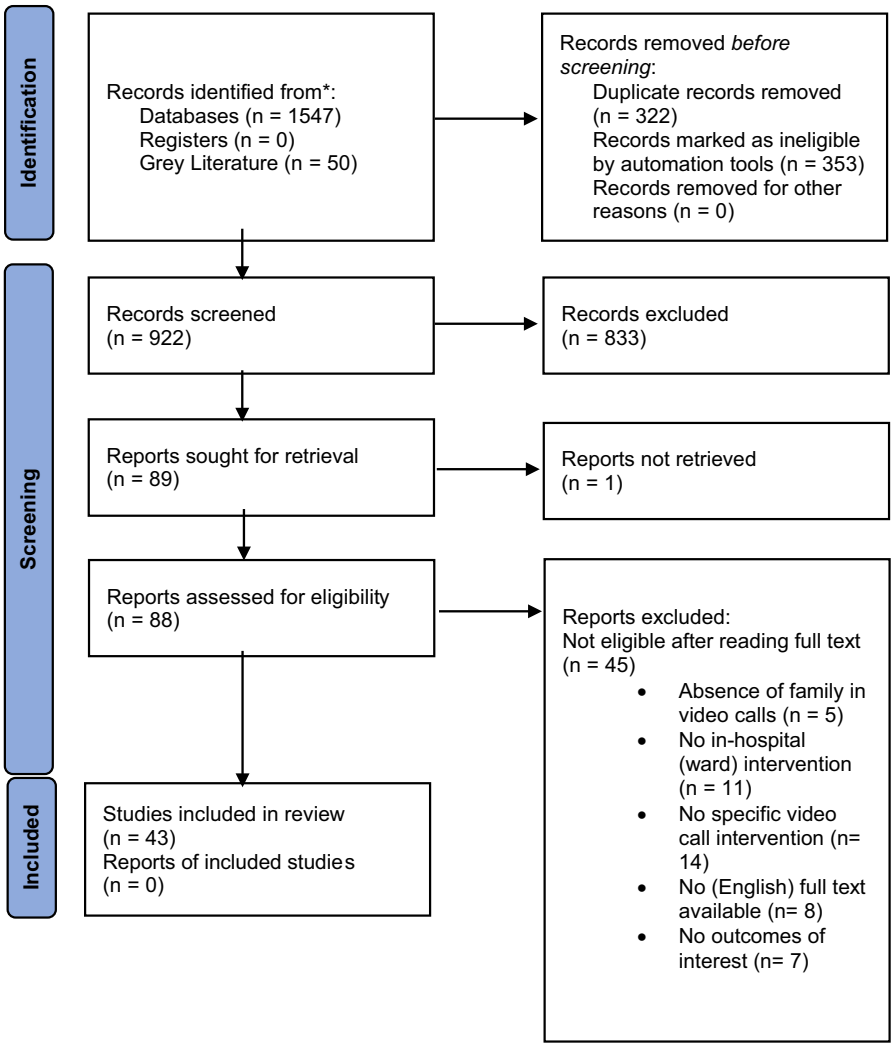

FIGURE 2 Flow chart of the included studies. *Records identified from PubMed and CINAHL.

the data and the data charting forms were checked by four other researchers (JB, AE, IJ and JM). After several discussion rounds, all researchers agreed upon the finalized version of the charting tables. Lastly, in line with a scoping review, the value of the studies was assessed by how much it was able to enhance to the broad overview. Hence there was no other quality assessment (Peters et al., 2020; Tricco et al., 2018).

When studies were determined to meet eligibility criteria, the following baseline data were extracted into a standardized table: author, year of publication, country, study design/publication type (classified according to Mixed Methods Appraisal Tool), study aim, setting (department), population, method of data collection and video call intervention. In addition, data on our outcomes of interest were charted using self-constructed data charting forms. Data from the studies on video call experiences were charted and categorized into experiences of patients, families and healthcare professionals. For our other outcome of interest, facilitators and barriers for implementation, data were charted based on a systematic literature analysis for the implementation of eHealth services (Schreiweis et al., 2019). For both facilitators and barriers, data were categorized into three categories: individual factors, environmental and organizational factors and technical factors. Qualitative data from the included studies on the outcomes of interest were summarized and if quantitative data on the outcomes were available, descriptive statistics (i.e. percentages) were presented in the data charting forms.

3 | RESULTS

3.1 | Selection of sources of evidence

The search in PubMed and CINAHL identified 1597 articles. No relevant literature was found in the additional literature search. After screening for title and abstract, 88 articles were considered potentially eligible. After studying full text, we excluded 45 articles resulting in 43 studies meeting our inclusion criteria (Figure 2). The most common reasons for excluding articles were the absence of specific video call interventions and the use of video calls outside hospital wards (Figure 2).

3.2 | Characteristics of included publications

This scoping review included a variety of study designs: over 30% of the included studies had a qualitative design (Dainty et al., 2023; Dhahri et al., 2021; Elma et al., 2022; Kennedy et al., 2021; Mercadante et al., 2020; Moraes & Chiaradia Mendes-Castillo, 2023; Nicholas et al., 2011; Østervang et al., 2019; Otte et al., 2022; Petersson et al., 2020; Rose, Graham, et al., 2022; Sasangohar et al., 2021; Xyrichis et al., 2022). From the included studies, approximately 30% had a quantitative descriptive design: that is, pilot or feasibility studies (de Havenon et al., 2015; Giuseppe et al., 2022; Sanfilippo et al., 2022), survey studies (Nelson et al., 2022; Riccò et al., 2022; Rose et al., 2021) and prospective observational studies (Dürst et al., 2022; Kebapcı & Türkmen, 2022; Rose, Cook, et al., 2022; Yager et al., 2017; Yang et al., 2014). In addition, the review included one randomized controlled trial (Yuan et al., 2023) and a randomized controlled pilot trial (Rosenthal et al., 2021).

Moreover, this review included four reviews (Cherniwchan, 2022; Dol et al., 2017; Epstein et al., 2017; Ranu et al., 2021) and three quality improvement studies (Bansal et al., 2022; Bavare et al., 2021; Tallent et al., 2022). Some other designs were included in the study: a letter to the editor (Wong & Merchant, 2021), an abstract (Shunker, 2022), two commentaries (Chua, 2022; Galazzi et al., 2021; Parsapour et al., 2011) and five (case-) reports (Bettini, 2020; Conroy et al., 2021; Dhala et al., 2020; Moolla et al., 2020; Webb et al., 2020). In addition, two experiments (Carlucci et al., 2020; Padua et al., 2021), an analytic review (Thomas et al., 2021), a prospective mixed-methods study (Zante et al., 2022) and an iterative development and evaluation study (Ehrler et al., 2021) were included.

This review comprises seven studies that were published prior to the onset of the COVID-19 pandemic (de Havenon et al., 2015; Dol et al., 2017; Epstein et al., 2017; Nicholas et al., 2011; Parsapour et al., 2011; Yager et al., 2017; Yang et al., 2014). One study (Ranu et al., 2021) described the use of videoconferencing in a non-pandemic context, while all remaining studies were conducted during the COVID-19 pandemic. Ten studies (Bavare et al., 2021; Bettini, 2020; Dol et al., 2017; Epstein et al., 2017; Giuseppe et al., 2022; Moraes & Chiaradia Mendes-Castillo, 2023; Nicholas et al., 2011; Ranu et al., 2021; Yager et al., 2017; Yang et al., 2014) were conducted on paediatric wards including paediatric intensive care units (PICUs) and neonatal intensive care units (NICUs), while the remaining studies were accomplished on adult hospital wards including intensive care units (ICUs) and cardiac care units (CCUs). The characteristics of the included studies are summarized in Table 1.

3.3 | Characteristics of the intervention studied

In 19 studies, video calls were used for virtual visits between patients and families (Dainty et al., 2023; Dhahri et al., 2021; Dhala et al., 2020; Dürst et al., 2022; Ehrler et al., 2021; Kebapcı & Türkmen, 2022; Moolla et al., 2020; Moraes & Chiaradia Mendes-Castillo, 2023; Nicholas et al., 2011; Padua et al., 2021; Parsapour et al., 2011; Ranu et al., 2021; Rose et al., 2021; Rose, Cook, et al., 2022; Sanfilippo et al., 2022; Thomas et al., 2021; Wong & Merchant, 2021; Yang et al., 2014; Yuan et al., 2023), and between patients, families and healthcare professionals in 24 studies (Bansal et al., 2022; Bavare et al., 2021; Bettini, 2020; Carlucci et al., 2020; Cherniwchan, 2022; Chua, 2022; Conroy et al., 2021; de Havenon et al., 2015; Dol et al., 2017; Elma et al., 2022; Epstein et al., 2017; Galazzi et al., 2021; Giuseppe et al., 2022; Kennedy et al., 2021; Nelson et al., 2022; Otte et al., 2022; Rose et al., 2021; Rose, Graham, et al., 2022; Sasangohar et al., 2021; Shunker, 2022; Webb et al., 2020; Xyrichis et al., 2022; Yager et al., 2017; Zante et al., 2022). The last group included video calls during medical rounds (Bavare et al., 2021; Yager et al., 2017),

TABLE 1 Characteristics of the included studies.

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Bansal et al. (2022), Canada	Mixed- methods quality improvement study	This study aimed to identify areas of improvement for the Frontline Connect Canada programme by (a) evaluating communication needs, user experience and programme satisfaction; and (b) identifying potential barriers to device access or use	Single centre, hospital wards (including ICU) and emergency department	Healthcare professionals from departments where the programme was available	Multiple surveys including both open and closed questions: (1) needs assessment survey before implementation of the programme ($n=139$), (2) post-device user experience survey ($n=31$) and (3) an exit survey assessing perceived utility, ease of use and barriers ($n=47$)	Frontline Connect Canada programme delivered dedicated data-enabled communication devices (i.e. tablets and smartphones) for patients and healthcare professionals in hospitals
Bavare et al. (2021), USA	Continuous quality improvement project	To implement and assess if technological communication could facilitate patient-centered rounds by maintaining multidisciplinary input, and preserve the educational commitment while respecting social distancing recommendation	Single centre, PICU	139 healthcare providers (e.g. life support staff, registered nurses and respiratory therapists)	Survey for healthcare providers, interviews for healthcare providers and families	Hybrid rounds were deployed using videoconferencing to establish communication between bedside healthcare providers and patient/family, and remaining ICU team remotely
Bettini (2020), USA	Case study	To facilitate goals-of-care discussions at the end-of-life for an infant and its family	Single centre, NICU	One infant and family	Unclear	Virtual communication to use for family meetings to discuss life prolongation or end-of-life care, as only one parent was allowed at the hospital
Carlucci et al. (2020), Italy	Experimental project	The study proposes an innovative clinical-organizational model which, through Information and Communications Technology intends to make the management of COVID-19 patients optimal, safe and better, in all the spheres that jointly define the concept of Health	ICU	ICU patients ($n=25$) and family members ($n=19$)	A patient evaluation form containing patients' demographic and clinical information was filled out by the ICU clinical coordinator and a structured questionnaire was administered by phone call to evaluate patient family members satisfaction	Daily clinical updates in an accurate and comprehensible manner by phone call, when possible remote visits to the patient by family members were allowed by video calls in dedicated time slots
Cherniwchan (2022), Canada	Narrative review	To gather relevant information on virtual methods of care delivery in order to move towards better operational guidance for palliative care services during pandemics	Hospital wards and hospices	Fifteen articles that addressed video- or audio-capable virtual palliative care in an inpatient setting during the COVID-19 pandemic	Review	Palliative care services delivered using video- or audio-capable technology

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Chua (2022)	Commentary	Comment about new strategies to improve communication in the intensive care unit during the COVID-19 pandemic	ICU	Family members of patients admitted to the ICU	NA	NA
Conroy et al. (2021), Ireland	Case report	To address the experience of implementing a video call system in a critical care setting and identifying the key requirements	Single centre, ICU	Interdisciplinary team (seven people) with clinical, academic and technological expertise developing a video call system	Post-rollout survey, non-structured staff interviews and semi-structured focus group interview with nurses	Video call system to connect staff, patients and families during COVID-19
Dainty et al. (2023), Canada	Qualitative study	To understand the experience of patients and families with the Virtual Family Visiting programme outside the intensive care unit in order to delineate more generalizable benefits and areas for improvement, as well as how such a programme may have an impact beyond a pandemic situation	Single centre, all hospital wards	Family members ($n = 24$) of hospitalized patients who participated in the Virtual Family Visiting programme	Semi-structured interviews (interpretative descriptive approach)	Virtual Family Visiting programme allows for video calls between patients and families who do not have devices with video technology or need some assistance to use their own devices
Dhahri et al. (2021), United Kingdom	Qualitative study	To determine the impact of 'virtual visiting' on staff and family members of patients affected by the COVID-19 pandemic	Single centre, COVID-19 wards	1009 virtual visits between patients and family members	Feedback from families ($n = 108$) and staff members ($n = 30$) was collected by (unstructured) emails	Virtual visits between patients and families in the presence of a staff member
Dhala et al. (2020), USA	Case study	To detail the rapid expansion of the virtual ICU to achieve patient-centred solutions while protecting staff and patients' family members during COVID-19	Single centre, ICU	Unclear	A short post call quality assessment survey	Patients and families were connected with help of smartphones and the existing telehealth infrastructure (Consultant Bridge)
Dol et al. (2017), Canada	Systematic review	To examine the effect of eHealth interventions used in NICUs on parent-related and infant outcomes	Multicentre, NICU	Studies included parents or primary caregivers (excluding paid health professionals) of infants requiring care in a NICU	Eight studies were included: Six non-randomized quasi-experimental studies and two randomized controlled trials	Studies that evaluated any eHealth intervention in NICUs, including education, communication or a combination of both. Comparators included no eHealth interventions and/or standard care

(Continues)

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Dürst et al. (2022), Switzerland, Italy	Observational multicentre study	This study aimed to evaluate the acceptance of video calls in hospitalized older patients and in their relatives during the ban on visits due to the COVID-19 pandemic. Secondary, this study compared levels of patients' anxiety; fear of self-death; fear of others' death; mood according to the type of communication technique used	Multicentre, orthogeriatric, acute and post-acute geriatric wards	Hospitalized older patients (≥65 years; $n = 64$) and their family members	Video calls were compared with phone calls. Acceptance of video calls was measured in both patients and family members using a 4-point Likert scale for four dimensions and fear of death using Collett-Lester Fear of Death Scale. In addition, the following scales for patients were measured: anxiety using Geriatric Anxiety Scale-10 items and Geriatric Depression Scale-5 items for assessing patients' mood. For family members, the Clinical Anxiety Scale for anxiety symptoms were measured.	Video calls were performed using Skype©, WhatsApp© or FaceTime©, according to subjects preferences
Ehrler et al. (2021), Switzerland	Iterative development and evaluation	To provide a solution in order to maintain the link between patients and their family without ignoring associated constraints such as data protection and security as well as ensuring a high level of usability for people that are not acquainted with technology	Single centre, ICUs	33 patients, 268 family members and 17 caregivers	The first questionnaire explored opinions of patients, family members and caregivers towards a video calls system. The second questionnaire evaluated the use of the video calls by patients.	Implementation of a self-developed video call system to connect patients and their family members
Elma et al. (2022), Canada	Qualitative descriptive study	To understand clinicians' perspectives on using videoconferencing technology to adapt to pandemic policies when caring for dying patients	Single centre, ICU, medical step-down unit and COVID-19 ward	45 healthcare professionals: 18 nurses, 11 physicians, 8 medical residents, 2 spiritual care clinicians, 1 clinical nurse specialist, 1 practical nurse, 1 nurse manager, 1 social worker, 1 respiratory therapist and1 dietician	Interviews, secondary analysis	Videoconferencing between clinicians, patients and families
Epstein et al. (2017), USA	Integrative review	To synthesize findings from the published literature on the use of technology in the NICU to improve communications and interactions among healthcare providers, parents and infants	Multicentre, NICU	11 Studies, examining the effect of communication technologies on parents, healthcare providers, or infant outcomes	The review included quantitative, qualitative and mixed-methods studies	The use of technology in the NICU to facilitate communication and interaction

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Galazzi et al. (2021), Italy	Critical commentary	To share experiences using video calls in end-of-life situations during the COVID-19 pandemic	Single centre, ICUs	17 patients and their family members	Unstructured collection of experiences after video calls	Video calls between patients, families and healthcare professionals (at the bedside) during end-of-life conversations
Giuseppe et al. (2022), Italy	Prospective cohort pilot study	To evaluate satisfaction and stress levels of parents in the NICU during the COVID-19 pandemic	Single centre, NICU	Telematics family-centred care (T-FCC) group parents ($n=40$) Family-centred care (FCC) group parents ($n=48$) No family-centred care (N-FCC) group parents ($n=58$)	Stress levels were measured by completing the Parental Stressor Scale-Hospitalized Infant (PSS-HI). Satisfaction levels were measured by completing a questionnaire.	Three different Telehealth interventions were compared: T-FCC: parents had no access to NICU but could see newborns via video calls. FCC: access to NICU 8 h/day, no video calls N-FCC access to NICU 1 h/day, no video calls.
de Havenon et al. (2015), USA	Prospective non-blinded non-randomized pilot study	To increase family satisfaction via a virtual family meeting with audio-visual support	Single centre, Neurology CCU	First stage: family members ($n=38$) after 12 family meetings Second stage: family members ($n=50$) after 10 meetings, 6 included audio-visual support.	Pilot study with two stages. During first stage, they administered a survey to explore satisfaction with 'original' family meeting. During second stage, same survey was used, and family members were asked whether they opted for audio-visual meetings.	Both 'regular' family meetings and audio-visual family meeting were held between patients, families and staff
Kebapcı and Türkmen (2022), Istanbul	Prospective observational study	To determine the effect of structured Virtual Patients Visits on the anxiety, satisfaction, hospital anxiety and depression levels of intensive care unit COVID-19 patients and their relatives	Single centre, ICUs	Adult ICU patients ($n=50$) with a COVID-19 diagnoses and their families	Before-after study measuring patients' and their families anxiety levels using The Visual Analogue Scale for Anxiety and Scale for the Assessment of the Satisfaction of the Relatives of the Inpatient Patients score of family members. In addition, satisfaction levels of families were measured	Daily structured virtual visits using Zoom©, FaceTime© or WhatsApp©
Kennedy et al. (2021), USA	Qualitative interview study	To explore experiences, perspectives and attitudes of family members and ICU staff about phone and video interactions during COVID-19 hospital visitor restrictions	Single centre, ICUs	21 family members, 14 clinical staff members	Semi-structured interviews	Phone and video communication between clinical staff and patients' family members

(Continues)

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Mercadante et al. (2020), Italy	Qualitative interview study	To explore the experiences of relatives of patients admitted to acute palliative care unit/hospice with WhatsApp© rounds	Single centre, acute palliative care ward and hospice	16 family members	Telephone interviews	Using WhatsApp© to connect family members during virtual rounds
Moolla et al. (2020), South Africa	Short report	To reconnect patients with their loved ones during COVID-19 visitation restrictions	Single centre, COVID-19 wards	Hospitalized patients, no further details given	The implementation of a Video Call Visit system with help of appointed champions (junior doctors) Unclear how outcomes were measured.	Video Call Visit system to reconnect patients and family members
Moraes and Chiaradia Mendes-Castillo (2023), Brazil	Qualitative study	To understand experiences of families who communicated with their children through video calls during isolation by COVID-19 in the paediatric intensive care unit	Single centre, PICU	Mothers ($n=9$) and fathers ($n=5$) of children in PICU	Semi-structured interviews using a theoretical framework	Video calls between parents and their hospitalized children
Nelson et al. (2022), USA	Survey	To evaluate telehealth use and views in US intensive care units during the pandemic	Multicentre, ICUs	ICU leaders ($n=18$), Members of the Neurocritical Care Society who practice in the US ($n=22$), and Society of Critical Care Medicine members practicing adult medicine ($n=136$)	Electronic surveys	Telehealth technologies (e.g. telephone without video component, virtual meeting software, FaceTime© or WhatsApp©)
Nicholas et al. (2011), Canada	Qualitative study	Evaluating the effects of using videophones among geographically separated families of hospitalized children	Single centre, paediatric ward	14 parents of children with chronic and/or life limiting illnesses	In-depth interviews	Video calls to contact families of hospitalized children
Østervang et al. (2019), Denmark	Qualitative interview study	The aim of this study was to investigate health care professionals' experiences in using and implementing technology to involve relatives during video-consulted patient rounds	Single centre, cancer department	Seven nurses and 2 physicians working at the cancer department	Semi-structured group interviews	Video-consulted patient rounds to connect families using the 'Cisco Jabber' app
Otte et al. (2022), Denmark	Qualitative study	To explore ICU nurses' experiences with video calls during the COVID-19 lockdown and to understand what the nurses used video calls for and if they found it to be a useful and meaningful tool, both in their work life and for patients and/or relatives, hereby helping the facilitation of video calls	Single centre, ICUs	ICU nurses ($n=6$)	Semi-structured group interviews (thematic analysis)	Video calls using patients phone or a tablet between patients, families and healthcare professionals in the COVID-19 lockdown

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Padua et al. (2021), Italy	Experiment	To assess whether digital communication benefits in patients with disorder of consciousness (DOC), considering the sensorial and emotional deprivation due to the COVID-19 emergency lockdown	Single centre, intensive neuro-rehabilitation ward	11 video calls between DOC patients (3 vigilant, 9 non-vigilant) and their family members	Evaluation of heart and respiratory parameters, and neurobehavioral changes of the patients, 10 min before start of the video call, during the video call and 10 min after the video call	Video communication using a tablet (T-video call) and projector (LS-video call) between DOC patients and their families
Parsapour et al. (2011), USA	Case series and commentary	To evaluate a telemedicine service (Family Link) developed to maintain close contact (via videoconference) between hospitalized patients and family/friends	Single centre, hospital wards and ICU	Patients ($n=36$) and their family members or friends	Retrospective chart review	A family-link service where patients could connect with family and friends at home
Petersson et al. (2020), Denmark	Qualitative interview study	To explore how adult patients admitted to an oncology ward experience video-consulted rounds with caregivers as a mean for family involvement	Single centre, oncology ward	15 Cancer patients participated in interviews ($n=11$) and/or in the observations ($n=13$)	Semi-structured interviews and participant observations during video-consulted rounds	Patient, families and healthcare professionals were connected through a tablet using the 'Cisco Jabber' app
Ranu et al. (2021), USA	Narrative review	To describe the possibilities to virtually connect parents to their infants in NICU settings	NICU	Unclear	Review	Description of video call interaction possibilities between parents and infants
Riccò et al. (2022), Italy	Survey	To assess and improve the effectiveness of structured telephone-based communication	Single centre, onco-haematological ward	Adult family members of cancer patients ($n=97$)	Telephone satisfaction survey using the modified European Organisation for Research and Treatment of Cancer Quality of Life Group-COMU26 questionnaire for cancer patients	Structured daily phone calls by healthcare professionals with patients' families. Family members were offered the opportunity of video calling to see the patient through video calls with smart-phones provided by the hospital
Rose et al. (2021), United Kingdom	National survey	To understand how communication among families, patients and the ICU team was enabled during the pandemic. The secondary objectives were to understand strategies used to facilitate virtual visiting and associated benefits and barriers	Multicentre, ICUs	Healthcare professionals from 117 different NHS hospitals (included 182 ICUs). Survey was send to a senior ICU nurse or ICU consultant, but were encouraged to forward the survey to colleagues if they believed colleagues were the more appropriate individuals to address the survey questions	Self-administered electronic survey. Qualitative responses to open-ended questions were conducted with summative content analysis	In 97% of the hospitals virtual family visiting was attempted. The most commonly used platforms were aTouchAway© (41%), followed by Skype© (25%), FaceTime© (23%) and Zoom© (18%)

(Continues)

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Rose, Graham, et al. (2022), United Kingdom	Qualitative interview study	To gain perspectives from family members on barriers and facilitators to the set up and conduct of virtual visits across intensive care unit settings in the United Kingdom to inform best practice and derive recommendations to improve virtual visiting. In addition, to understand how virtual visiting was included, family members' experiences with other forms of communication were explored	Multicentre, ICUs	Family member who experienced ICU virtual visits ($n=41$) from 16 different hospitals	Semi-structured interviews and a qualitative descriptive approach	Virtual visiting using a tablet
Rose, Cook, et al. (2022), United Kingdom	Prospective observational study	To evaluate family members' markers of psychological wellbeing prior to and following their first virtual ICU visit and subsequent virtual visits and to measure prevalence of depression, anxiety and stress using validated measures	Multicentre, ICUs	Adult family members of ICU patients ($n=2166$) from 37 hospitals	Multiple questionnaires: Distress thermometer, 21-item Depression, Anxiety and Stress Scale and a modified version of the Discrete Emotions Questionnaire	Virtual visiting solution using the e-platform aTouchAway
Rosenthal et al. (2021), USA	Randomized controlled pilot trial	This pilot trial aimed to (1) measure the feasibility of conducting a virtual family centred rounds (FCR) trial, (2) characterize the reach of the virtual FCR intervention and (3) assess the potential impact of the virtual FCR intervention on exploratory patient and family outcomes	Single centre, NICU	Parents of neonates assigned to the virtual family centred rounds group ($n=74$) and assigned to the usual care group ($n=36$)	Virtual observations of FCR, review of electronic patient file and parent survey (Hospital Consumer Assessment of Healthcare Providers and Systems; HCAHPS)	Virtual FCRs were held between HCPs and parents of neonates using Zoom©
Sanfilippo et al. (2022), Italy	Feasibility study	To evaluate the effects of the introduction of a video call performed twice per week on the incidence of depression, anxiety and PTSD in caregivers of ICU patients	Single centre, ICU	Family members ($n=20$) from COVID-patients ($n=12$) and non-COVID patients ($n=8$) and also 17 patients were included of whom 11 were admitted with COVID-19	Multiple questionnaires validated in Italian: Impact of Event Scale, Center for Epidemiologic Studies Depression Scale and Hospital Anxiety and Depression Scale	Video calls which were performed twice a week by a trained nurse
Sasangohar et al. (2021) USA	Interview study	To evaluate the usage of a virtual ICU for family visitation during the COVID-19 pandemic	Single centre, ICU	230 family members	Interviews (sentiment analysis)	They launched a virtual ICU programme in which family members were able to arrange a virtual visit with the bedside staff and patient

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Shunker (2022), Australia	Abstract	To explore strategies, challenges and barriers of virtual visiting using videoconferencing to bridge the physical gap between patients and their families	ICU	Unclear	Focus groups	Videoconferencing and virtual visits between patients, family members and healthcare staff
Tallent et al. (2022)	Quality improvement study	The purpose of this quality improvement (QI) project was to implement a virtual rounding programme to encourage caregiver presence in morning medical rounds through the use of videoconferencing	Single centre, PCICU	Parents and PCICU staff	Before- after study using surveys measuring staff satisfaction and workload impact. Parental satisfaction was measured using the paediatric Family Satisfaction in the Intensive Care Unit (pFS-ICU)	A virtual rounding programme was implemented allowing parents of patients admitted to PCICU to join medical rounds remotely through teleconferencing. Meeting Owl Pro© was used as device
Thomas et al. (2021), New Zealand	Analytic review	To develop a videoconferencing system for virtual visiting that meets families' wishes and ensures patient privacy, dignity and data security	Single centre, ICUs	Patients, family members and ICU staff	Unclear	Development of 'HowRU': a cloud-based system that uses virtual visiting. Besides, they designed a workflow from start to finish for using virtual visiting
Webb et al. (2020), United Kingdom	COVID-19 rapid report	To report on measures taken in response to the social distancing measures during the COVID-19 pandemic	Single centre, CCU	Staff members (including physiotherapists, nurses, healthcare assistants and doctors)	First survey to identify if communication between staff and families was a problem, and potential solutions ($n=28$). Second survey to collect feedback on implementing virtual visits ($n=29$). In addition, feedback from patients and families was collected	Virtual visits between patients, family members and staff members
Wong and Merchant (2021), Singapore	Letter to editor	To improve the psychosocial and mental well-being of the patients when relatives were not allowed to visit them during COVID-19	Single centre, geriatric ward	30 admitted patients	Surveys	Virtual visiting using a mobile device that supported video calls
Xyrichis et al. (2022), United Kingdom	Qualitative descriptive study	To explore clinician experiences, including perceived benefits for family members, including significant others not related by blood or marriage, of virtual visiting during the COVID 19 pandemic	Multicentre, ICUs	ICU-experienced clinicians ($n=17$) and non-ICU-experienced family liaison team members ($n=19$)	Semi-structured telephone/video interviews. Analytical themes were developed inductively following a standard thematic approach, using 'family-centred care' and 'sensemaking' as sensitizing concepts	Virtual visiting

(Continues)

TABLE 1 (Continued)

Author (year), country	Study design	Study aim	Setting (department)	Population	Methods	Video call intervention
Yager et al. (2017), USA	Prospective single centre study	To evaluate the feasibility and impact of telemedicine for remote parent participation in PICU rounds when parents are unable to be post sent at their child's bedside	Single centre, PICU	23 sets of parents. PICU nurses and physicians directly involved in the care of a patient whose parents were in the study.	153 surveys after 51 virtual rounds. From each round, one parent, one nurse and one physician completed the survey	Virtual rounds between parents and the PICU team
Yang et al. (2014), USA	Prospective cohort study	To evaluate the impact of a videoconferencing programme (Family-Link) on stress levels experienced by hospitalized children	Single centre, paediatric wards	Parents/guardians of children ($n=367$)	Family-Link programme users ($n=232$) and non–Family-Link users ($n=135$). Stress reduction during hospitalization were measured using the Parental Stress Survey	Family-Link videoconferencing programme to connect hospitalized children with their parents/other family members and friends
Yuan et al. (2023), China	Parallel group single-blind randomized controlled trial	To examine the effect of video visitation on patient's anxiety and depression, the incidence of delirium, family's anxiety, and patients' and family members' satisfaction with visitation during the COVID-19 pandemic	Single centre, surgical ICU	Adult ICU patients ($n=121$) and family members ($n=98$)	Multiple surveys. Including Chinese versions of: the Hospital Anxiety and Depression Scale, Confusion Assessment Method for the Intensive Care Unit, the Self-Rating Anxiety Scale and satisfaction questionnaire routinely used in the hospital	Video visitation between patients, family members and the patient's nurse
Zante et al. (2022), Switzerland	Prospective mixed-methods study	To investigate the effect of video calls on symptoms of PTSD in relatives of ICU patients	Single centre, multidisciplinary department of ICU	Relatives of patients hospitalized in the ICU ($n=52$) separated in a video call group ($n=26$) and a standard care group ($n=26$) without video calls	Interviewed by telephone using the Impact of Event Scale-Revised, Family Satisfaction in the Intensive Care unit 24-item-Revised and inductive content analysis on additional comments	Specially assigned nurses conducted the video calls with the relatives by appointment

Abbreviations: CCU, critical care unit; ICU, intensive care unit; NA, not applicable; NICU, neonatal intensive care unit; PICU, paediatric intensive care unit; PCICU, paediatric cardiac intensive care unit; PTSD, post-traumatic stress disorder; USA, United States of America.

family meetings (Bettini, 2020; de Havenon et al., 2015), end-of-life care (Cherniwchan, 2022; Galazzi et al., 2021; Otte et al., 2022) and updates about care (Bansal et al., 2022; Carlucci et al., 2020; Chua, 2022; Conroy et al., 2021; Dol et al., 2017; Elma et al., 2022; Epstein et al., 2017; Kennedy et al., 2021; Nelson et al., 2022; Riccò et al., 2022; Rose et al., 2021; Rose, Graham, et al., 2022; Shunker, 2022; Xyrichis et al., 2022; Zante et al., 2022). Video calls were also used on PICUs and NICUs for parents seeing their infant (Epstein et al., 2017; Giuseppe et al., 2022; Ranu et al., 2021; Yang et al., 2014), and for communication and updates between parents and healthcare professionals about the child (Bavare et al., 2021; Bettini, 2020; Dol et al., 2017; Moraes & Chiaradia Mendes-Castillo, 2023; Nicholas et al., 2011; Yager et al., 2017).

4 | KEY FINDINGS

4.1 | Experiences of patients, families and healthcare professionals using video calls

4.1.1 | Patients

Nine articles described the experiences of patients with the use of video calls in hospital wards (Dhala et al., 2020; Dürst et al., 2022; Ehrler et al., 2021; Kebapcı & Türkmen, 2022; Padua et al., 2021; Parsapour et al., 2011; Wong & Merchant, 2021; Yang et al., 2014; Yuan et al., 2023) (Table 2). In several studies, patients experienced a reduction in anxiety after using video calls to connect with their families (Dürst et al., 2022; Kebapcı & Türkmen, 2022; Wong & Merchant, 2021). However, one study in ICU showed no significant differences in anxiety scores when family video visitation was compared to the ICUs routine care during COVID-19 (i.e. no in-person visits and phone updates by research nurse) (Yuan et al., 2023). One study published before the COVID-19 pandemic reported improved mood and increased motivation for rehabilitation of patients during their hospital stay when using video calls (Parsapour et al., 2011). During the pandemic, video calls helped patients to feel less isolated (Ehrler et al., 2021); however, patients preferred in-hospital visits when allowed (Wong & Merchant, 2021).

4.1.2 | Families

Twenty-seven articles studied the experiences of families of hospitalized patients regarding the use of video calls (Table 2). Families reported satisfaction with video call services, as it facilitated communication with healthcare professionals about the care of their loved ones (Bettini, 2020; Dainty et al., 2023; Dhahri et al., 2021; Moraes & Chiaradia Mendes-Castillo, 2023; Nicholas et al., 2011; Riccò et al., 2022; Yager et al., 2017). As a result, families felt more engaged in the treatment process (Ranu et al., 2021; Yager et al., 2017). Being able to virtually visit their loved ones helped families to feel reassured, it brought more comfort and it reduced anxiety significantly (Dürst et al., 2022; Kebapcı & Türkmen, 2022; Webb et al., 2020; Yager et al., 2017). However, some families felt distressed by virtually seeing their loved one in a critically ill situation (Dhahri et al., 2021; Elma et al., 2022; Epstein et al., 2017; Sasangohar et al., 2021; Zante et al., 2022). Video calls in NICUs were mostly used to update parents about their infants' situation and to provide support (Bavare et al., 2021; Bettini, 2020; Dol et al., 2017; Moraes & Chiaradia Mendes-Castillo, 2023; Nicholas et al., 2011; Yager et al., 2017). Parents with access to their infant via video calls experienced lower stress levels than parents who had only had limited access to the NICU and no video call service accessibility (Epstein et al., 2017; Giuseppe et al., 2022; Moraes & Chiaradia Mendes-Castillo, 2023). However, some parents also experienced feelings of helplessness and feelings of guilt, as they were not 'there' when their infant needed them (Epstein et al., 2017; Nicholas et al., 2011). Two studies described the process of video calls during end-of-life care, where the calls helped family members with grieving (Galazzi et al., 2021; Sasangohar et al., 2021). Nevertheless, families preferred in-hospital visits if allowed (Kennedy et al., 2021).

4.1.3 | Healthcare professionals

Fifteen studies reported on the experiences of healthcare professionals with the use of video calls in hospital wards (Bansal et al., 2022; Bavare et al., 2021; Cherniwchan, 2022; Conroy et al., 2021; Dhahri et al., 2021; Ehrler et al., 2021; Elma et al., 2022; Epstein et al., 2017; Galazzi et al., 2021; Kennedy et al., 2021; Nelson et al., 2022; Otte et al., 2022; Ranu et al., 2021; Rose et al., 2021; Shunker, 2022; Webb et al., 2020; Xyrichis et al., 2022; Yager et al., 2017) (Table 2). During the COVID-19 pandemic, healthcare professionals felt that video calls were useful and effective when in-person hospital visits were not allowed (Bavare et al., 2021; Cherniwchan, 2022). Video calls gave healthcare professionals a moral boost, as they were able to connect families with the admitted patients (Elma et al., 2022; Rose et al., 2021; Webb et al., 2020). Furthermore, healthcare professionals mentioned that video calls helped to facilitate in goals of care planning (Bansal et al., 2022) and interaction with patients and families (Elma et al., 2022; Webb et al., 2020). Professionals observed increased vigilance and awareness among admitted ICU patients when using video call services (Rose et al., 2021). However, healthcare professionals felt that video calls were emotionally difficult, as it was hard to provide support at distance (Dhahri et al., 2021; Kennedy et al., 2021; Otte et al., 2022; Shunker, 2022; Webb et al., 2020). Additionally, healthcare professionals felt that video calls were sometimes not as effective as in-person conversations, for example, it was difficult to use silence effectively, and healthcare professionals were not sure if families understood all the information provided (Dhahri et al., 2021; Kennedy et al., 2021; Nelson et al., 2022). Moreover, one study described that nurses struggled to engage family members during the video call (Kennedy et al., 2021). Healthcare professionals felt video calls should not replace in-hospital visits (Conroy et al., 2021; Elma et al., 2022; Galazzi et al., 2021; Kennedy et al., 2021; Otte et al., 2022).

TABLE 2 Summary of reported experiences of patients, families and healthcare professionals.

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Bansal et al. (2022), Canada			Video calls were useful in facilitating *communication* among patients, families and staff (median score 9.7 out of 10; $n=30$) and HCPs suggested that video calls were easy to use (median score 9.7 out of 10; $n=28$). Video calls *facilitated* in goals of *care planning*, *decision-making* and facilitated in *overcoming language barriers*. Mean experience was 7.2 out of 10 ($n=35$). Overall *satisfaction* with the video call programme was rated as: 13 out of 42 (31%) were 'extremely satisfied', 12 out of 42 (28.6%) were 'satisfied', 12 out of 42 (28.6%) were 'neutral' and 5 out of 50 (11.9%) were 'dissatisfied'.	
Bavare et al. (2021), USA			Educational moments for staff were difficult during hybrid rounds	HCPs and families: appreciated the efforts to do hybrid rounds during COVID-19 pandemic, but wanted the ICU attending/fellow supervising the team to participate at bedside
Bettini (2020), USA		Families were *grateful* that technology allowed them to be together with their loved one		
Carlucci et al. (2020), Italy		The information given by the medical staff, the *courtesy* of the staff and the initiative of video calling were excellent. The *continuous contact* with the patient and with the physicians had greatly alleviated the suffering status of families and patients ($n=19$, 100%)		
Cherniwchan (2022), Canada				Patient and HCPs: An *acceptable alternative* to in-person services. Most patients still did not endorse, however, that technology could ever substitute a family member's physical presence at clinical rounds
Conroy et al. (2021), Ireland			A greater sense of *confidence* initiating sensitive calls with a wired connection in place. The solution *did not replace* the tactile interaction between family and patient, and the reassurance that it provided	

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Dainty et al. (2023), Canada		Family members were *extremely happy* with video call opportunity and it was seen as a vital lifeline of human connection that supported the mental health of both patients and their family members. Video calls provided context and confirmation of reports from HCPs. It supported family *decision-making* and promoted *better communication*		
Dhahri et al. (2021), United Kingdom		Virtual visits helped to *feel close* to their loved ones. Some family members were shocked to see their loved one so ill		HCPs and families: 94.9% had positive comments on virtual visits. Negative comments were more frequently reported in the staff cohort (23%) compared to the family group (4%). Trends included sub-themes: *overwhelming emotions*, *emotional strain* for staff members and *difficult situations*
Dhala et al. (2020), USA	Mental and emotional status of COVID-19 patients were *bolstered*	*Gratitude* for the ability to see and speak with their loved ones		Patients, families, and HCPs: overall responses from were *in favour* of continued virtual ICU care
Dol et al. (2017), Canada		eHealth interventions were *useful* and *acceptable*. They generally accepted the quality of the video or audio and minimal technical difficulties encountered		
Dürst et al. (2022), Switzerland, Italy	Global scores regarding *acceptance* of video calls after 1 week of video call use was (mean(SD)) 11.5(6.3) for phone calls and 14.4 (3.9) for video calls ($p = .260$). General *anxiety* was significantly *reduced* from baseline to the end of the study in both video calls and phone calls ($p = .017$). This reduction was *significantly more important* in patients using video calls ($p = .045$) *Fear of death* significantly *decreased* over time in both video and phone calls groups ($p < .0001$). The reduction appeared to be larger in the video calls group for overall fear of death ($p = .038$), fear of self-death ($p = .061$) and fear of others' death ($p = .005$) No significant effect between video and phone calls ($p = .464$) was observed on *mood*.	Global score regarding *acceptance* of video calls after 1 week of use was (mean(SD)) 10.7(6.8) in using phone calls and 15.9(3.3) in using video calls ($p = .762$). General *anxiety* significantly ($p = .004$) *decreased* over time in both video and phone call group, without any difference across video and phone calls groups ($p = .977$). *Fear of* the loved ones' *death* evolved in opposed directions in the two groups of relatives, with a significant beneficial effect among video versus phone calls users ($p = .003$).		

(Continues)

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Ehrler et al. (2021), Switzerland	Video calls helped to fight isolation during hospitalization			Majority of patients ($n=33$, 93.9%), families ($n=250$, 93.3%) and HCPs ($n=12$, 70.6%) were *highly satisfied* and intended to use video calls again (90.9%, 89.6% and 64.7%)
Elma et al. (2022), Canada		Families became *distressed* seeing their loved one with tubes	HCPs expressed *appreciation* towards video calls and felt rewarded because they allowed patients and families to connect. However, video calls *could not replace* face-to-face interactions, particularly in end-of-life care	
Epstein et al. (2017), USA		Parents had positive experiences with communication technologies as they could see their infants. It was *meaningful*, *helpful*, and it *reduced stress* and *anxiety*. A few parents expressed *helplessness*, *sadness*, *stress* or *guilt*	HCPs perceived the use of technology quite *favourably*	
Galazzi et al. (2021), Italy		Families expressly requested the video calls as it *helped* in the *grieving process*. Some also specified the importance of this opportunity	End-of-life care with families at the bedside must be first choice	
Giuseppe et al. (2022) Italy		T-FCC group parents were *more satisfied* and *less stressed* compared to N-FCC group		
de Havenon et al. (2015), USA		No significant group differences were observed between audio-visual family meetings and regular meetings on (1) family members' report of *satisfaction* with the decision-making process, (2) making decisions that were *reflective* of the patients' wishes, (3) unresolved issues, agreement on patient wishes and (4) overall *satisfaction*		
Kebapcı and Türkmen (2022), Istanbul	Mean *anxiety* level using a Visual Analogue Scale score *decreased* from 2.97 to 1.49 after the virtual visit ($p<.001$)	Mean anxiety level using a Visual Analogue Scale decreased from 5.70 to 3.53 after the virtual visit. ($p<.001$). Majority were *satisfied* with the virtual visits ($n=48$, 96%)		
Kennedy et al. (2021), USA		Families' self-perceived ability to 'be there' for their loved one varied	Communication goals via phone and video calls could be met; however, HCPs worried about conveying empathy and establishing trust with families	*Families and HCPs perceive* phone and video calls somewhat effective, however inferior to in-person communication.

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Mercadante et al. (2020), Italy		Appreciated the opportunity to see their loved one and to receive medical updates from the HCPs. However, families felt that video calls could not substitute the real presence		
Moraes and Chiaradia Mendes-Castillo (2023), Brazil		Parents felt *welcomed* by the healthcare team and felt that anxiety and mistrust give way to the return of family affection and trust in care. Parents were able to *relieve* the *homesickness* and *suffering* of the child via video calls. The calls helped to understand all interventions performed with the child, the devices and the clinical condition.		
Nelson et al. (2022), USA			Telehealth technologies were seen as *valuable* in taking care of patients by 93.8%–100.0% of the ICU leaders. The majority felt it would be useful for their ICU to continue using telehealth technologies after hospital visitor restrictions were lifted. Some healthcare professionals felt that telehealth may *create mistrust* due to not being able to communicate in person (25.0%, 12.6% and 21.3% respectively).	
Nicholas et al. (2011), Canada		It was sometimes *emotionally challenging* to see their loved ones in pain or having a difficult day		*Patients and families* reported benefits of being visually able to see familiar settings and beloved others. It brought *reassurance*, *comfort*, more *knowledge* about the treatment, and a *decrease* in *feelings of isolation*
Østervang et al. (2019), Denmark		Video calls helped to reduce misunderstandings during admission and helped *accommodating involvement* in care. HCPs found information provided by family members useful		
Otte et al. (2022), Denmark			HCPs found that video calls *helped* family members *understanding* the ICU setting, but were also *concerned* about family members' well-being after ending the call. Nurses found it *awkward* to provide comfort over video. HCPs saw potential for video calls as *supplement* to in-person visits, but not as a replacement of in-person visits	

(Continues)

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Padua et al. (2021), Italy	No significant changes in heart and blood pressure parameters were observed. When patients video called with family, neurobehavioral changes were observed in patients	Families had a *positive sensation* from the video call but results appeared to be influenced by the acceptance of hospital restrictions (i.e. complete visitor ban)		
Parsapour et al. (2011), USA	Patients with the family-link service had the ability to interact with support provider (e.g. spouse and children). They were *motivated* to rehabilitate, and the service made the hospital stay more *bearable*. If the hospital was far away from home, the service offered opportunity to attend ceremonies			
Petersson et al. (2020), Denmark	A satisfactory alternative to physical presence, virtual contact felt *remarkably real*, placing patients at the centre of the dialogue			
Ranu et al. (2021), USA		There was overwhelming *acceptance* of the use of web camera technology by parents. Parents felt more connected and closer to the infant and were able to take on certain parental roles that were otherwise difficult Overall, it *positively influenced* psychosocial outcomes	It was sometimes challenging for parents if they were hypervigilance	
Riccò et al. (2022), Italy		Most were *satisfied* with the received communication through (video) calls with a mean (SD) total score of 4.69 (0.60). Results showed high satisfaction rate with both the informative (mean ± SD: 4.66 ± 0.64) and emotional (4.66 ± 0.58) content, with no significant difference depending on family members' demographic characteristics ($p > .05$). Additionally, 13% of the family members found it *useful* to organize more video calls		
Rose et al. (2021), United Kingdom			Majority thought that it *reduced* patients' psychosocial *distress*, and *improved* staff *morale*. Approximately 45% thought that it also reoriented patients with delirium, surmounts communication or language barriers and improved patient engagement with rehabilitation or physiotherapy	

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Rose, Graham, et al. (2022), United Kingdom		Family members considered virtual visits, compared to in-person visits, the *next best thing*		
Rose, Cook, et al. (2022), United Kingdom		*Distress* before and after the first virtual visit was 1.6 (3.2) (mean (SD)) points lower than pre-visit ($p < .001$). Of the participants that experienced 2 or more (maximum 10) virtual visits, the proportion rating distress as 7 or higher (i.e. severe distress) decreased further from 33% of the participants to 22% at the 10th virtual visit. Moreover, family members reported after the virtual visit a range of emotions with *reassurance* being the most common, *anger* being the least		
Rosenthal et al. (2021), USA		Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey showed higher scores in the intervention group compared to the usual care group, indicating greater caregiver experience		
Sanfilippo et al. (2022), Italy		The average results between the two video calls (before first video call and before third video call) showed *no significant difference* in terms of *depression* ($p = .17$ and .59), anxiety ($p = .67$) and *post-traumatic stress disorder* ($p = .19$)		
Sasangohar et al. (2021), USA		Over 86% of the family members had positive experiences with the virtual ICU. Families shared feelings of *happiness*, *joy* and *gratitude*. The virtual ICU also provided a degree of *closure*. In addition, families had mixed feelings as seeing the patient intubated contributed to feelings of *sadness*		
Shunker (2022), Australia		Satisfied with the communication through virtual rounds. Some parents felt *lack of control* regarding care and *lack of support* during the decision-making process	ICU HCPs experienced *distress* at having to keep families away and to cope with anger, distress and grief over a phone or virtual platform. Holding patient's hands at their end-of-life with family presence over a virtual platform was quite *distressing* to staff	Patients and families: *Absence* of family presence had a *negative impact* on patient recovery and psychological outcomes. Information transfer required a clear and creative approach

(Continues)

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Tallent et al. (2022)		Parents *appreciated* the virtual rounding opportunity and *felt engaged* with the care team. It helped in *alleviating the stress* arising from the inability to be physically present	Virtual rounds did not increase rounding times after implementation ($p = .673$). Staff satisfaction surveys revealed that staff felt the VR programme did not prolong rounding times ($p \leq .001$), workload impact perceptions improved after intervention ($p = <.001$), and staff felt VR should be offered to families in PCICU ($p \leq .001$)	
Webb et al. (2020), United Kingdom		Families had *positive experiences* with daily video calls. Families could visualize HCPs, which increased the confidence in the care team	HCPs reported it was emotionally heavy, but rewarding to be able to *connect* patient and family; morale boost for staff	
Wong and Merchant (2021), Singapore	Almost two-thirds requested daily video calls and 95% agreed that the calls made them *less anxious* or *worried*. Nine in 10 participants still preferred an in-person visit if allowed			
Xyrichis et al. (2022), United Kingdom		Virtual visits were *emotionally challenging* for family members because they were able to visualize the health status of the patient	HCPs experienced virtual visiting as an opportunity to restore the family unit, to involve family members in care and to enable sense making of the ICU context for patients' families	
Yager et al. (2017), USA		Parents ($n = 51$) reported a high satisfaction score of a mean of 9.4 out of 10. Video calls *enhanced* parent-provider *communication* and offered *reassurance*	Nurses ($n = 51$) had a high level of satisfaction (9.8 out of 10) and hardly any disruptions (0.3 out of 10) in workflow of the virtual rounds were observed. Physicians ($n = 51$) also reported a median satisfaction rate of 9.9 out of 10 and low level of disruption, that is, 0.6 out of 10	
Yang et al. (2014), USA	Use of videoconferencing suggested a *reduction* in *stress* for children during hospitalization. Although the reduction in stress scores Across all domains from the Parental Stress Survey was greater among Family-Link users compared with non–Family-Link users, these differences were not statistically significant. Video calls helped the children to *stay in touch* with their family and friends, which was considered very important for them.			

TABLE 2 (Continued)

Author (year), country[a]	Reported experiences of patients	Reported experiences of families	Reported experiences of HCPs	Reported experiences of patients, families and HCPs
Yuan et al. (2023), China	Between the video visitation group and the control group, there were no statistically significant differences in anxiety scores ($p=0.187$) and depression scores ($p=.119$). A *statistically significant* difference in satisfaction was found between the two groups: 41.5% versus 14.3% was 'very satisfied' with the visiting method; 44.6% versus 42.9% was 'satisfied' with the visiting method; 7.7% versus 21.4% was 'medium satisfied' and 6.2% versus 21.4% was dissatisfied or very dissatisfied with the visiting method.	There were no statistically significant differences in the anxiety score in the video visitation group compared to the control group. There was a significant difference between the video visitation group and control group in family members' *satisfaction* with the visiting method ($p=.007$). In the intervention group 62.0% ($n=31$) versus 35.4% ($n=17$) were 'very satisfied' with the visit. 26.0% ($n=13$) of intervention group was 'satisfied' compared to 27.1% ($n=13$) in the control group. Medium level of satisfaction was found in 8.0% ($n=4$) in the intervention group versus 29.2% ($n=14$) in the control group. Lastly, 4.0% ($n=2$) of the intervention group was dissatisfied and/or very dissatisfied versus 8.4% ($n=4$) in the control group.		
Zante et al. (2022), Switzerland		No significant difference was observed between the video call group and the standard care group (49.52 ± 13.41 vs. 47.46 ± 10.43, $p=.54$). The Adapted Family Satisfaction in the Intensive Care Unit 24-Item-Revised questionnaire scores were high for both groups: 38 (IQR 37–40) in the Video call group and 40 (IQR 37–40: $p=.24$) in the standard care group. Family members noted reduced feelings of *helplessness* and the feeling of greater *closeness* to the patient after/during the video call. However, some stated that they were *saddened* or *distressed* at the sight of their loved ones in the ICU.		

Abbreviations: FCC, family-centred care; ICU, intensive care unit; IQR, interquartile range; N-FCC, no family-centred care; SD, standard deviation; T-FCC, telematics family-centred care; USA, United States of America.

[a] Studies of Chua et al. (2022), Moolla et al. (2020) and Thomas et al. (2021) did not include information on experiences of patients, families or healthcare professionals.

TABLE 3 Summary of reported facilitators and barriers.

	Facilitators			Barriers		
Author (year), country[a]	**Individual factors**	**Environmental and organizational factors**	**Technical factors**	**Individual factors**	**Environmental and organizational factors**	**Technical factors**
Bansal et al. (2022), Canada		Supporting policies: 'site champions' had a large role in facilitating video calls		Unclear benefit: the need for use of video calls did not arise in healthcare professionals	Missing fit into organizational structure: healthcare professionals did not know that video call devices were available or located at the ward	Security: concerns about inappropriate use of the ICT and how to maintain confidentiality. Unsuited services: need to speak carefully and close into microphone, unreliable internet connections. Concerns about infection control and device sanitation. Usability: lack of time to use video calls and time-consuming to set up call. Personal devices were easier to use than hospital devices.
Bavare et al. (2021), USA	User experience: fewer interruptions during bedside rounds and improved efficiency. Collaboration: improved input of healthcare professionals and higher engagement of remote healthcare professionals and families.		Ease of use: opportunity to integrate video calls with data platforms	Training and support: missing educational moments to train junior healthcare professionals.	Loss of situational awareness of patients/unit acuity if rounds are not at the bedside.	Unsuited services: suboptimal audio-video quality and audio issues cause due to alarm interference
Bettini (2020), USA	Cognition: families have sufficient knowledge to use the technology	Supporting policies: education for families prior telehealth visit	Ease of use: availability of tools for families to facilitate communication			
Carlucci et al. (2020), Italy	Clear benefit: information technology tools may have a decisive role in supporting health insurance, creating a highly performing system that reduce distances, suffering of disease and the weight of necessary isolation			User experience: 13 (52%) ICU patients were not able to interact with their family members by video calls during ICU stay		
Cherniwchan (2022), Canada		Supporting policies: providing detailed training and support for healthcare professionals to facilitate video sessions. The use of an organized, holistic care framework in video sessions for palliative inpatients.	Service easy to assess: presence of some healthcare professionals at patients' bedside to facilitate video sessions for patients and their families.		Funding: issues with financing of video sessions.	Unsuited services: issues with connectivity and accessibility during video sessions. Security: difficulties to maintain privacy during video sessions.

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Chua (2022)	Communication: videoconferencing is the most practical alternative option to an in-person meeting or a phone call, especially when breaking bad news, delivering complex medical information or discussing goals of care. Clear benefit: ICU patients are encouraged to use videoconferencing to connect with their families to promote their emotional and psychosocial well-being. In addition, videoconferencing could be beneficial in preventing delirium, improving engagement with health services, providing mental support, enhancing staff morale and overcoming patients' language barriers. User experience: videoconferencing helps with families' understanding of the patient's clinical status.	Supporting policies: timing and duration of virtual visit should be flexible because this provides reassurance, builds rapport and helps generate trust with the patients' family				
Conroy et al. (2021), Ireland		Supporting policies: involvement of hospital stakeholders who have experience in legal requirements and hospital policies for videoconferencing. Cognition: ensuring low training requirements for healthcare professionals. Supporting policies: availability of adequate materials in line with the infection prevention policies (e.g. plastic sleeves for device).	Reliability of service: video call system should be reliable and easy-to-use for healthcare professionals. Privacy: ability to ensure privacy. Reliability of service: sufficient network access. Standards: high sound and video quality.			

(Continues)

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Dainty et al. (2023), Canada		Supporting policies: in order to have meaningful connection hospital staff facilitated contact between patients and their families by providing technical support, holding the device during the call as well as providing context				
Dhahri et al. (2021), United Kingdom	User experience: adequate support by healthcare professionals through follow-up calls or visits to families	Cognition: for healthcare professionals before and after virtual visiting, in place physiological support systems for patients, visitor and healthcare professionals.	Standards: development of standard operating procedure for virtual visits, regular debriefing sessions for healthcare professionals to implement virtual visits.	User experience: virtual visits in end-of-life care could affect healthcare professionals' mental health and well-being. Collaboration: awareness of miscommunication, healthcare professionals discuss and witness difficult topics with families.		
Dhala et al. (2020), USA		Clear benefits: reduction of the need for personal protective equipment if there are shortages. Supporting policies: installation of virtual visitation services require careful planning. Healthcare professionals should be informed before implementation.	Standards: high quality real-time video feed is necessary to ensure the quality of remote consults			
Dol et al. (2017), Canada	User experience: willingness of parents to accept eHealth interventions as part of neonatal intensive care. Motivation: healthcare professionals should be aware and willing to support families.			Unclear benefits: effects of eHealth on neonatal outcomes is yet unclear		

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Ehrler et al. (2021), Switzerland	Collaboration: the engagement of healthcare professionals is valuable to quickly enable the deployment of a video call system	Supporting policies: the presence of a shared coherent strategic vision for implementing video calls.	Usability: an agile information system should be used that not increases workload.			Usability: issues with setting up video calls and the need of specific training. Security: privacy issues
Elma et al. (2022), Canada		Supporting policies: explicitly scheduling frequent and long(er) virtual visits and preparing families for theses visits	Service easy to access: increase availability and use of videoconferencing technology.	Accessibility: patients with certain impairments or altered levels of consciousness are not fully able to benefit from video calls. User experience: healthcare professionals have feelings of intrusion in private patient–family moments, experience difficulties giving non-verbal cues, missing physical touch. Unclear benefits: increased workload for healthcare professionals. Cognition: different levels of digital health literacy.	Supporting laws: ethical concerns about unconscious patient participating in virtual visits	
Epstein et al. (2017), USA						Unsuited services: technological barriers (i.e. freezing cameras, blurred images and repositioning camera)
Galazzi et al. (2021), Italy		Supporting policies: providing training and assistance by healthcare professionals helps families to cope with end-of-life processes via video calls		Doubt of added value: healthcare professions suggest that some families may feel seeing their loved one dying over video call might not be the best way to see the patient as their last memory.		Usability: video call services are not available for all families and have consequences for access to care

(Continues)

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Giuseppe et al. (2022), Italy	Collaboration: video calls can be considered as a good and useful tool for parents to feel included in health care team during pandemic			Doubt of added value: video call cannot replace physical contact		
de Havenon et al. (2015), USA			Usability: audio-visual meetings are feasible	Unclear benefits: lacking evidence of effects audio-visual meetings on improving family meeting communication, satisfaction and decision-making.		
Kebapcı and Türkmen (2022), Istanbul	Clear benefit: video calls are a cost-effective opportunity to increase satisfaction and quality of care					
Kennedy et al. (2021), USA	Collaboration: before telehealth family meetings, one should check the availability of technology and coordinating with families and healthcare professionals. Communication: healthcare professionals should be able to use adequate communication strategies: identify a family point person to receive updates, to check family understanding frequently, to position the camera on video calls to help family see the patient and their clinical setting, and to offer time for the family and patient to interact without health care professionals participating.		Usability: availability of technology	User experiences: healthcare professionals can feel uncertain understood information sharing or experience difficulties in having high-stakes discussions or in how to cope with silences. Unclear benefits: increased workload for healthcare professionals		
Mercadante et al. (2020), Italy			Ease of use: simple technology could overcome problems regarding visitation restrictions during the pandemic			

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Moolla et al. (2020), South Africa		Supporting policies: availability of adequate materials in line with the infection prevention policies (e.g. plastic sleeves for device). Adequate ward preparation (e.g. advertising and instructions in different languages). Appointment of local champions.	Usability: adequate hardware (e.g. tablets and cell phones) and adequate software (e.g. Skype and Zoom)			
Moraes and Chiaradia Mendes-Castillo (2023), Brazil	Motivation: healthcare professionals were determined to seek alternative methods to connect patients and families. Communication: professional awareness and sensitivity to mediate video calls as a healthcare professional is of importance.					
Nelson et al. (2022), USA						Usability: technical issues with telehealth technologies were experienced by 66.7% of the ICU leaders, 50.0% of the US-based Neurocritical Care Society members and 63.4% of the Society of Critical Care Medicine members
Nicholas et al. (2011), Canada	User experience: ability to use videophone when desired		Usability: accessibility of a phone that is easy to use with an unrestrained visual field to offer movement.			Usability: technological issues such as slow transmissions, not working video screens or a grainy or black and white picture
Østervang et al. (2019), Denmark	User experience: ability to quickly update families on treatment and care	Supporting policies: consistent work structure for setting up video calls could free up time	Usability: ability to involve other collaborators such as rehabilitation homes simultaneously with the family members	User experience: video calls made it difficult for HCPs to divide attention to both the patient and the family member. Training and support: time-consuming for HCPs to learn using the video calls.		Usability: technological failures caused inconvenient disruptions to the conversation.

(Continues)

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Otte et al. (2022), Denmark	Ease of use: video calls were less time-consuming than an in-person visit and easier to schedule. User experience: more family members can see the patient without a risk of infection transmission. Families get insight into treatment of the patient. Motivation: patients get a window into his or her home.				Supporting laws: ethical considerations when the patient has not given consent to video calls	Usability: limited time and capacity to deal with technical problems. Unsuited services: problems with establishing sufficient internet connection, loudspeaker function problems.
Parsapour et al. (2011), USA	Ease of use: healthcare professionals should be able to set-up the equipment, solve connectivity problems maintain an inventory of equipment		Usability: relatively inexpensive communication technology (i.e. broadband internet and standard webcam-based technologies).			Security: difficulties to overcome issues with hospital firewalls, which can make it more expensive. Difficulties to maintain privacy. Usability: access to internet is not universally available.
Petersson et al. (2020), Denmark	Ease of use: map for positioning patient and HCPs enables eye contact with all partners in the video call. User experience: patients felt comforted by their families.	Supporting policies: fixed times for video-consulted ward rounds are necessary to prepare patients and reduce waiting times.		User experience: issues with reading body language, lack of physical contact Cognition: patients require a thorough introduction on using video calls and older patients may require additional support to comprehend the technology.		
Ranu et al. (2021), USA	Clear benefits & trust and control: secured buy-in from health care staff should be arranged, addressing benefits of the system, issues of privacy, ease of use and impact on nurses' workload prior to implementation		Standards: one-way sound transmission from parent to infant. Ease of use. Privacy protection by using telehealth platforms that are secured and maintain HIPPA compliance.	Believes: existing thought of nurses that video technology increases workload. Cognition: existing language barriers.		Security: difficulties to maintain privacy in shared open spaces. Insufficient devices. Limitations in technology.

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Riccò et al. (2022), Italy	Clear benefit: structured phone calls with to opportunity to video call could become a new opportunity, especially for family members who live or work far away and could now have a bigger role in the global process. User experience: 2% would have liked to have seen the patient before discharge, especially after a long hospital stay.	Supporting policies: 12% of the family members would have preferred to have always talked to the same clinician and 4% suggested the first meeting be held in person				
Rose et al. (2021), United Kingdom	User experience: providing informational and emotional support to families and reducing patient psychological distress. Clear benefit: provide reorientation for patients with delirium and patient motivation to engage in therapies. Clear benefit: Overcome language or communication barriers, and enhance patient-centred care. Clear benefit: Improves staff mental being during ongoing pandemic-related visiting restrictions.	Supporting policies: The creation of family communication or liaison teams to overcome the reduced availability of ICU nurses because of workload. Local family communication champions may be one solution for implementing and sustaining virtual visiting as an option outside of pandemic conditions. Supporting policies: Revisions of ICU virtual visiting guidance.	Usability: The use of a single videoconferencing platform has obvious advantages in terms of developing training and expertise and for managing technical problems. Selection of a videoconferencing platform should be done in consultation with information technology specialists. Security: Platform needs to be one-way calling, secured cloud-based storage and a dashboard of family contact details, avoidance of setting up meeting links or two-step authentication and generic ICU logins and passwords.		Supporting regulations: virtual visiting with unconscious or sedated patients was in some hospitals a contraindication. This variation was identified as problematic for families when patients were transferred between organizations. Supporting laws: The requirement of evidence of documented consent for virtual visiting from patients with impaired mental capacity on ICU admission is also problematic.	Usability: Family challenges associated with using video platform technology or accessing a suitable device for videoconferencing. Unsuited services: Using healthcare workers' personal devices because of the inability to block the call origin and of infection control precautions. Unsuited services: Lack of staff time, difficulties with fourth-generation or Wi-Fi connectivity, and lack of staff training.

(Continues)

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Rose, Graham, et al. (2022), United Kingdom	Ease of use: easy to use, accessible and flexible smartphone app for family members' own device. User experience: Family members were involved in care and could motivate patients in rehabilitation. Ability to include multiple family members in the visits and flexibility in duration of the visit.	Supporting policies: preparing the family to see their loved one, negotiating a time and presence of intensive care unit team member		User experience: disappointment of family members when video call could not be facilitated at the appointed time. In addition, some hospitals restricted virtual calls to one family member only. This resulted in one person being fully responsible for all communication with the patient	Supporting regulations: restrictive virtual visiting, burden of responsibility for other family to visit.	Usability: lack of pre-planning and failing to prepare the patient. Issues with tablet falling down when patient holds the tablet. Unsuited services: insufficient resources—tablets, tablet stands and poor camera positioning.
Rosenthal et al. (2021), USA	Clear benefit: virtual rounds are technically feasible and do not burden staff with increased duration of rounding times					Unsuited services: visual issues and audio issues due to poor connection or loud background noises
Sanfilippo et al. (2022), Italy			Usability: video calls are feasible, even in context of workload of healthcare professionals			
Sasangohar et al. (2021), USA		Supporting policies: pre-scheduling meetings with family members and use of reminders for families including regarding exact time and duration of the planned calls	Usability: on demand access	User experience: inability to communicate with patients due to patient status (e.g. intubated and non-communicative) and to hear the patient clearly due to background and equipment noise. Physical constraints: virtual visits does not replace in-person visits (e.g. lack of touch); absence of visual (prescription glasses) or hearing support (hearing aids).	Usability: issues with instable connection (e.g. frozen screens); Long waiting times for virtual calls due to equipment setup.	

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Shunker (2022), Australia		Supporting policies: The ICU social worker had a key role in facilitating virtual visiting		Language barriers: difficult to instruct non-English patients to access the virtual visit platform	Funding: limited resources; one virtual visit device for 40 ICU beds	
Thomas et al. (2021), New Zealand		Supporting policies: assigning and training local champions, availability of IT help line	Standards: availability of step-by-step guide, including instructions videos and simple workflow			
Tallent et al. (2022)	Clear benefit: no increased duration of rounding times. Motivation: positive support for virtual rounding was provided by parents and staff in free-text feedback.	Supporting policies: nurse practitioner team championed the programme and was integral in the success of the programme				
Webb et al. (2020), United Kingdom				User experience: low levels of digital health literacy	Missing fit into organizational structure: use of non-proprietary platform communication	Usability: difficulty in setting up video calls; not all communication platforms can be used on all types of devices. Security: privacy protection of patients and families (e.g. recording calls).
Wong and Merchant (2021), Singapore	Collaboration: appointed ambassadors who could assist patients who experience difficulties with using mobile devices	Supporting policies: availability of hearing amplifiers from persons with hearing impairment	Usability: availability of mobile devices with supports video calls and is connected with internet separate from the hospitals' network			
Xyrichis et al. (2022), United Kingdom	Motivation: physical therapists viewed virtual visits as motivating tool for patients	Supporting policies: ongoing adaption of virtual visits should be considered as it extends the ability to be present in case of geographical, physical or emotional barriers				

(Continues)

TABLE 3 (Continued)

Author (year), country[a]	Facilitators			Barriers		
	Individual factors	Environmental and organizational factors	Technical factors	Individual factors	Environmental and organizational factors	Technical factors
Yuan et al. (2023), China	Clear benefit: video calls will not increase workload of nurses, easy to implement and do not affect medical care					
Yager et al. (2017), USA		Supporting policies: appointment of a coordinator to facilitate each encounter and support of telemedicine department. Funding: availability of financial support.	Usability: availability of iPads with cellular capability. Standards: instruction materials for health care staff to ensure being heard clearly.			
Zante et al. (2022), Switzerland		Supporting policies: flexibility of call options (e.g. member of staff involved and time of day) and preparing family members in advance of the video call for the sight of their critically ill family member				Unsuited services: family members noted technical difficulties such as poor audio quality of video calls

Abbreviations: ICT, intra-community transaction; ICU, intensive care unit; US, United States.

[a]Studies of Dürst et al. (2022), Rose, Cook, et al. (2022), Rose, Graham, et al. (2022), Padua et al. (2021) and Yang et al. (2014) did not include information on experiences of patients, families or healthcare professionals.

4.1.4 | Implementation of video calls in hospital wards

Facilitators

The studies that reported on facilitators regarding the implementation of video calls in hospital wards are presented in Table 3. For successful implementation of video calls, healthcare professionals should be engaged in the implementation process (Ehrler et al., 2021; Ranu et al., 2021).

Furthermore, healthcare professionals should adequately prepare families to see their ill loved one before the video call (Rose, Graham, et al., 2022; Zante et al., 2022) and during the call healthcare professionals should also support families in order to have a meaningful connection (Dainty et al., 2023; Dhahri et al., 2021; Dol et al., 2017; Shunker, 2022). In addition, some environmental and organizational factors were suggested as facilitators for implementation. For example, studies suggested that assigning local champions on the hospital wards was a crucial step in implementation (Moolla et al., 2020; Thomas et al., 2021). Training of healthcare professionals was also considered important to help them understand, use and explain video call services (Cherniwchan, 2022; Conroy et al., 2021; Galazzi et al., 2021). Furthermore, adequate and easy-to-use devices and instruction guides were mentioned as technical facilitators for implementing video call services in hospital wards (Bavare et al., 2021; Ranu et al., 2021; Thomas et al., 2021).

Barriers

The studies that reported on barriers regarding the implementation of video calls in hospital wards are presented in Table 3. In three studies, the implementation of video calls in daily practice was hindered by the fact that conducting and setting up the calls caused increased workload for healthcare professionals (Kennedy et al., 2021; Ranu et al., 2021). Two studies addressed funding of the video call services as a barrier that must be considered when implementing these services (Cherniwchan, 2022; Elma et al., 2022; Shunker, 2022). Another barrier mentioned was the difficulty to maintain privacy during the video call sessions (Cherniwchan, 2022; Ehrler et al., 2021). Lastly, several barriers for implementation were related to technical issues, such as frozen screens, not hearing or seeing each other well, and unstable internet connections. In addition, not being able to use the software was a common issue that arose during a video call (Bansal et al., 2022; Dol et al., 2017; Epstein et al., 2017; Nelson et al., 2022; Nicholas et al., 2011; Otte et al., 2022; Rose et al., 2021; Rose, Graham, et al., 2022; Sasangohar et al., 2021; Webb et al., 2020; Zante et al., 2022).

5 | DISCUSSION

In this scoping review, we found overall positive experiences of inpatients, families and healthcare professionals towards video calls as an approach for family involvement in hospital wards. In addition, this study provides an overview of facilitators and barriers for implementation of video calls in hospital wards.

Results from this scoping review show that the use of video calls contributed to the core concepts of patient- and family-centred care (Johnson & Abraham, 2012). For example, family members had the opportunity to collaborate and share information with their loved ones and healthcare professionals. In addition, family members emphasized their gratitude towards healthcare professionals during the COVID-19 pandemic for being able to connect with their loved ones admitted to the hospital ward (Bettini, 2020; Epstein et al., 2017). This promotes mutual respect and dignity (Johnson & Abraham, 2012). In some of the included studies, family members were actively involved in the decision-making process using video calls (Bettini, 2020; de Havenon et al., 2015). Thus, despite the fact that physical proximity was often not possible during to the pandemic, it is suggested there was opportunity to patient- and family-centred care.

Active involvement of family members during hospitalization in care is shown to be beneficial (Park et al., 2018; Park & Giap, 2020). For example, involvement of family caregivers in the transition from hospital to home reduces the number of unplanned readmissions (Levoy et al., 2022). In addition, geographical proximity of family members is associated with lower risk of readmissions and complications in hospital patients (Bucher et al., 2022). In most of the included studies, patients and families preferred in-hospital visits to video calls when this was allowed. However, physical proximity of family during hospital stay is not always possible due to logistical challenges (i.e. time constraints, family commitments) (Parsapour et al., 2011). Furthermore, it is expected that in the nearby future physical proximity of family members will be further challenged as in Western European countries the centralization of complex medical care may result in patients being admitted to hospitals remotely from home. Using video call services could be supportive in connecting patients, families and healthcare professionals independently from time and place, and thus guarantee patient- and family-centred care (26, 50).

The use of video calls required a different approach for healthcare professionals to connect with the patient and their family members compared to face-to-face communication (Walthall et al., 2022). For example, in the included studies, healthcare professionals experienced challenges in using communication skills effectively (Dhahri et al., 2021; Kennedy et al., 2021), and to provide compassionate care at distance (Cherniwchan, 2022; Dhahri et al., 2021). Compared to phone calls, video calls have the advantage of non-verbal communication, which is considered helpful for healthcare professionals in order to build a trusting relationship with patients' families (Barsom, Jansen, et al., 2021), and for families to better perceive non-verbal cues. With the increased use of digital health, specific compassionate care competencies should be developed (19). Healthcare professionals should understand that digital health tools are to support rather than to obstruct the care that healthcare professionals provide (19).

5.1 | Strengths and limitations

This review only included studies published in English and Dutch language, and relevant articles in other languages could have been missed. In addition, in line with a scoping review, we did not perform a quality appraisal, as we aimed to provide an overview of the evidence instead of producing a critically appraised answer (Munn et al., 2018). Despite this, most of the studies involved qualitative study designs, and were not large-scale studies including experimental design such as (randomized) clinical trials. Considering the evidence pyramid, these studies have a potential higher risk of bias.

Furthermore, the majority of the included studies did not used a structured approach to identify barriers and facilitators. The included studies described facilitators and barriers based on user experiences. We consider the use of the systematic literature analysis for the implementation of eHealth services to categorize facilitators and barriers for implementation of video calls as a strength (Schreiweis et al., 2019). Another strength of this study, is that besides the recommended search in two databases, we also included Grey literature (Peters et al., 2020).

5.2 | Directions for future research

The COVID-19 pandemic functioned as a catalyst for the broad in-hospital implementation of video calls (Cherniwchan, 2022; Monaghesh & Hajizadeh, 2020; Wong & Merchant, 2021), but it stagnated when COVID-19 restrictions were alleviated (Barsom, Meijer, et al., 2021). A systematic review focusing on the sustainability of video consulting in health care identified several challenges for long-term sustainability, such as the absence of long-term strategic plans, resistance to change and costs (James et al., 2021). Therefore, we suggest that future studies should focus on structured context analyses to explore local barriers and facilitators, and to develop effective implementation strategies (Nilsen, 2020). In addition, we suggest that adequate process evaluations should be performed with special attention to long-term sustainability (James et al., 2021; Nilsen, 2020). In the Netherlands, a national vision on eHealth has been developed that could guide this implementation process (Rauwerdink et al., 2020). Moreover, future studies should investigate whether family involvement by using video call services are as beneficial as physical family involvement. These studies should focus on large-scale intervention studies evaluating the effectiveness of video call services on patient care outcomes and family-related outcomes.

6 | CONCLUSIONS

This scoping review provides an overview of studies that used video call services to involve families in hospital wards. Based on these studies we suggest that patients, families and healthcare professionals consider video calls as a good alternative when in-person visits are not allowed. Healthcare professionals experience more hesitation towards video calls during admission, as they perceive an increased workload and are uncertain whether video calls are as effective as in-person conservations. Furthermore, assigning local champions, training of healthcare professionals and clear instruction guides for healthcare professionals facilitate implementation of video calls in hospital wards and could overcome technical problems. When implementing video calls in hospital wards, policymakers and healthcare professionals should select strategies that address the positive aspects of family involvement at distance and the use of digital communication skills.

ACKNOWLEDGEMENTS

We would like to thank José Boerrigter MSc, for helping creating the search strategy and we would like to thank Faridi Jamaludin, for her support in the data screening and data extraction of this review.

FUNDING INFORMATION

No external funding.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Musters, S. C., Coolen, C. M., Jongerden, I. P., Schijven, M. P., Maaskant, J. M., & Eskes, A. M. (2024). Experiences of healthcare professionals, patients and families with video calls to stimulate patient- and family-centred care during hospitalization: A scoping review. *Journal of Clinical Nursing*, *00*, 1–39. https://doi.org/10.1111/jocn.17155