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## REVIEW

# Interprofessional clinical decision-making process in health: A scoping review

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## Abstract

**Aims:** To describe the key elements of the interprofessional decision-making process in health, based on published scientific studies. To describe the authors, reviews and subject matter of those publications.

**Design:** Scoping review of the literature.

**Data Sources:** MEDLINE, APA Psycinfo OpenGrey, Lissa and Cochrane databases were searched in December 2019 and January 2023.

**Review Methods:** References were considered eligible if they (i) were written in French or English, (ii) concerned health, (iii) studied a clinical decision-making process, (iv) were performed in an interprofessional context. 'PRISMA-scoping review' guidelines were respected. The eligible studies were analysed and classified by an inductive approach

**Results:** We identified 1429 sources of information, 145 of which were retained for the analysis. Based on these studies, we identified five key elements of interprofessional decision-making in health. The process was found to be influenced by group dynamics, the available information and consideration of the unique characteristics of the patient. An organizational framework and specific training favoured improvements in the process.

**Conclusion:** Decision-making can be based on a willingness of the healthcare organization to promote models based on more shared leadership and to work on professional roles and values. It also requires healthcare professionals trained in the entire continuum of collaborative practices, to meet the unique needs of each patient. Finally, it appears essential to favour the sharing of multiple sources of accessible and structured information. Tools for knowledge formalization should help to optimize interprofessional decision-making in health.

**Impact:** The quality of a team decision-making is critical to the quality of care. Interprofessional decision-making can be structured and improved through different levels of action. These improvements could benefit to patients and healthcare professionals in every settings of care involving care collaboration.

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**Impact Statement:** Interprofessional decision-making in health is an essential lever of quality of care, especially for the most complex patients which are a contemporary challenge. This scoping review article offers a synthesis of a large corpus of data published to date about the interprofessional clinical decision-making process in healthcare. It has the potential to provide a global vision, practical data and a list of references to facilitate the work of healthcare teams, organizations and teachers ready to initiate a change.

#### KEYWORDS

decision-making, group process, interprofessional relations, literature review, nurses, patient care team, physicians, rehabilitation, scoping review, social workers

## 1 | INTRODUCTION

Healthcare systems are facing a steady increase in the prevalence of chronic diseases. Such diseases are responsible for 70% of deaths worldwide (World Health Organization, 2021), and are associated with an ever-increasing prevalence of multimorbidity (Nguyen et al., 2019). Interprofessional practices provide an opportunity to rise to these challenges of modern health in the context of increasing demand for complex care (Baker et al., 2006). Interprofessional collaboration and education can strengthen healthcare systems and improve health results (Gilbert et al., 2010). Teamwork increases the experience of caregivers, care quality and patient safety (Jones & Jones, 2011; Weinberg et al., 2011). According to the Institute of Medicine, interprofessional practices are indispensable in the 21st century (Institute of Medicine [US] Committee on the Health Professions Education Summit, 2003).

Practices have evolved, leading to changes in the decision-making process, and a shift from an individual to a group decision-making model (Saint-Pierre et al., 2018). The decision-making process may be considered in terms of the various alternatives open to a group at a given time, and their consequences (Simon, 1976), in a given context (Greenfield et al., 2010). The interprofessional decision-making process is one of the levers for improving the quality and efficacy of care (Lemieux-Charles & McGuire, 2006). It is therefore vital to understand and master this process.

### 1.1 | Background

Four reviews have dealt with interprofessional decision-making in clinical contexts, in the fields of intensive care (Ervin et al., 2018) oncology (Lamb, Brown, et al., 2011; Lamb, Green, et al., 2011), and long-term care (Cranley et al., 2022). The first one focused on team-working rather than specifically on decision-making. The reviews in oncology were written in 2009 and focused on the results of the decision-making process and the implementation of decisions. All these reviews highlighted the importance of the structuring and transmission of information, team dynamics and the roles of the various actors in the process, including the patient. A few reviews are registered in Prospero and concern shared decision-making with

patients, the results of the decision-making process and decision-making in paediatrics, critical care and psychiatry. No study to date has ever focused on the process beyond a specific professional field, beside an ongoing review about the effects of decision fatigue (Maier et al., 2021). The authors of these previous reviews called for studies of the links between the structure of a team, its functioning, and the psychosocial phenomena at work (Ervin et al., 2018; Nijhuis et al., 2007).

## 2 | THE REVIEW

### 2.1 | Aims

The principal objective of this study was to describe the key elements of the interprofessional decision-making process in health, based on the findings of published studies. Its secondary objectives were to describe the authors, reviews and subject matter of publications in this area.

### 2.2 | Design

We performed a scoping review in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, extension for Scoping Reviews (Data S1) (Tricco et al., 2018). Scoping reviews can be conducted to examine the extent (that is, size), range (variety) and nature (characteristics) of the evidence on a topic or question and to summarize findings from a body of knowledge that is heterogeneous in methods or discipline (Tricco et al., 2018).

### 2.3 | Search methods

We searched five databases for relevant references: Medline (Pubmed), APA (PsycInfo), OpenGrey, Lissa and Cochrane. Four MeSH terms were used as keywords for the design of queries: 'decision-making', 'interprofessional relationships', 'group processes' and 'patient care team' (the search equations are given in Data S2). Searches were performed

in two rounds: the first one up to 6 December 2019, with no anterior date limit. The second one was an actualization: three databases (Medline, APA and Cochrane) were searched for any new source referenced between 7 December 2019 and 16 January 2023. Opengrey and Lissa were not included to the actualization because their percentage return were low (around 2% of included sources for each) on the first round. All the sources extracted were included in the reference management program Zotero®, which was then used to eliminate duplicates.

References were considered eligible if they (i) were written in French or English, (ii) concerned health, (iii) studied a clinical decision-making process, (iv) were performed in an interprofessional context. The interprofessional criteria was defined in this study as the involvement of at least two different professions and at least one of these professions had to be a healthcare profession. Clinical decision-making was defined as any decision-making process concerning a patient (e.g., treatment, referral), as opposed to decisions relating to the organization of a care structure. Studies not concerning such processes, such as those considering the impact of decisions, were not eligible for inclusion. In the framework of this scoping review, all types of publications and methods and all levels of evidence were included, and no limitation on the basis of date was imposed.

First, four researchers (TB, a general practitioner, teacher and PhD student; GH, CC and MM, medical students preparing their dissertations) examined the titles and abstracts of the articles identified. Each reference was evaluated blindly, by two of the investigators. The independence of their opinions was guaranteed by the online use of Rayyan (Ouzzani et al., 2016) dedicated software for reviews. The eligibility criteria were evaluated successively in the order given above. Divergent opinions were resolved by debate to achieve a consensus between the three researchers.

Second, three researchers (GH, CC and MM) tried to obtain the full texts of the selected references through online searches, and e-mails sent to the authors, with an e-mail reminder sent 2 weeks later, if necessary.

Third, the four researchers applied the selection criteria to the full texts. Each reference was again analysed blindly, by two investigators, with Rayyan software. Conflicts were resolved by debate to achieve a consensus of the researchers. Secondary references or references that came to the attention of the researchers by any other means were considered eligible and analysed by the same process as the primary references.

## 2.4 | Search outcomes

The selection process is described in the flowchart (see Figure 1). The rate of concordance between researchers for the analysis of the 1429 references was 72%. The concordance rate for the study of the 271 full texts was 80.9%. In total, 145 sources were retained. The sample characteristics are presented in Table 1.

The sources of information were principally North American ( $n=56$ ), British ( $n=34$ ) or European ( $n=28$ ) origin. Most (68%)

originated from English-speaking countries (USA, UK, Canada, Australia). Hospital care teams accounted for 72% of studies. The most frequently represented departments were intensive care and reanimation ( $n=22$ ), psychiatry ( $n=16$ ), palliative care ( $n=12$ ) and geriatrics ( $n=12$ ). The most frequently included journals were the Journal of Interprofessional Care ( $n=19$ ) and the Journal of Advanced Nursing ( $n=5$ ).

## 2.5 | Quality appraisal

Scoping reviews are designed to provide an overview of the existing evidence regardless of methodological quality or risk of bias and considering the various sources of evidence that may be used in a scoping review (such as quantitative and qualitative research, policy documents and expert opinions). Therefore, the included sources of evidence are typically not critically appraised for scoping reviews (Tricco et al., 2018).

## 2.6 | Data abstraction

A grid was developed by the research team for extraction of the following data: type of publication, language, country of the authors, setting, department, population studied, professions concerned, method, objective, key results, conclusion and summary of the data adjudged useful for the review. All the elements relating to interprofessional clinical decision-making processes were sought.

## 2.7 | Synthesis

Each of the selected sources was thus summarized by one of the three researchers (TB, GH or CC). The research team then manually analysed the summarized extracted data with an inductive approach, to arrive at a consensual classification (Thomas, 2006).

## 3 | RESULTS

The data analysis revealed five key elements of interprofessional decision-making in health: group dynamics, the information used, determinants relating to the patient, organization and training. A table of the characteristics of each of the 145 sources of information is presented in Table 2, including key elements and professions concerned.

### 3.1 | Essential group dynamics

The group dynamics considered included the issues of hierarchy, communication and group processes. This key-element label was attributed to 89 sources (Abramson & Mizrahi, 2003; Ambrose-Miller

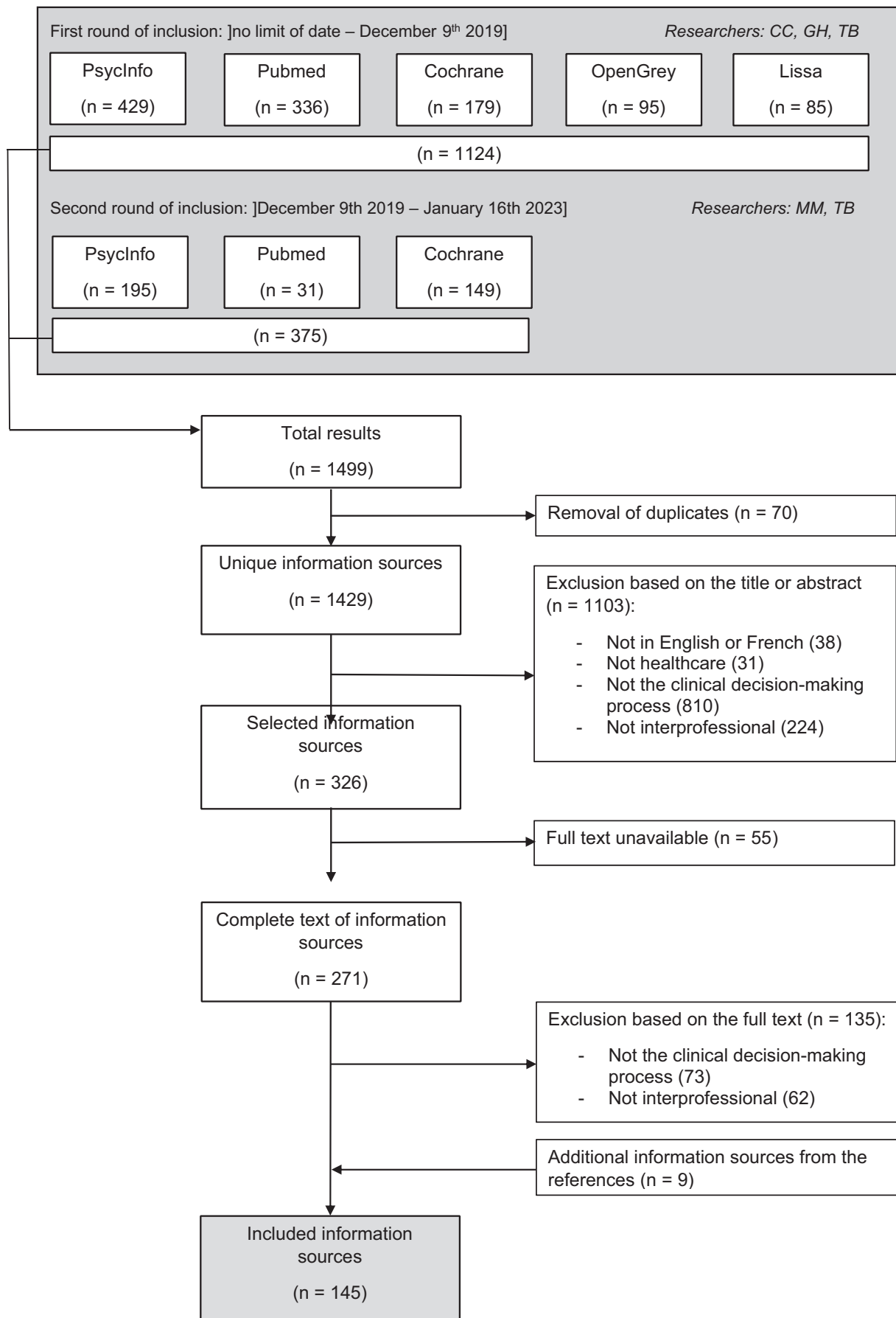


FIGURE 1 Inclusion process flowchart.

TABLE 1 Description of the sample of included information sources ( $n = 145$ ).

	<i>n</i> (%)
Language	
English	138 (95)
French	7 (5)
Type de source	
Journal article	140 (97)
Dissertation or thesis	4 (3)
Book	1 (<1)
Date	
1969–1999	25 (17)
2000–2009	40 (28)
2010–2023	80 (55)
Country	
USA	43 (30)
UK	34 (23)
Canada	13 (9)
Australia	8 (6)
France	7 (5)
International	9 (6)
Other countries	31 (21)
Setting	
Hospital	104 (72)
Primary care	18 (12)
Theoretical <sup>a</sup>	11 (8)
Training	7 (5)
Primary care-hospital <sup>b</sup>	5 (3)
Department	
Reanimation/intensive care	22 (13)
Psychiatry	16 (11)
Palliative care	12 (8)
Ethics	12 (8)
Geriatrics	12 (8)
Oncology	11 (8)
Paediatrics	10 (7)
Follow-up care, rehabilitation/handicap	9 (6)
Medicine	7 (5)
Surgery	6 (4)
Emergency room	5 (3)
Obstetrics	2 (1)
Not applicable <sup>c</sup>	21 (14)
Method	
Qualitative	62 (43)
None (opinion piece)	35 (24)
Quantitative	28 (19)
Mixed	9 (6)
Review	8 (6)
Case study	3 (2)

TABLE 1 (Continued)

	<i>n</i> (%)
Target readership of the sources	
Medical	47 (32)
Nurses	30 (21)
Interprofessionnel	24 (17)
Social	8 (6)
Other	36 (25)

<sup>a</sup>Theoretical: sources not anchored in a context of the care practices described.

<sup>b</sup>Primary care-hospital: study performed in both a hospital structure and in primary care.

<sup>c</sup>Not applicable: does not concern a specific discipline.

& Ashcroft, 2016; Andermo et al., 2015; Anquinet et al., 2015; Baggs, 1994; Baggs et al., 2007; Baggs & Schmitt, 1995; Bajwa et al., 2020; Bartholdson et al., 2021; Bentovim & Gilmour, 1981; Berg et al., 2020.; Bokhour, 2006; Borrett & Gould, 2021; Botes, 2000; Briggs, 1999; Brooks et al., 2017; Bunch, 2000; Caenepeel & Jobin, 2005; Cook et al., 2001; Coombs, 2003, 2014; Coombs & Ersser, 2004; Cranley et al., 2022; de Casterlé et al., 2006; Dekussche, 2005; Dimech et al., 2021; Duner, 2013; Durand et al., 2022; Ervin et al., 2018; Faith & Chidwick, 2009; Fein et al., 2016; Fiddick et al., 2020; Firn et al., 2020; Forbes et al., 2020; Forsgårde et al., 2021; Fox & Comeau-Vallée, 2020; Fratianne et al., 1992; Friedman, 2020; Gair & Hartery, 2001; Geist & Chandler, 1984; Grafham et al., 2004; Greenhalgh et al., 2008; Gundrosen et al., 2018; Hagoel et al., 2011; Haines et al., 2018; Heath et al., 2016; Heerschap et al., 2019; Helzer et al., 2020; Ho et al., 2005; Husson, 2011; Jensen et al., 2013; Johal & Danbury, 2021; Jordan, 1982; Joseph & Conrad, 1989; Kane, 1975; Kayser & Kaplan, 2020; Kilpatrick, 2013; Knowles & Gilmore, 1994; Koekkoek et al., 2019; Lamb, Brown, et al., 2011; Landau, 2000; Lee et al., 2021; Lewis, 1969; Lichtenstein et al., 2004; Machin et al., 2019; Makowsky et al., 2009; Mannion & Thompson, 2014; Minetti, 2011; Moyo et al., 2016; Nathan et al., 2021; Nijhuis et al., 2007; Nikander, 2007; Parker-Tomlin et al., 2017; Pethybridge, 2004; Petrognani, 2005; Quinlan, 2009; Roelofsen et al., 2001; Sabourin & Geist, 1990; Scott et al., 2011; Siegle et al., 2018; Sinskey et al., 2019; Snelgrove et al., 2011; Unsworth et al., 1997; Van den Bulcke et al., 2016; Walter, Arnold, et al., 2019; Walter, Shall, et al., 2019; Warren & Wiggins, 2016; Wocial, 1996; Zimmermann, 1994).

### 3.2 | Challenging traditional hierarchies and professional roles

The traditional culture of medical hierarchy was contested by many authors (Andermo et al., 2015; Dekussche, 2005; Joseph & Conrad, 1989; Kayser & Kaplan, 2020). It was suggested that, for a better quality of decision-making processes, the group would need a

TABLE 2 Characteristics of the 145 information sources included.

Author	Year	Country	Setting	Department	Method	Professions involved in the decision													
						GD	Data	Org	Pat	Tr	Doc	Nur	Ree	Edu	Soc	NC	Pat	Oth	
Abramson	2003	USA	Hospital	NA	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ambrose-Miller	2016	Canada	Theoretical	Obs	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andermo	2015	Sweden	PC	NA	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anquetin	2014	International	PC	Onco	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquila	2003	USA	Hospital	Sur	Opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baggs	1994	USA	Hospital	ICU	Quant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baggs	1995	USA	Hospital	ICU	Quant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baggs	1999	USA	Hospital	ICU	Quant	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baggs	2007	USA	Hospital	ICU	Qual	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bajwa	2019	Suisse	Hospital	Med	Quant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Banchet	2011	France	PC	Pal	Qual	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bartholdson	2021	Sweden	Hospital	Ped	Quant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Batorowicz	2008	Canada	Hospital	FUCR	Mixed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bell	2007	Australia	PC	Psy	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bentovim	1981	UK	Hospital	Ped	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Berg	2020	Norway	Hospital	Psy	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bokhour	2006	USA	Hospital	Ger	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Borrett	2020	UK	PC-H	NA	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Botes	2000	South Africa	Theoretical	Eth	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brick	1980	USA	Hospital	Ped	Quant	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Briggs	1999	USA	Hospital	Ped	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Brooks	2017	Australia	Hospital	ICU	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bunch	2000	Norway	Hospital	Sur	Qual	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Caenepeel	2005	Canada	Hospital	Eth	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Castillo-Parra	2017	Chile	Training	NA	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chase	1981	USA	Hospital	Psy	Qual	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chiarella	1992	Australia	Hospital	Eth	Opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarke	2015	UK	Hospital	Pal	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Colombo	2003	UK	PC	Psy	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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TABLE 2 (Continued)

Author	Year	Country	Setting	Department	Method	GD	Data	Org	Pat	Tr	Doc	Nur	Ree	Edu	Soc	NC	Pat	Oth
Cook	2001	UK	PC	NA	Mixed	X	X				X	X			X	X		
Coombs	2003	UK	Hospital	ICU	Qual	X					X	X						
Coombs	2004	UK	Hospital	ICU	Qual	X					X	X						
Coombs	2014	New Zealand	Hospital	ICU	Opinion	X					X	X						
Cranley	2022	International	Hospital	Ger	Review	X	X	X				X						
de Boer	2012	The Netherlands	Hospital	ICU	Quant			X			X	X			X	X		
De Casterlé	2006	Belgium	PC	Pal	Qual	X					X	X					X	
Dekussche	2005	France	Hospital	ICU	Opinion	X		X			X	X			X	X		X
Dimech	2020	Malte	Hospital	Ger	Qual	X		X	X		X	X					X	
Doiret	2005	France	Hospital	Eth	Opinion		X	X			X	X						
Duner	2013	Sweden	PC - H	Ger	Qual	X						X			X			
Durand	2021	Canada	Hospital	Psy	Quant	X					X	X						
Eagle	2005	UK	Hospital	Pal	Qual			X	X		X	X			X	X		
Ervin	2018	USA	Hospital	ICU	Review	X		X			X	X						X
Faith	2009	Canada	Hospital	Eth	Opinion	X		X			X	X						
Faulkney	1985	USA	Training	Ger	Opinion			X										
Fein	2016	International	Hospital	ER	Opinion	X		X			X	X						
Ferrand	2003	France	Hospital	ICU	Quant			X			X	X						
Fiddick	2020	UK	Hospital	Psy	Qual	X					X	X			X	X		X
Firn	2020	USA	Hospital	ICU	Qual	X				X	X	X			X	X		
Forbes	2020	USA	Hospital	NA	Qual	X					X	X						
Forsgårde	2021	Sweden	PC	NA	Qual	X			X		X	X					X	X
Fox	2020	Canada	Hospital	NA	Qual	X					X	X			X	X		X
Fratianne	1992	USA	Hospital	ICU	Quant	X		X			X	X			X	X		
Friedman	2020	USA	Hospital	Psy	Quant	X		X			X	X			X	X		X
Gair	2001	UK	Hospital	Ger	Qual	X					X	X			X	X		
Geist	1984	USA	Hospital	Psy	Qual	X												
Gerace	2013	UK	PC - H	Psy	Qual		X				X	X			X	X		X
Goldman	2015	Canada	Hospital	Ger	Qual			X			X	X			X	X		X
Gomas	2001	France	Theoretical	Pal	Opinion		X	X										
Grafham	2004	UK	PC	Psy	Qual	X		X			X	X						X
Greenfield	2010	Australia	Theoretical	NA	Other			X										



TABLE 2 (Continued)

Author	Date	Country	Setting	Department	Method	GD	Data	Org	Pat	Tr	Doc	Nur	Ree	Edu	Soc	NC	Pat	Oth
Greenhalgh	2008	UK	Hospital	FUCR	Qual	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gundrosen	2018	Norway	Hospital	ER	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hagoel	2011	International	Training	NA	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Haines	2018	UK	Hospital	Psy	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Harris	2020	USA	Training	NA	Opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Heath	2016	UK	Hospital	Sur	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Heerschap	2019	Canada	Hospital	Med	Qual	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helzer	2020	USA	Hospital	ICU	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ho	2005	International	Hospital	ICU	Quant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Husson	2011	France	PC	Pal	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jensen	2013	Denmark	Hospital	ICU	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Johal	2020	UK	Hospital	ICU	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Jordan	1982	USA	Hospital	Sur	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joseph	1989	USA	Hospital	Eth	Quant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kane	1975	USA	Hospital	Pal	Opinion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kayser	2020	USA	Hospital	ICU	Review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Keshmiri	2020	Iran	Hospital	ER	Mixed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kidger	2009	UK	Hospital	Onco	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kilpatrick	2013	Canada	Hospital	Med	Mixed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Knowles	1994	Canada	Hospital	Eth	Cas	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Koekkoek	2019	The Netherlands	PC	Psy	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lago	2011	Brazil	Hospital	ICU	Mixed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lamb †	2011	UK	Hospital	Onco	Review	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lamb ‡	2011	UK	Hospital	Onco	Review	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lamb §	2013	UK	Hospital	Onco	Quant	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lamb ¶	2013	UK	Hospital	Onco	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lanceley	2008	UK	Hospital	Onco	Qual	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landau	2000	Israel	Hospital	Eth	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lee	2020	International	Hospital	Ger	Qual	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(Continues)

TABLE 2 (Continued)

Author	Date	Country	Setting	Department	Method	GD	Data	Org	Pat	Tr	Doc	Nur	Ree	Edu	Soc	NC	Pat	Oth
Lewis	1969	USA	Hospital	Psy	Opinion	X		X			X	X		X	X		X	X
Lichtenstein	2004	USA	Hospital	Psy	Quant	X		X			X	X	X		X	X		X
Lynch	2019	International	PC	FUCR	Qual			X					X	X		X		
Machin	2018	UK	Training	NA	Opinion	X				X	X			X	X			
Mackintosh	2009	UK	Hospital	Obs	Qual			X			X	X						X
Makowsky	2009	Canada	PC - H	NA	Qual	X					X	X						X
Mannion	2014	UK	Theoretical	NA	Opinion	X		X										
Maxson	2011	USA	Training	Sur	Quant					X	X	X						
McClelland	1993	USA	PC	Ped	Qual		X				X	X	X	X				X
Meaney	2003	USA	Theoretical	Eth	Opinion			X			X					X		
Midwinter	2011	UK	Hospital	ER	Opinion			X			X					X		
Minetti	2011	Italie	Hospital	Pal	Qual	X												
Mitchell	2013	Australia	Hospital	Med	Qual			X			X	X	X		X			X
Moyo	2016	New Zealand	Theoretical	NA	Review	X												
Murray	2019	International	PC	FUCR	Qual				X				X	X				
Nathan	2021	UK	Hospital	Psy	Qual	X				X	X						X	
Neville	2013	Australia	Training	NA	Quant					X	X	X						X
Nijhuis	2007	The Netherlands	Hospital	Ped	Review	X		X										
Nikander	2007	Finland	PC	Ger	Other	X	X				X	X			X			
Oddi	1998	USA	Hospital	Pal	Opinion		X				X	X						
O'Leary	2019	USA	Hospital	NA	Mixed			X			X	X						
Parker-Tomlin	2017	Australia	Theoretical	NA	Opinion	X						X						
Pattison	2014	UK	Hospital	ICU	Opinion			X	X		X	X						
Pereira	2018	Portugal	PC - H	Pal	Qual			X			X	X			X			X
Pethybridge	2004	UK	Hospital	Ger	Qual	X		X			X	X	X		X			
Petrognani	2005	France	Theoretical	Pal	Opinion	X												
Quinlan	2009	Canada	PC	NA	Qual	X		X			X	X						
Robertson	1982	USA	Hospital	NA	Quant		X	X	X			X						
Roelofsens	2001	The Netherlands	Hospital	FUCR	Quant	X		X			X	X	X	X	X			X
Sabourin	1990	USA	Theoretical	NA	Qual	X						X		X				
Schlairet	2009	USA	Hospital	Eth	Opinion			X				X						

TABLE 2 (Continued)

Author	Date	Country	Setting	Department	Method	GD	Data	Org	Pat	Tr	Doc	Nur	Ree	Edu	Soc	NC	Pat	Oth
Scott S	2011	UK	Hospital	Psy	Qual	☑	☐	☐	☐	☐	☑	☑	☑	☐	☑	☐	☐	☑
Scott R	2020	UK	Hospital	Onc	Quant	☐	☑	☑	☑	☐	☑	☑	☐	☐	☐	☐	☐	☐
Seuren	2019	The Netherlands	Hospital	ER	Qual	☐	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐
Sevdalis	2014	UK	Hospital	Onc	Opinion	☐	☐	☑	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐
Shiao	2019	Taiwan	Hospital	Ger	Quant	☐	☐	☐	☐	☑	☑	☑	☑	☐	☑	☐	☐	☑
Siegle	2018	Germany	Hospital	Onc	Mixed	☑	☐	☐	☐	☑	☑	☑	☐	☐	☐	☐	☑	☐
Simon	2016	USA	PC	Ger	Mixed	☐	☐	☑	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐
Simpson	2013	UK	PC	Ped	Mixed	☐	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
Sinskey	2019	USA	Hospital	Sur	Review	☑	☐	☐	☐	☐	☑	☑	☐	☐	☐	☐	☑	☐
Snelgrove	2011	UK	Hospital	Med	Opinion	☑	☐	☐	☐	☑	☑	☑	☐	☐	☐	☐	☐	☐
Stuber	1991	USA	Hospital	Onc	Cas	☐	☐	☐	☑	☐	☑	☑	☐	☐	☐	☐	☑	☑
Svantesson	2008	Sweden	Hospital	Eth	Qual	☐	☐	☑	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐
Todd	2005	Canada	Hospital	FUCR	Mixed	☐	☐	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐
Unsworth	1995	International	Hospital	FUCR	Quant	☐	☑	☐	☑	☐	☑	☑	☐	☐	☑	☐	☐	☑
Unsworth	1997	Australia	Hospital	FUCR	Mixed	☑	☐	☐	☐	☐	☑	☑	☐	☐	☑	☐	☐	☐
VanDenBulcke	2016	Belgium	Hospital	ICU	Quant	☑	☐	☑	☐	☐	☑	☑	☑	☐	☑	☑	☐	☑
Walter #	2019	USA	Hospital	Ped	Quant	☑	☐	☐	☐	☐	☑	☑	☑	☐	☑	☑	☐	☑
Walter *	2019	USA	Hospital	Ped	Opinion	☑	☐	☐	☐	☐	☑	☑	☐	☐	☑	☑	☑	☑
Warren	2016	USA	Hospital	Ped	Opinion	☑	☐	☑	☐	☐	☑	☑	☑	☑	☑	☑	☑	☑
Weinberg	2011	USA	Hospital	NA	Quant	☐	☐	☑	☐	☐	☑	☑	☑	☐	☑	☑	☐	☐
Winman	2012	Sweden	Hospital	FUCR	Qual	☐	☑	☑	☐	☐	☑	☑	☑	☐	☑	☑	☐	☑
Wocial	1996	USA	Theoretical	Eth	Opinion	☑	☐	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐
Wong	2020	USA	Hospital	Med	Cas	☐	☑	☑	☑	☐	☑	☑	☑	☐	☑	☑	☑	☑
Zimmermann	1994	USA	Hospital	Pal	Mixed	☑	☐	☐	☐	☐	☑	☑	☑	☐	☑	☑	☐	☐
Total						89	30	78	23	15	111	111	44	12	47	36	21	45

Note: Full titles: †: Decision making in surgical oncology; ‡: Quality of care management decisions by multidisciplinary cancer teams: a systematic review; §: Multidisciplinary cancer team meeting structure and treatment decisions: a prospective correlational study; ¶: Facilitators and barriers to teamworking and patient centeredness in multidisciplinary cancer teams: findings of a national study.

#: Interprofessional team member communication patterns, teamwork, and collaboration in pre-family meeting huddles in a paediatric cardiac intensive care unit. \*: Teamwork when conducting family meetings: Concepts, terminology, and the importance of team-team practices. Column Setting: PC, primary care; PC-H, study in primary care and at the hospital. Column Department: ER, emergency room; Eth, ethics; FUCR, follow-up care and rehabilitation/handicap; Ger, Geriatrics; ICU, Reanimation/intensive care unit; Med, medicine; NA, not applicable; Obs, obstetric; Onco, oncology; Pal, palliative care; Ped, paediatrics; Psy, Psychiatry; Sur, surgery. Column Method: Cas, case study; Opinion, opinion piece; Other, intervention study; Qual, qualitative; Quant, quantitative. Columns Categories: Data, data; GD, group dynamics; Org, organization; Pat, patient; Tr, Training. Columns Professions: Doc, doctors (interns/students in medicine, doctors); Edu, educators (school assistants, educators, teachers); NC, non-care professions (administrators, chaplains, healthcare managers, coordinators, directors, ethicists, patient managers, informaticians, judges, technicians); Nur, nurses (care assistants, nurses, nurse practitioners, paediatric nurses); Oth, other healthcare professionals (audiologists, dentists, dieticians, pharmacists, psychologists, midwives); Pat, patients (patients, families/carers); Ree, re-educators (ergotherapists, physiotherapists, speech therapists, orthoptists, psychomotricians); Soc, social workers (social workers, health visitors).

more permissive leadership model, far from the hierarchical authoritarian leadership of traditional systems (Ervin et al., 2018). The hierarchical status of team members has also been reported to have a direct impact on the individual behaviour of team members, their participation in decision-making and their satisfaction at work. Decision-making was found to be dominated by team members considered to have a higher status (Bartholdson et al., 2021; Lichtenstein et al., 2004; Scott et al., 2020), for example, in one study doctors spoke 83.9% of the time in decision meetings (Walter, Shall, et al., 2019).

Changing hierarchical and leadership models can be a challenge in different contexts. Studies showed that vertical leadership and sharing leadership can cohabit (Fox & Comeau-Vallée, 2020). Without revolution, a gradual integration of the elements discussed below can foster group dynamics for better decision-making. Valorization of the role of each individual and respect were considered of the utmost importance for the good functioning of the team (Borrett & Gould, 2021; Fox & Comeau-Vallée, 2020; Fratianne et al., 1992; Minetti, 2011). The feeling of belonging to a group was considered important, in one study, for creating a partnership relationship with others and limiting imbalances of power and domination within the group (Petrognani, 2005). Some studies showed that the participation of team members in decision-making was significantly related to their personal satisfaction and commitment (Bartholdson et al., 2021; Cranley et al., 2022; Joseph & Conrad, 1989), whereas a conflictual process led to burn out and decreased care quality (Kayser & Kaplan, 2020).

Ignorance of the professional culture of others can lead to conflicts in clinical decision-making, uncertainty, culpability and solitude (Bunch, 2000; Coombs, 2003). Decision-making can be facilitated by a unique group culture, with common beliefs, values, language and behaviours (Briggs, 1999; Sinskey et al., 2019). An absence of common values has been shown to hinder interprofessional decision-making (Dimech et al., 2021; Moyo et al., 2016). These conflicts may be due to a clash between explicit values based on role and professional training, and implicit, non-expressed values based on personal beliefs and particular emotions concerning patients (Scott et al., 2011).

The included studies highlighted different roles and professional issues. For end-of-life decision-making, one study reported that doctors felt that their professional image was threatened in cases of treatment failure (Fratianne et al., 1992). Nurses emerged from these studies as the first-line of contact with patients, with their detailed understanding of the needs and preferences of patients due to their proximity (de Casterlé et al., 2006; Schlairet, 2009). Studies described nurses as the 'patients' advocate' (Todd et al., 2005) as well as a support for healthcare-aid participation in decision-making, otherwise often isolated despite an intimate knowledge of the patients (Cranley et al., 2022). Nurses were also reported to play a role in mediation between the medical team and the patients and their families (Chiarella, 1992; Oddi & Cassidy, 1998). Social workers were described as providing unique knowledge about the patient environment required for decision-making (Ambrose-Miller & Ashcroft, 2016; Fratianne et al., 1992).

### 3.3 | Improving communication using skills and tools

Professional differences were also expressed in terms of modes of communication: the doctors reproached nurses for using qualitative, emotional and subjective language, as opposed to their own language, which was often technical, quantitative and hierarchical (Brooks et al., 2017; Bunch, 2000; Coombs, 2003; Forbes et al., 2020; Heath et al., 2016). Better communication and better transmission of information within the team has been reported to result in greater satisfaction among team members and a better quality of collaboration (Van den Bulcke et al., 2016; Zimmermann, 1994). Communication within the team should be clear and well-meaning, with room (and time) for the verbalization of emotions and of experiences in a shared climate of trust and safety, leading to express and accept uncertainty (Berg et al., 2020; Coombs, 2014; Ervin et al., 2018; Fox & Comeau-Vallée, 2020) and to a collective emotional intelligence (Sinskey et al., 2019). Some studies suggested that the communication skills of doctors, particularly in end-of-life situations and of nurses towards healthcare aids could be improved (Brooks et al., 2017; Cranley et al., 2022; Landau, 2000). The tools used for communication and for sharing knowledge have been reported to contribute to the commitment of team members to the decision-making process (Lee et al., 2021; Simon, 2016), sometimes as simple as using inclusive pronouns (Fox & Comeau-Vallée, 2020).

### 3.4 | Be aware of group processes and cognitive biases

Group processes are inherent to all social groups and can generate biases compromising decision-making and patient safety (Mannion & Thompson, 2014). Social standards designed to prevent conflicts may prevent members of the team from expressing an independent opinion (Kane, 1975) and a 'groupthink' may generate an insensitivity to new ideas (Snelgrove et al., 2011). The 'group polarization' could potentially lead to group decisions that are more extreme than the initial individual positions (Mannion & Thompson, 2014; Unsworth et al., 1997). The phenomenon of 'social loafing' has been reported to decrease individual motivation and group efficacy, whereas 'escalation of commitment' can incite the group to continue in the same direction despite objective data calling the decision into question (Mannion & Thompson, 2014). Because of risk and losses aversion and a natural tendency to hope for improvement, members in favour of continued care usually outweighed members in favour of decreased care (Johal & Danbury, 2021; Koekkoek et al., 2019). Individual cognitive mechanisms, personal history, values and life experiences from childhood onwards can influence the positions of members of a group and the decision-making process (Andermo et al., 2015; Johal & Danbury, 2021). More recently, a gender bias in decision-making process was showed, such as a higher reliance of physicians on men physicians advices or gender differences in perceived self-efficacy about sharing information (Durand et al., 2022; Helzer et al., 2020). It has been suggested that different individual

cognitive biases should be taken into account, such as 'confirmation bias' (according to which, individuals principally seek sources of information confirming their existing opinion) 'retrospective bias' (according to which, a knowledge of the results of a prior decision wrongly influence the probability of a particular decision being taken) (Mannion & Thompson, 2014) or, more broadly, shortcuts in the cognitive process of data selection (Fiddick et al., 2020).

Reflections and discussion have been shown to help to improve the performance of the team (Fein et al., 2016; Walter, Arnold, et al., 2019), by encouraging concentration on improving the understanding of self, others and the situation. Identifying a common goal for all team members and taking, sharing and entrusting responsibility strengthened the collective dynamic (Forsgårde et al., 2021; Heath et al., 2016).

### 3.5 | The information used in the process

Information quality has been reported to contribute to the quality of the decision-making process (Lamb, Sevdalis, et al., 2013; Nikander, 2007). The wording used as a reason of solicitation influenced the discussion and decision (Eagle & de Vries, 2005; Lynch et al., 2019; Winman & Rystedt, 2012). The 'information' label was attributed to 30 sources (Baggs et al., 2007; Banchet, 2011; Bentovim & Gilmour, 1981; Brick & Swinth, 1980; Bunch, 2000; Chase et al., 1981; Cook et al., 2001; Cranley et al., 2022; Doiret, 2005; Faith & Chidwick, 2009; Fiddick et al., 2020; Gair & Hartery, 2001; Gerace et al., 2013; Gomas, 2001; Greenhalgh et al., 2008; Heerschap et al., 2019; Kidger et al., 2009; Knowles & Gilmore, 1994; Lamb, Green, et al., 2011; Lamb, Brown, et al., 2011; Lamb, Sevdalis, et al., 2013; McClelland & Sands, 1993; Nikander, 2007; Oddi & Cassidy, 1998; Robertson et al., 1982; Scott et al., 2020; Simpson et al., 2013; Unsworth et al., 1995; Winman & Rystedt, 2012; Wong et al., 2020).

Data collection was considered to be indispensable for decision-making, with an exhaustive evaluation determining whether it was possible to come to a decision (Gomas, 2001; Jensen et al., 2013; Lamb, Sevdalis, et al., 2013). Each professional provides unique information (Haines et al., 2018; McClelland & Sands, 1993), for some mainly oral (Cranley et al., 2022). Tools, such as evaluation grids and clinical scores, can be used to render the evaluation more exhaustive or objective (Banchet, 2011; Gerace et al., 2013; Simpson et al., 2013). Observation of the patient in its environment can provide additional data (Bentovim & Gilmour, 1981). Many studies reported that the patient was at the heart of the information to be collected: the patient's desires, problems, quality of life, advance directives and decision-making capacity (Gair & Hartery, 2001; Gomas, 2001; Heerschap et al., 2019; Ho et al., 2005; Murray et al., 2019; Pattison & O'Gara, 2014; Unsworth et al., 1995). It was also considered important to collect data characterizing disease and comorbid conditions, despite the uncertainty of disease course and outcome: prognosis, symptoms, frailty, possible treatments and their undesirable effects (Gomas, 2001; Lamb, Brown, et al., 2011;

Lamb, Green, et al., 2011; Murray et al., 2019; Pattison & O'Gara, 2014). The collection of data concerning the family can help to place the patient in context or to provide patients unable to express themselves with a voice (Doiret, 2005; Gomas, 2001; Lynch et al., 2019; Nikander, 2007). It may be relevant to consider not only current data but also the patient's history, previous episodes of care (Bentovim & Gilmour, 1981). Collecting data for a meeting is important, but it's a one-off: data collection and sharing should be a regular process that serves continuity of care and decision making (Wong et al., 2020). Data external to the situation itself can create a framework for clinical decisions: legislation (Faith & Chidwick, 2009), professional deontology (Gomas, 2001; Martins Pereira et al., 2018), social and cultural consensus (Oddi & Cassidy, 1998), media pressure (Pattison & O'Gara, 2014) and limited resources (Eagle & de Vries, 2005; Murray et al., 2019).

The data should be accessible, from multiple sources, and relevant. The intelligibility of data has been identified as an essential condition for the participation of all team members (Lanceley et al., 2008; Winman & Rystedt, 2012). The availability of data to the entire team has been reported to increase mutual comprehension (Fein et al., 2016; Mackintosh et al., 2009). Tools, such as computing resources, can help to improve the sharing of information (Botes, 2000; Lamb, Brown, et al., 2011; Lamb, Green, et al., 2011; Winman & Rystedt, 2012), particularly if they are easy to use, accessible and include instruments for messaging and group conversation (Simon, 2016). The training of the staff and sufficient computer access needed consideration (Cranley et al., 2022). Exchange data from and towards the extra-hospital field remained difficult (Wong et al., 2020). The data must be reduced and transformed before meetings (Greenhalgh et al., 2008; Lamb, Sevdalis, et al., 2013). Subjective and tacit data can provide information about the complexity of the situation (Greenhalgh et al., 2008; Kidger et al., 2009; Quinlan, 2009), emotions (Nikander, 2007) and intuition when faced with a decision (Eagle & de Vries, 2005). Decision-making is, thus, a combination and interpretation process based on the participants' understanding of the patient (Winman & Rystedt, 2012), which can create new data (Berg et al., 2020; Quinlan, 2009; Robertson et al., 1982). The identification of essential data can make it possible to understand particular decision-making processes, or even to model them on a computer (Brick & Swinth, 1980; Eagle & de Vries, 2005).

### 3.6 | The uniqueness of each patient

The interprofessional approach makes it possible to take the uniqueness of the patient into account in decision-making. Determinants relating to patients were a key-element in 23 sources (Bartholdson et al., 2021; Bell et al., 2007; Borrett & Gould, 2021; Chase et al., 1981; Colombo et al., 2003; Dimech et al., 2021; Eagle & de Vries, 2005; Forsgårde et al., 2021; Hagoel et al., 2011; Heath et al., 2016; Jensen et al., 2013; Lamb, Brown, et al., 2011; Lamb, Taylor, et al., 2013; Lanceley et al., 2008; Lee et al., 2021;

Murray et al., 2019; Pattison & O'Gara, 2014; Robertson et al., 1982; Scott et al., 2020; Simpson et al., 2013; Stuber & Reed, 1991; Unsworth et al., 1995; Wong et al., 2020).

Each patient has a unique identity, with their own cultural and religious values, representations, and wishes concerning their involvement in decisions (Faith & Chidwick, 2009; Hagoel et al., 2011). Representations of the disease and sociocultural context may influence the way the patient is perceived by healthcare professionals (Colombo et al., 2003; Dimech et al., 2021; Heerschap et al., 2019; Stuber & Reed, 1991). If meetings are only oriented towards biomedical issues, there is a risk of the patients being viewed as a scientific object rather than a person (Jensen et al., 2013; Lanceley et al., 2008; Stuber & Reed, 1991). In a study in oncology, only 20% of the decision meetings discussed the perspective of the patient and the psychosocial data (Scott et al., 2020).

The uniqueness of the patient can be better appreciated through the use of interprofessional approaches (Lamb, Brown, et al., 2011; McClelland & Sands, 1993). Each caregiver provides a particular vision of the patient and their problems (Bell et al., 2007; Dimech et al., 2021; Robertson et al., 1982; Winman & Rystedt, 2012). Their visions should be crossed, because professionals tend to over or underestimate the patients' resources (Koekkoek et al., 2019). Several studies have suggested that the patient was an actor of the decision process (Bartholdson et al., 2021) and that his opinion should be sought before the decision is taken (Heath et al., 2016; Oddi & Cassidy, 1998; Pattison & O'Gara, 2014). Nurses were often considered, in these studies, to be the patients' advocates, representing their views or defending their rights (Anquinet et al., 2015; Lamb, Taylor, et al., 2013; Oddi & Cassidy, 1998; Scott et al., 2020). Meetings should include professionals from the patient's care team (Eagle & de Vries, 2005), and it has been suggested that the professional responsible for the initial presentation of the patient should direct the discussion (Eagle & de Vries, 2005; Nikander, 2007).

The participation of caregivers who know the patient may be beneficial, but it may also affect the objectivity of decisions (Nikander, 2007). Each relationship is unique and some have a particular emotional (identification), symbolic (caring for a colleague) or scientific (first in the domain) connotation (Stuber & Reed, 1991). Some studies considered the neutrality of healthcare professionals from outside the care team to be potentially necessary (Ferrand et al., 2003; Pattison & O'Gara, 2014).

### 3.7 | Organization at the service of the decision-making process

The organization of care, teams, and healthcare departments or structures appears to influence the interprofessional decision-making process in healthcare (Pethybridge, 2004). In this review, 78 of the sources provided substantial elements of information concerning these determinants (Aquila, 2003; Baggs, 1994; Baggs et al., 1999; Bartholdson et al., 2021; Batorowicz & Shepherd, 2008; Bentovim & Gilmour, 1981; Bokhour, 2006; Borrett & Gould, 2021; Briggs, 1999;

Brooks et al., 2017; Bunch, 2000; Chiarella, 1992; Clarke et al., 2015; Colombo et al., 2003; Cranley et al., 2022; de Boer et al., 2012; Dekussche, 2005; Dimech et al., 2021; Doiret, 2005; Eagle & de Vries, 2005; Ervin et al., 2018; Faith & Chidwick, 2009; Faulkner, 1985; Fein et al., 2016; Ferrand et al., 2003; Fratianna et al., 1992; Friedman, 2020; Goldman et al., 2015; Gomas, 2001; Grafham et al., 2004; Greenfield et al., 2010; Greenhalgh et al., 2008; Haines et al., 2018; Heerschap et al., 2019; Ho et al., 2005; Husson, 2011; Jensen et al., 2013; Johal & Danbury, 2021; Jordan, 1982; Kane, 1975; Keshmiri et al., 2020; Kidger et al., 2009; Kilpatrick, 2013; Lago et al., 2011; Lamb, Green, et al., 2011; Lamb, Brown, et al., 2011; Lamb, Sevdalis, et al., 2013; Lamb, Taylor, et al., 2013; Lanceley et al., 2008; Lee et al., 2021; Lewis, 1969; Lichtenstein et al., 2004; Mackintosh et al., 2009; Mannion & Thompson, 2014; Meaney, 2003; Midwinter et al., 2011; Mitchell et al., 2013; Murray et al., 2019; Nijhuis et al., 2007; O'Leary et al., 2019; Pattison & O'Gara, 2014; Martins Pereira et al., 2018; Pethybridge, 2004; Quinlan, 2009; Robertson et al., 1982; Roelofsen et al., 2001; Schlairet, 2009; Scott et al., 2020; Seuren et al., 2019; Sevdalis & Green, 2014; Simon, 2016; Svantesson et al., 2008; Todd et al., 2005; Van den Bulcke et al., 2016; Warren & Wiggins, 2016; Weinberget al., 2011; Winman & Rystedt, 2012; Wong et al., 2020), revealing the existence of a typical process (de Boer et al., 2012; Dekussche, 2005; Doiret, 2005; Schlairet, 2009) that could be improved by formalization, the attribution of resources and the development of a favourable context. In the absence of decision-making technology, the process is unclear and rarely changed the status quo (Koekkoek et al., 2019).

### 3.8 | Organizing a decision-making session

The organization of decision-making sessions can be formalized by a common and transparent decision-making approach, possibly explained in written form as a charter (Briggs, 1999; Doiret, 2005). A consensus of six steps (i–vi) in this process emerged from the studies included. At each step, the organization of the group was found to be determinant to ensure that a benefit was gained from its advantages whilst limiting its biases. These steps were as follows:

- (i) Exploration of the situation or detailed inventory of the information available. Several studies suggested that everyone should be asked expressly for their opinion rather than just leaving an open opportunity for people to express themselves (Haines et al., 2018; Schlairet, 2009).
- (ii) The problem should be defined or clarified, and the group should seek a consensus on the problem to be resolved and the objectives to be attained (Schlairet, 2009), reaching a 'situational consciousness' (Berg et al., 2020).
- (iii) The identification of possible or alternative solutions is determinant: the organization of the meeting should favour creativity, to generate a large number of diverse options (Aquila, 2003; Faulkner, 1985).
- (iv) These solutions should then be analyzed and compared: it is important to predict the possible consequences of each choice,



without prematurely sorting the options (Dekussche, 2005; Faulkner, 1985), by studying their risk/benefit ratios possibly with the aid of a table (Dekussche, 2005; Jordan, 1982).

- (v) Comparisons are then used to arrive at a decision. It has been suggested that this involves simply selecting the least bad solution to the problem and that consensus is merely an absence of opposition (Bentovim & Gilmour, 1981; Dekussche, 2005; Jordan, 1982). The decision, its justification and any disagreements should be documented (Lamb, Green, et al., 2011; Lamb, Brown, et al., 2011). In some cases, the professionals may decide, whereas, in others, the options selected are presented to the family or the patient, whose opinions can affect the decision and plans (Fratianne et al., 1992; Lamb, Green, et al., 2011; Lamb, Green, et al., 2011; Lamb, Taylor, et al., 2013). If the decision is taken in the absence of the family doctor, this doctor should at least be informed (Lamb, Green, et al., 2011) as should any caregivers of the patient not present at the meeting (Lago et al., 2011).
- (vi) The planning of actions or the development of scenarios (de Boer et al., 2012; Dekussche, 2005; Doiret, 2005; Schlairet, 2009) can facilitate traceability, without which, the application of the decision may be moderated or delayed, in situations in which the timing of care is often critical (Brooks et al., 2017; Jensen et al., 2013; Sevdalis & Green, 2014). This type of plan also makes it possible to clarify the responsibilities and the roadmap (Brooks et al., 2017), but the writing of such a plan should not become the chief priority of the group at the expense of the debate concerning plans for the patient (Bokhour, 2006). Finally, the improvement of the decision-making process requires its evaluation (Roelofsen et al., 2001; Sevdalis & Green, 2014). The perception of nurses may be a reliable indicator of the quality of the decision-making process (Baggs et al., 1999; Ferrand et al., 2003) and tools, such as the Collaboration and Satisfaction About Care Decisions score, have been developed for its evaluation (Baggs, 1994; Baggs et al., 1999).

### 3.9 | Organizing the group and its tools

The conditions for decision-making depend on the distribution of human and financial resources (Faith & Chidwick, 2009). The organization of the group should regulate authority by clearly attributing the roles and responsibilities of all its members (Meaney, 2003; Pethybridge, 2004) and retaining flexibility in situations in which such flexibility could improve the potential of a team (Lamb, Brown, et al., 2011; Lewis, 1969). The terminology of functions and roles needs to be considered to avoid ambiguity (Borrett & Gould, 2021). The leader of the decision-making process should not be chosen for their technical or medical skills, but for their skills in organization, communication and conflict resolution, to ensure that the leadership is inclusive (Coombs, 2014; Ervin et al., 2018; Faulkner, 1985; Fein et al., 2016; Kane, 1975; Lewis, 1969; Midwinter et al., 2011).

Leadership may be shared (Lamb, Green, et al., 2011) by a doctor-nurse duo (Warren & Wiggins, 2016) or a group of individuals (Gair & Hartery, 2001), or may rotate between meetings (Lamb, Brown, et al., 2011). One author highlighted the importance of followership, with leaders contributing only 20% to success (Coombs, 2014). The authors of the studies included in this analysis suggested that the coordinators recruited should preferentially include non-caregivers and non-administrative staff (Mackintosh et al., 2009), at the interface between the obligations of care staff to the patient and those of the organization to society (Meaney, 2003). These individuals could be case managers, ethicists or retired healthcare professionals, for example (Baggs et al., 1999; Bartholdson et al., 2021; Faith & Chidwick, 2009; Kayser & Kaplan, 2020; Knowles & Gilmore, 1994; Svantesson et al., 2008).

It is then necessary to establish a group of individuals from diverse professions, including those providing psychosocial information (Lamb, Green, et al., 2011), such as psychologists, who may also modify discussions (Ferrand et al., 2003; Haines et al., 2018). Ideally, the professionals who will eventually perform the care practices selected should be integrated into the decision-making process, to endorse these practices without internal ethical conflicts (Chiarella, 1992; de Casterlé et al., 2006; Lichtenstein et al., 2004; Roelofsen et al., 2001; Todd et al., 2005). Including someone external to the department in discussion may be useful (Ferrand et al., 2003; Pattison & O'Gara, 2014). The participation of patients and relatives in the decision-making process was little mentioned in the articles selected for this review (Bartholdson et al., 2021; Haines et al., 2018; Lamb, Green, et al., 2011; Nijhuis et al., 2007). Questions were raised in these studies about the time point in the patient's care pathway at which decisions should be taken, and anticipation seemed to make it possible to take the right decision at the right time (Brooks et al., 2017).

Finally, the management of human resources implies the dedication of sufficient time for the various missions. In this review, we were unable to establish an ideal time for meetings (Bokhour, 2006; Greenhalgh et al., 2008), with only one study describing meetings lasting 10 min per patient (Seuren et al., 2019). However, lack of time was identified as detrimental to the decision-making process in some studies (Bokhour, 2006; Borrett & Gould, 2021; Lamb, Green, et al., 2011; Lamb, Brown, et al., 2011; Lamb, Sevdalis, et al., 2013; Lamb, Taylor, et al., 2013). If resources must be rationalized, then the patients most likely to get the greatest benefit from the added value of a collective process, particularly if complex (Borrett & Gould, 2021), should be identified (Sevdalis & Green, 2014; Simpson et al., 2013). Further data are expected on the organization of interprofessional processes, exploring multifaceted organizational interventions (O'Leary et al., 2019).

### 3.10 | Contributing to a favourable environment

Healthcare organizations have been reported to have the capacity to promote appropriate 'open' cultures and to develop

working environments limiting the harmful biases of group thinking (Doiret, 2005; Mannion & Thompson, 2014). A department could organize itself to support interprofessionalism (Todd et al., 2005), through departmental (interprofessional visits and training early in internships) or individual (following the example of peers and teaching) activities (Goldman et al., 2015). Working conditions, particularly night work (Ferrand et al., 2003; Nathan et al., 2021), may prevent professionals from participating in decision-making meetings or sharing information (Brooks et al., 2017; Cranley et al., 2022; Kilpatrick, 2013; Lamb, Green, et al., 2011; Todd et al., 2005). Bringing professionals together may prove complicated in practice (Simpson et al., 2013), but could be favoured by a regularity of organization over time (Briggs, 1999; Ferrand et al., 2003; Mitchell et al., 2013) and allocated time (Cranley et al., 2022; Nathan et al., 2021). It would be preferable to allocate a particular shared time and place to a particular team (Briggs, 1999; Duner, 2013; Husson, 2011; Mitchell et al., 2013).

Institutions should also embody interprofessionalism. The degree of hierarchy of the model chosen illustrates the type of cooperation (Chiarella, 1992; Lewis, 1969). An environment of open discussions should be promoted, in which criticism is accepted, together with the evaluation, by the institution, of its practices (Ervin et al., 2018; Greenfield et al., 2010; Mannion & Thompson, 2014). Ethical commitment and care in partnership with patients would improve the participation of all professions in the decision-making process, and their satisfaction (Ferrand et al., 2003; Weinberg et al., 2011). Beyond healthcare institutions, society and the community are making progress towards the ethical, legal and economic governance of decision-making in health (Faith & Chidwick, 2009; Knowles & Gilmore, 1994; Lago et al., 2011; Lynch et al., 2019; Meaney, 2003).

### 3.11 | Training, a lever for change

Training makes it possible to improve one's knowledge of oneself and others and to create a dynamic for change. Training in interprofessional decision-making was a key-element within 15 of the selected sources (Banchet, 2011; Castillo-Parra et al., 2017; Firn et al., 2020; Goldman et al., 2015; Greenfield et al., 2010; Hagoel et al., 2011; Harris et al., 2021; Keshmiri et al., 2020; Machin et al., 2019; Maxson et al., 2011; Nathan et al., 2021; Neville et al., 2013; Shiao et al., 2019; Siegle et al., 2018; Snelgrove et al., 2011). Learning begins with a detailed examination of the personal and professional values of each individual (Hagoel et al., 2011; Harris et al., 2021; Oddi & Cassidy, 1998). An understanding of the skills and knowledge of the other professionals makes it possible to appreciate the originality of their approach (Goldman et al., 2015; Neville et al., 2013), their challenges (Colombo et al., 2003; Maxson et al., 2011) and to learn to see the situation from the standpoint of another professional culture (Hagoel et al., 2011). Several training courses for teams were based on simulation (Harris et al., 2021; Shiao et al., 2019) and have made it possible to break out of the habitual hierarchical framework (Snelgrove et al., 2011), to initiate an improvement in professional

relationships and communication and to improve professional satisfaction with the decision-making process (Maxson et al., 2011). Contributing to the development of the scenario improved the effectiveness of the training (Shiao et al., 2019). Initial training enabled professionals to discover the complexity of the interprofessional decision-making process (Castillo-Parra et al., 2017) and shared decision-making (Harris et al., 2021). Students also train through internships in departments in which interprofessionalism is effectively established, with the organization of training time in the field and learning from the example of senior staff (Goldman et al., 2015). Early collaborative learning was encouraged (Harris et al., 2021) alongside ethic courses, not only to identify ethical principles but also to develop clinical reasoning skills (Firn et al., 2020; Machin et al., 2019).

## 4 | DISCUSSION

### 4.1 | Principal results

Interprofessional decision-making in health has been studied since the 1960s, in several academic disciplines, including medicine and nursing science. Knowledge has been generated at diverse healthcare sites, principally hospitals, and often in relation to life-or-death questions. The interprofessional decision-making process has been shown to be influenced by group dynamics, the information available and consideration of the unique features of individual patients. An organizational framework and specific training have been shown to support improvements in this process. The majority of studies agree that the human dimension is essential in group decision-making and have explored the sociopsychological mechanisms of this dimension. A good team organization has been described as reflecting a good understanding of the human dimension of the decision-making process at the service of patient care, translated into an appropriate material environment and tools in the field.

The generalization of the results is limited by an overrepresentation of certain decision-making models, essentially embedded in the hospital context in English-speaking countries. The socio-cultural context influences the decision-making process (Yaguchi et al., 2005). The decisions studied were principally life-or-death decision, but teams take many less far-reaching decisions on a daily basis. Nevertheless, our results are consistent with the data concerning decision-making in public health published in the Council of Europe guide on decision-making in the end-of-life context (Council of Europe, 2014). The literature review on healthcare aides' involvement in team decision-making identified key elements to ours (information access/availability, hierarchical staffing structures and supervisor support/shared governance) (Cranley et al., 2022). In the domain of aeronautics, the team decision-making process has been modelled by the acronym FOR-DEC, highlighting the principal key elements: facts, options, risks and benefits, decision, execution, checks (Hoermann, 1994).



## 4.2 | Perspectives

The continuum of collaborative practices in health considers 'the sharing of decisions and actions linked to a common objective' to be the highest degree of collaboration. It considers the patient, and the complexity of his situation, to be the determinant of the degree of collaboration required (Careau et al., 2014). The patient is also recognized as an acting partner in team decisions. This interprofessional approach demands a harmonization of different points of view to develop a common vision of the situation, which is necessary for the development of a shared plan of action. Its implementation also requires transverse skills. Few training courses in the interprofessional decision-making process have been described, possibly due to the focus of team training on collaboration more generally (Mickan et al., 2010). Interprofessional decision-making is a field of application of this collaboration (Nijhuis et al., 2007). This review presents communication as one of the principal elements of the process and identifies a deficiency of communication skills in interprofessional work in health (Baggs, 1994; Bokhour, 2006; Botes, 2000; Husson, 2011; Landau, 2000). A systematic review of the literature performed in 2017 suggested that nurse-doctor communication remained ineffective (Tan et al., 2017). Reflective practices appear to be a useful tool for improving skills (Fein et al., 2016; Van den Bulcke et al., 2016). Before, during and after the decision, reflection can prevent errors of communication. The International Conference on Communication in Health in 2019 encouraged the teaching of such practices to healthcare professionals, to enable them to become 'reflective practitioners' (Karnieli-Miller, 2020). This work also showed that a lack of leadership skills in an interprofessional team affected team dynamics and influenced the decision-making process (Ambrose-Miller & Ashcroft, 2016; Ervin et al., 2018; Nijhuis et al., 2007; Oddi & Cassidy, 1998). The doctors often found themselves as leaders by 'default', despite having no training in team management. The training of healthcare professionals in leadership and healthcare team management seems to be beneficial (Ackerly et al., 2011; Seabold et al., 2020). The interprofessional competency framework developed by the Canadian Interprofessional Health Collaborative (CIHC) could serve as a tool in a transverse pedagogic approach for different professionals, for initial or on-the-job training (Canadian Interprofessional Health Collaborative, 2010). It identifies six skills, all highlighted in this review: the role clarification; team functioning; patient/client/family/community-centred care; collaborative leadership; interprofessional communication; interprofessional conflict resolution. One effective change in practices is long to settled in (Solomon, 1995). This change should be supported by a sustained will to train new generations of professionals within healthcare organizations. Interprofessional decision-making in health is a key process in the establishment of care requiring dedicated managerial attention. The identity of the members of the team, its hierarchy, professional roles and local organization condition its capacity for collaboration in general (Housley, 2003; Lewis, 2006).

The results highlight the importance of taking the personal and professional values of healthcare professionals into account,

because a poor knowledge of these values may lead to tensions and conflict within the team (Botes, 2000; Greenfield et al., 2010; Scott et al., 2011). The development of a framework of values common to all groups of healthcare professionals could potentially improve interprofessional decision-making (Moyo et al., 2016). One comparative study of professional and interprofessional values in 13 interprofessional teams working in healthcare in the US in 2015 led to the emergence of the notion of 'interprofessional professionalism' (Tsou et al., 2015). By identifying values common to seven healthcare professions, an Australian study placed the values of interprofessional practice between the right of the patient to receive the best possible available care and the recognition of the contribution of each profession (Grace et al., 2017).

In addition to working on the values at the heart of the organization, regulators should contribute to the definition and attribution of professional roles, based on the notions of shared leadership (Lamb, Green, et al., 2011). Indeed, this review highlights the heterogeneity of the professions involved in the decision-making process and the importance of a clear distribution of roles, particularly for the facilitation and leadership functions. These roles should be attributed according to collaborative skills rather than healthcare skills and may, therefore, be attributed to different professionals, or even to a duo, and may be fixed or rotating (Gair & Hartery, 2001; Lamb, Green, et al., 2011; Warren & Wiggins, 2016). Certain professions, such as social workers and nurses, have different functions in different countries. The development of advanced practices would make it possible to acquire skills in case management (and, thus, patient data management) or team leadership (Goldsberry, 2018; Singh, 2020). The involvement of pharmacists in the interprofessional decision-making process was rarely reported in the studies included in this review (Bell et al., 2007; Grafham et al., 2004; Makowsky et al., 2009). However, collaboration between doctors and pharmacists can have a significant impact, for the control of arterial blood pressure in patients treated for hypertension, for example, or the control of diabetes (Hwang et al., 2017).

The teams, organized and competent in interprofessional working, are still confronted with complex and unique situations. There should be multiple sources of subjective, objective, shared, accessible and comprehensible information. The management of information for decision-making processes is an axis for work and research. Ontological tools for modelling information could be used to structure the input and output data for the process. In this domain, only one study in the US in 1980 reported a formalization of the knowledge involved in the decision-making process (Brick & Swinth, 1980). A systems analysis based on exploratory interviews led to the development of a set of binary informatic decision rules based on objective criteria. Agreement with human decisions was demonstrated, allowing the authors to state that '(it) does not appear to be a mysterious process'. There were limitations to the transferability of modelling to another department or another time, but this approach could potentially accelerate the training of people involved in the process or could make it possible to replace 'expensive' professionals in the decision-making process by students training in these professions or less costly professionals (Hammond, 1971).

### 4.3 | Limitations

Relevant sources may have been published in languages other than those included in this study. The MeSH term 'interprofessional relations' could have been combined with the keywords 'interdisciplinary', 'multidisciplinary' or 'multiprofessional'. The field of shared medical decision-making with the patient could have provided a complementary approach to decision-making. Publication biases may have influenced the results. Searches were performed with the OpenGrey and Lissa databases to limit such biases. The CINHAI database was not explored for this study. The summaries were written in a subjective manner, which may have limited their reproducibility. The principal strengths of this study are its high degree of conformity to the PRISMA-ScR criteria, and the transversality and number of sources included and analyzed, rendering our results robust and original. Some studies found similar results and categorizations, for example, Fiddick et al. whose qualitative study identified three areas involved in the decision process: self (attitudes and beliefs), user qualities, organizational structure and wider social structures (Fiddick et al., 2020).

## 5 | CONCLUSION

Team decision is not a mysterious box. It's a healthcare team process that could rely on the development of training about collaboration and communication in teams, based on shared referentials (Canadian Interprofessional Health Collaborative, 2010; Careau et al., 2014), and about decision-making specifically, which this review showed as sparse. In the meantime, managing those multidisciplinary teams and healthcare organizations needs to consider the worth of all professions specificity and the individual skills—including in leadership. The uniqueness of each patient and their environment, converted into shareable data, was identified as the central element of the interprofessional decision-making process. Organizations should consider data management as a tool to facilitate the collaboration and enhance the quality of decisions. Further data modelling could also lead, in the future, to the development of collaborative decision support tools (Roosan et al., 2019) to assist teams in this process with a view to developing a personalization of care that is oriented and in partnership with the patient.

### AUTHOR CONTRIBUTIONS

According to ICJME recommendations: Tiphane Bouchez is the major contributor to the study conception and contributed to; data acquisition, analysis and interpretation; drafting and revisions. Clémence Cagnon is the major contributor to data acquisition and contributed to; the study conception, data analysis and interpretation; drafting and revisions. Gouraya Hamouche contributed to; data acquisition, analysis and interpretation; drafting and revisions. Marouan Majdoub contributed to; data acquisition, analysis and interpretation and revisions. Jean Charlet contributed to; the study conception and draft critical revisions. Matthieu Schuers contributed to; the study

conception, data interpretation, drafting and revisions. All the authors approved the final version to be published and agreed to be accountable for all aspects of the work.

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No conflict of interest has been declared by the authors.

### PEER REVIEW

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### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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

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