

Review Article

For which decisions is Shared Decision Making considered appropriate? – A systematic review

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ARTICLE INFO

Keywords:

Shared Decision Making
Decision types
Patient-provider communication
Medical decision making
Medical encounter
Systematic review

ABSTRACT

Objective: To identify decision characteristics for which SDM authors deem SDM appropriate or not, and what arguments are used.

Methods: We applied two search strategies: we included SDM models from an earlier review (strategy 1) and conducted a new search in eight databases to include papers other than describing an SDM model, such as original research, opinion papers and reviews (strategy 2).

Results: From the 92 included papers, we identified 18 decision characteristics for which authors deemed SDM appropriate, including *preference-sensitive*, *equipoise* and decisions where *patient commitment is needed in implementing* the decision. SDM authors indicated limits to SDM, especially when there are immediate life-saving measures needed. We identified four decision characteristics on which authors of different papers disagreed on whether or not SDM is appropriate.

Conclusion: The findings of this review show the broad range of decision characteristics for which authors deem SDM appropriate, the ambiguity of some, and potential limits of SDM.

Practice implications: The findings can stimulate clinicians to (re)consider pursuing SDM in situations in which they did not before. Additionally, it can inform SDM campaigns and educational programs as it shows for which decision situations SDM might be more or less challenging to practice.

1. Introduction

Shared Decision Making (SDM) is increasingly being advocated in clinical practice and efforts are made to implement it throughout healthcare. SDM does not currently have a unified definition, yet attempts have been made to capture its core elements. SDM entails a collaborative decision making process, including clarifying a decision is needed, discussing the options, exploring patient preferences, and ultimately making a decision (or deferring it) [1–3]. These core elements have been translated into workable steps to help incorporate them into practice [4,5].

Several national quality institutes linked to clinical practice guidelines recommend SDM, such as The Institute for Quality and Efficiency

in Healthcare in Germany and The National Institute for Health and Care Excellence (NICE) in the UK. In addition, strong political advocacy for SDM is visible in different countries in the form of national campaigns, among which The Netherlands, USA, Germany, Canada, UK and Taiwan [6]. However, SDM is often advocated broadly without specifying *when* to apply SDM. In transitioning from advocating towards implementing SDM in daily clinical practice, questions may arise regarding the limits to SDM's applicability. For effective implementation, guidance for clinicians on when SDM is considered to be appropriate is required.

The large body of literature on patient decision aids, tools to support SDM, shows that SDM is deemed relevant or appropriate for many different decisions in many different settings [7]. Specification in what exactly makes these decisions particularly appropriate for SDM is often

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<https://doi.org/10.1016/j.pec.2022.09.015>

Received 13 June 2022; Received in revised form 26 August 2022; Accepted 26 September 2022

Available online 28 September 2022

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lacking. For some decisions, engaging in SDM is deemed so important that it has been made mandatory, for example for lung cancer screening decisions or decisions regarding implanting cardioverter-defibrillators (ICD's) in the US. These decisions are described as *not having one superior option* and *preference-sensitive* [8].

Some SDM authors mention characteristics of decisions for which SDM is particularly appropriate. For example, Whitney et al. propose that the level of *uncertainty* (evidence) around decisions, their *importance* [9], and the *amount of risk* involved in decision options [10], all play a role in determining the relevance of SDM. In their ground-laying work, Charles et al. described SDM in the context of early-stage breast cancer treatment decisions as their main example. They characterized this decision as having *several treatment options* and comprising *uncertainty around possible outcomes* [11] and considered these two decision characteristics to make SDM appropriate.

However, the SDM literature is less extensive on when SDM might *not* be appropriate. Hypothetically, SDM could lead to a burden of choice for patients, particularly in decisions which may have *high impact*. Additionally, for *urgent* decisions with *large (life-saving) consequences*, SDM can potentially be harmful [12,13]. Thus, it seems some decision characteristics clearly make SDM suitable, while others indicate the limits of SDM. Identifying these decision characteristics and how they relate to SDM can help clinicians in implementing SDM effectively in practice. Therefore, in this review, we aim to systematically assess what decision characteristics SDM authors report for which they deem SDM appropriate. Additionally, we wish to explore the limits of SDM and identify which decision characteristics SDM authors mention that make SDM inappropriate or even potentially harmful. We will provide an overview of the different decision characteristics and decision examples reported by SDM authors (including the setting in which they were mentioned), and what arguments authors provide on why SDM is (in) appropriate in those situations.

2. Methods

The focus of this review is on decision characteristics, i.e., features that characterize decisions (e.g., impact of a decision) regardless of the content of the decision or its setting. Decision characteristics are different from characteristics regarding decision makers (e.g., cognitive functioning), decision setting (e.g., primary care), or decision type (e.g., treatment). (Fig. 1). For example, decisions to be made within a short time frame (a decision characteristic) may occur in different settings (primary care, emergency department etc.) and may entail different types of decisions (diagnostics, treatment etc).

2.1. Data collection

In order to identify a broad variety of papers, we applied two strategies to collect data. In strategy 1, we focused on how authors of SDM models implicitly and/or explicitly consider SDM to be appropriate. The papers describing SDM models were derived from a 2019 review of SDM

models [1].

Strategy 2 included a systematic search of papers that describe decision characteristics. The second strategy focused on opinion papers, original research and reviews, and not on SDM models. The search consisted of keywords and synonyms for 'SDM', 'decision situation', 'decision type', and decision characteristics that had been identified in the papers included in the first strategy. We searched the following eight databases: Academic Search Premier, Cochrane, Pubmed, Embase, Embcare, Embase, Medline, PsychINFO and Web of Science. See Appendix A for the full search strategy. To be eligible, the papers had to be published in a peer-reviewed journal and explicitly describe the authors' view on the appropriateness of SDM as a function of decision characteristics. Papers on SDM models that were published after the search of Bomhof-Roordink et al. [1] and that came up in this search, were also included. We excluded papers that did not present the *authors'* views on when SDM is appropriate as a function of particular decision characteristics and, for example, described the opinions of study participants such as clinicians and/or patients; papers in other languages than English, Dutch or French; and papers on SDM interventions such as decision aids that did not explain why SDM is important for that particular decision. Title-abstract screening and full-text screening were performed independently and in duplicate (DH-AP and DH-MG). In case of disagreement, consensus was reached by discussion and if needed, a third researcher was consulted (AP or MG).

2.2. Data extraction

One researcher (DH) extracted the data from all the papers included based on strategy 1 and 2 using a standardized extraction form, and another researcher (AP or MG) verified the extractions. Consensus, if needed, was reached through discussion. For all papers (both strategy 1 and 2), we extracted the following general characteristics: author(s), year of publication, journal, country of study, and study design. We extracted fragments describing the decisions (including their setting), decision characteristics, and arguments used to determine whether SDM was considered appropriate or not.

2.3. Data analysis

We used the extracted data, based on all papers, including strategy 1 and 2, to build an overview of the decision characteristics and examples of decisions. One researcher (DH) categorized the decision characteristics based on their similarity, and two other researchers checked the categorization (AH and MG). Inconsistencies were discussed until consensus was reached. In the results, we provide decision characteristics, decision examples and arguments of all papers (both strategy 1 and 2) in a descriptive way. We tried to describe the decision characteristics and decision examples as concretely as possible, while staying close to the original authors' wording.

We counted how often decision characteristics were mentioned in the papers included in strategy 1. We excluded the papers from strategy

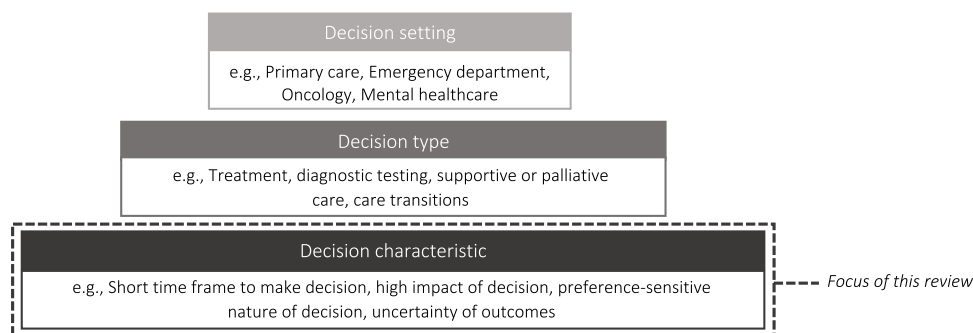


Fig. 1. Three levels to describe decisions.

2 in this calculation, because we had purposely included decision characteristics in building the search for strategy 2. Quality and risk of bias of all included studies were not assessed, because we aimed to be inclusive of the different views of authors, which is not in line with excluding views based on formal bias/quality assessments. Ethical approval was not required for this study. This review was registered at PROSPERO: CRD42021236297.

3. Results

3.1. Included papers

We included the 40 papers describing an SDM model from the review of Bomhof-Roordink et al. [1]. Two papers, each describing a unique SDM model, were added from the search of strategy 2 [14,15] (Fig. 2). The authors of half of the papers on SDM models ($n = 21$) explicitly stated for what kind of decisions they considered their SDM model to be appropriate [5,11,14–32]. In 19 papers they only implicitly mentioned when they considered SDM appropriate [2,4,33–49]. For example, these authors implied that their SDM model was appropriate for certain decisions by providing decision examples containing specific decision characteristics. Two papers did not mention when their SDM model is appropriate [50,51].

Strategy 2 yielded 1860 papers, of which 51 were included (Fig. 2). Eight original studies were included, mostly qualitative [52–59] (Table 1). Other papers were reviews ($n = 17$) [60–75] or other non-empirical papers [9,10,76–100].

3.2. Decision characteristics

In total, 18 decision characteristics were identified for which authors considered SDM appropriate and seven decision characteristics for which it was not. Authors disagreed on four decision characteristics, namely decisions with *one best option*, *weight of the decision being light* (decisions that are considered ‘minor’ or ‘not important’), decisions with *a trade-off between individual impact and public benefit* and decisions to be

made *in a short time frame*. Some authors described these as decision characteristics for which SDM is appropriate while others described them as inappropriate for SDM. See Appendix B for a full list of the decision characteristics, decision examples, and the settings in which the decisions were mentioned. In the next paragraphs we will elaborate on the decision characteristics identified.

3.3. Decision characteristics for which SDM is deemed appropriate

3.3.1. Preference-sensitive

Preference-sensitive was frequently mentioned as a decision characteristic that makes SDM appropriate. The definition that the authors provided for this term differed. Therefore, we extracted the features that authors mentioned (Table 2). Appendix B contains the complete descriptions that authors gave of preference-sensitive. Preference-sensitive decisions were most often described as bearing *multiple options* or *multiple reasonable options*. In some papers, this was the only feature mentioned [20,23,82,85,95,100]. Other authors further specified that the options entail a *trade-off of risks and benefits* [32,62,68,72,79] and/or that the *decision depends on patient preferences* [22,24,25,53,55,60,63,64,72,76,81,90,98]. The options in preference-sensitive decisions were stated to be *valued differently between patients* [19,53,64,74,88] or to *differ between patients and healthcare professionals* [77]. Other features mentioned were *limited evidence* [5,53,69,88], *uncertainty around outcomes* [14,55,64], and *equipose* [5,64,71,88]. Some authors referred to the *impact on patients’ lifestyle* and the *need for patient cooperation for implementing the decision*, as features of preference-sensitive decisions [56,63]. Others described preference-sensitive as a *trade-off in which length and quality of life, preservation of bodily integrity, prevention of future problems, costs, and convenience* should be considered [9]. Lastly, authors indicated that in case of ‘a clearly better option’, the decision can still be preference-sensitive because of the *ensuing risks or burden* [69], or when *preferences around decisions vary per patient* [64]. Examples of preference-sensitive decisions included treatment decisions in breast cancer [9,24,55,63,81,95], decisions regarding prostate cancer screening [68,72,90,95], hypertension treatment decisions [74], and

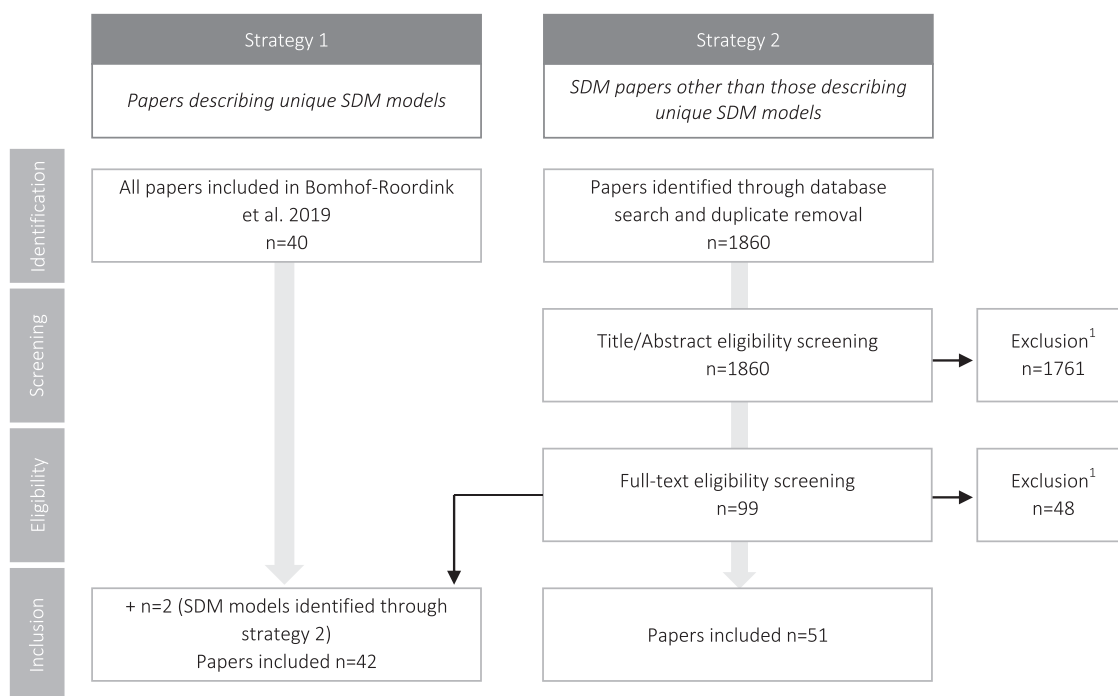


Fig. 2. Flow diagram of the inclusion process of relevant papers. ¹ Reasons for exclusion: Paper not written in English, French or Dutch or paper does not contain explicit statements describing the authors’ view on decision characteristics making SDM appropriate or not. Papers that had already been identified based on strategy 1 were excluded in strategy 2.

Table 1
Overview of included papers.

Author, publication year [Ref.]	Country	Study design/type of paper	Setting paper
Papers describing SDM models (strategy 1)			
Bomhof-Roordink et al. 2019 [48]	The Netherlands	Qualitative: interviews	Oncology
Caverly et al. 2020 [14]	USA	Non-empirical paper	Primary care
Charles et al. 1997 [11]	Canada	Non-empirical paper	Early stage breast cancer treatment
Charles et al. 1999 [30]	Canada	Non-empirical paper	Early stage breast cancer treatment
Chor et al. 2019 [22]	USA	Non-empirical paper	Gynaecology: asymptomatic non pregnant women
Dobler et al. 2017 [27]	USA	Non-empirical paper	Lung cancer screening
Eliacin et al. 2015 [41]	USA	Qualitative: interviews	Mental healthcare
Elwyn et al. 2000 [43]	UK	Qualitative: focus groups	Primary care
Elwyn et al. 2012 [4]	UK	Non-empirical paper	Not specified
Elwyn et al. 2013 [44]	UK, USA, Canada	Non-empirical paper	Not specified
Elwyn et al. 2017 [51]	USA, UK	Qualitative and quantitative: commentary, review, survey	Not specified
Gillick et al. 2015 [20]	USA	Non-empirical paper	Not specified
Grim et al. 2016 [35]	Sweden	Qualitative study: focus groups	Mental healthcare
Jansen et al. 2016 [26]	Australia	Non-empirical paper	Elderly care (polypharmacy)
Joseph-Williams et al. 2019 [39]	UK	Qualitative: observation of consultations	Chronic kidney disease and early stage breast cancer
Kane et al. 2014 [24]	USA	Review	Oncology
Karkazis et al. 2010 [25]	USA	Non-empirical paper	Decisions about genital surgery for disorders of sex development
Langer et al. 2018 [31]	USA	Non-empirical paper	Psychotherapy youth and families
Légaré et al. 2011 [40]	Canada	Non-empirical paper	Primary care
Légaré et al. 2011 [46]	Canada	Qualitative design: interviews	Primary care
Lenzen et al. 2018 [29]	The Netherlands	Non-empirical paper	Primary care
Lown et al. 2009 [47]	USA	Qualitative design: working groups	Chronic conditions and primary care
Makoul et al. 2006 [2]	USA	Review	Not specified
Montori et al. 2006 [17]	Canada	Non-empirical paper	Chronic care
Moore et al. 2018 [18]	USA	Non-empirical paper	Physiotherapy
Murray et al. 2006 [16]	UK, Canada	Non-empirical paper	Primary care
Navar et al. 2016 [15]	USA	Review	Cardiovascular disease prevention
Ng et al. 2019 [23]	Malaysia	Non-empirical paper	Primary care (complex multimorbidity)
Park et al. 2018 [19]	South Korea	Review	Paediatric care
Peek et al. 2008 [101]	USA	Qualitative: interviews	Diabetes
Probst et al. 2017 [32]	USA	Non-empirical paper	Emergency department
Probst et al. 2018 [21]	USA	Non-empirical paper	Emergency cardiovascular care
Rennke et al. 2017 [42]	USA	Non-empirical paper	Inpatient hospital setting
Rusiecki et al. 2018 [36]	USA	Quantitative: pre-post surveys	Not specified
Saidinejad et al. 2018 [34]	USA	Non-empirical paper	Paediatric emergency department
Shay et al. 2014 [37]	USA	Qualitative: interviews	Primary care
Simon et al. 2006 [49]	Germany	Qualitative and Quantitative: Delphi method and survey	Depression, gynaecology, primary care, urology, anaesthesia
Stiggelbout et al. 2015 [5]	The Netherlands	Non-empirical paper	Not specified
Towle et al. 1999 [33]	Canada	Qualitative: interviews	Not specified
Truglio-Londrigan et al. 2018 [28]	USA	Review	Not specified
Van de Pol et al. 2016 [45]	The Netherlands	Qualitative: Delphi method	Elderly care
Volk et al. 2014 [50]	USA	Quantitative: pre- post surveys	Primary care
SDM papers not describing SDM models (strategy 2)			
Anagnostou et al. 2020 [60]	USA	Review	Paediatric allergy care
Armstrong et al. 2019 [96]	USA	Non-empirical paper	Disorders of consciousness
Bailo et al. 2019 [77]	Italy	Non-empirical paper	Not specified
Barry 2012 [78]	USA	Non-empirical paper	Not specified
Blaiss et al. 2019 [61]	USA	Review	Allergology
Clarke et al. 2004 [52]	USA	Qualitative: interviews	Congestive Heart Failure
Colligan et al. 2017 [62]	USA	Review	Multiple sclerosis
De Ligt et al. 2019 [63]	The Netherlands	Review	Breast cancer
Deegan et al. 2014 [79]	USA	Non-empirical paper	Mental healthcare
Drake et al. 2009 [80]	USA	Non-empirical paper	Mental healthcare
Elwyn et al. 1999 [58]	UK/The Netherlands	Qualitative: discourse analysis	Primary care
Elwyn et al. 2009 [81]	USA/UK	Non-empirical paper	Not specified
Elwyn et al. 2014 [83]	UK	Non-empirical paper	Not specified
Engelhardt et al. 2016 [55]	The Netherlands	Qualitative/quantitative: coding of consultations	Breast cancer
Fornier et al. 2020 [64]	Canada	Review	Head and neck oncology (surgery)
Greenhawt et al. 2020 [75]	USA	Review	Food allergy care
Gwyn et al. 1999 [59]	UK	Qualitative: discourse analysis	Primary care
Hamann and Heres 2014 [82]	Germany	Non-empirical paper	Mental healthcare
Herlitz et al. 2016 [65]	Sweden	Review	Chronic care in general
Jansen et al. 2019 [53]	Australia	Qualitative: interviews	Elderly care
Kahlert et al. 2018 [66]	Switzerland	Review	Breastfeeding HIV infected mothers
Kon et al. 2016 [98]	USA	Non-empirical paper	Intensive Care Unit
Kraus et al. 2016 [67]	USA	Review	Emergency department
Langford et al. 2019 [74]	USA	Review	Hypertension management
	Switzerland	Review	Prostate cancer

(continued on next page)

Table 1 (continued)

Author, publication year [Ref.]	Country	Study design/type of paper	Setting paper
Martínez-González et al. 2018 [68]			
Matthias et al. 2020 [54]	USA	Qualitative: interviews	Primary care
Mercuri et al. 2020 [84]	Canada	Non-empirical paper	Not specified
Mistler et al. 2008 [85]	USA	Non-empirical paper	Mental healthcare
Moulton et al. 2020 [86]	USA	Non-empirical paper	Enrolment in research
Narayan et al. 2015 [69]	USA	Review	Elderly care
Nelson et al. 2014 [87]	Canada	Non-empirical paper	Children with severe neurologic impairment
Niburski et al. 2020 [70]	Canada	Review	Surgery
Opel et al. 2018 [76]	USA	Non-empirical paper	Paediatric care
Palace et al. 2013 [88]	UK	Non-empirical paper	Multiple sclerosis
Pickrell et al. 2015 [89]	UK	Non-empirical paper	Epilepsy
Politi et al. 2013 [71]	USA	Review	Not specified
Politi et al. 2012 [90]	USA	Non-empirical paper	Oncology
Politi et al. 2013 [72]	USA	Review	Not specified
Pynnonen et al. 2014 [91]	USA	Non-empirical paper	Head and neck surgery
Shaw et al. 2020 [100]	UK	Protocol paper qualitative study	Major surgery
Turnbull et al. 2016 [56]	USA	Qualitative: Delphi method	Intensive Care Unit (non-emergent care)
Ubbink et al. 2015 [92]	The Netherlands	Non-empirical paper	Surgery
Van Beek-Peeters et al. 2020 [73]	The Netherlands	Review	Elderly patients with symptomatic severe aortic stenosis
Waldron et al. 2020 [97]	Canada	Review: realist synthesis	Not specified
Weiss et al. 2019 [93]	USA	Non-empirical paper	Paediatric care
Whitney 2003 [9]	USA	Non-empirical paper	Not specified
Whitney et al. 2003 [10]	USA	Non-empirical paper	Not specified
Whitney et al. 2006 [94]	USA	Non-empirical paper	Paediatric oncology
Whitney et al. 2008 [95]	USA	Non-empirical paper	Not specified
Woolf et al. 2001 [99]	USA	Non-empirical paper: editorial	Not specified
Zhuang et al. 2020 [57]	USA	Qualitative: Delphi method	Carpal tunnel syndrome surgery

drug choice in mental healthcare [79,82,85]. Appendix B contains more examples. Some authors used the term *value-sensitive*. In this decision characteristic the emphasis lies on patients' religious, moral and other values, as well as philosophical beliefs, that lead to varying preferences among patients and thus making SDM appropriate, for example the decision for genetic prenatal screening [9].

The arguments for SDM being applicable in preference-sensitive decisions were often related to the ethical imperative to include patients in these decisions [22,28,80,85], or as a means to achieve patient-centred care [53,85]. Additionally, SDM was mentioned as a conversation process that can help in exploring patients' values and preferences [96], and aligning them with the best available clinical evidence [57]. Another argument was that clarifying preferences through SDM is needed because clinicians cannot, and should not, presume patient preferences as they may misperceive them [62,99]. If not prompted as in SDM, patients may not express their preferences because clinicians do not make explicit that their preferences are relevant, or patients (wrongfully) assume clinicians know their preferences [53].

3.3.2. Equipoise

Another frequently mentioned decision characteristic that makes SDM appropriate was *equipoise*. Again, authors' definitions differed and we extracted the features (Table 3). Appendix B shows the complete authors' descriptions of the term *equipoise*. The most often mentioned feature of *equipoise* was that it entails decisions with *multiple options* or *multiple reasonable options* [18,28,59,70,89], similar to preference-sensitive decisions. Other authors added that these options are *dependent on patient preferences* [31,32] and/or have to be *in balance* [31,66,81,88]. The existence of a reasonable balance between options in a situation with *equipoise* was described in one paper as: "when a majority of people would agree that it is reasonable to consider making a choice between competing options" [81]. Others described *equipoise* as multiple options from which *potential benefits and disadvantages need to be weighed* [40,46] or more simply as decisions with *not one best option* [18,28,59,70] due to limited evidence [18]. Examples of *equipoise* decisions included decisions regarding anticoagulation for patients with new-onset atrial fibrillation [21] and decisions regarding breastfeeding by HIV-infected mothers with low viral load [66]. Some authors who

used the term '*clinical equipoise*' included the *uncertainty on the potential benefits and disadvantages of the options* in their description [89], for example in the choice of medication in epilepsy treatment [89]. '*Professional equipoise*' was described as decisions where 1) *clinicians deem there is no best choice* [43], 2) "where there is consensus among clinicians that there is no superior option" [81], 3) *patients have 'freedom' to choose between options* [58,59], or 4) as a pre-condition for '*dual equipoise*': a situation in which both clinicians and patients agree that all options are in balance and patient preferences are paramount to decide [58].

In summary, both the terms preference-sensitive and *equipoise* share an important key element: the decision has multiple (reasonable) options. The multitude of options are a result of having comparable options in terms of risks and benefits, or existing uncertainty about which option may be best. With the term '*equipoise*' the emphasis is on having multiple options and those options being somewhat in balance. A preference-sensitive decision may also contain these elements, but is further portrayed as depending on patient preferences, and the possibility that patients may value the options differently. A preference-sensitive decision may contain *equipoise*, but this is not a requirement. A decision with *equipoise* on the other hand, could be considered a preference-sensitive decision, in most or all cases.

3.3.3. Multiple options

In addition to being mentioned as a feature of '*equipoise*' and '*preference-sensitive*', the availability of multiple options was also mentioned independently as a decision characteristic for which SDM is considered appropriate, and described as a decision with: *multiple options* [25,31,44,70,83,97], *multiple options with different possible outcomes* [11,19,30,54] or *multiple reasonable options* [4,5,24,33,61,76,78,92,94]. Foregoing active treatment may also count as a reasonable option [4,30]. Authors described decisions with *no best option* as a specific form of decisions with multiple options for which SDM was deemed applicable [11,25,61,87,91,94]. These decision situations entail no superior option, for example whether or not to perform a tonsillectomy on a child with recurrent throat infection [91].

3.3.4. Uncertainty

Uncertainty around the decision was another decision characteristic

Table 2
Features of the term ‘preference-sensitive’.

Refs.	Core features of authors’ descriptions of ‘preference-sensitive’
[20,23,82,85,95,100]	Multiple reasonable options
[24,25,75,98]	Choice depends on personal preferences and values of patient
[22,72,76,90]	Multiple reasonable options, decision depends on patient preferences
[74]	Multiple reasonable options, decision depends on patient preferences, which vary per patient
[88]	Multiple reasonable options each with benefits and disadvantages and may vary in scientific certainty (i.e. where equipoise exist); this is valued differently per patient
[77]	Multiple reasonable options (evidence uncertain), patient views on benefits and risks vary per patient or differ from those of healthcare professionals
[19]	Multiple reasonable options, benefit and risks valued differently by patients
[32,62,68,79]	Multiple reasonable options with trade-off risks and benefits
[55]	Multiple reasonable options with trade-off risks and benefits where patients preferences should adjudicate, uncertainty which patients might benefit
[60,81]	Multiple options with trade off harms and benefits, decision dependent on values and personal preferences patient
[63]	Multiple options with trade-off risks and benefits, options comparable in outcomes, insufficient evidence what’s the best option, outcomes highly dependent on patient cooperation/high impact patient’s lifestyle
[5]	Multiple options, evidence lacking or equipoise, only patient preferences can adjudicate
[69]	Multiple options (no clear evidence) or clear evidence but benefit in tandem with risks or burdens
[56]	Criteria: multiple options with trade-off risks and benefits, options comparable in outcomes, insufficient evidence what is the best option, outcomes highly dependent on patient cooperation/high impact patient’s lifestyle
[9]	Trade-off including considerations related to length- and quality of life or preservation of bodily integrity, prevention of future problems, cost, and convenience
[14]	Uncertainty outcomes and individual preferences
[71]	Equipoise between treatment options with equal or similar outcomes from a medical standpoint
[64]	Equipoise or substantial uncertainty effect of treatment or: clear option, but values vary per patient
[53]	Evidence benefit and harms limited, decision depend on weighing many factors, option depends on how outcomes are valued, for which preferences vary widely

that was frequently mentioned [9,10,28,48,90,96]. A further distinction can be made between *uncertainty about evidence* and *uncertainty about outcomes* of decision options. The authors described *uncertainty about evidence* as situations in which evidence about options was limited, conflicting or lacking [19,24,25,27,71,87,90,92]. Examples are introduction of new technologies in surgery [92] and children with severe neurologic impairment [87]. Uncertainty can also originate from the difficulty to apply evidence, often deriving from well-controlled trials among highly-selected patient populations, to individual patients [72,90]. *Uncertainty about outcomes* relates to uncertainty about what the outcome of the decision will be and how outcomes might impact physical and physiological wellbeing [11,30,72]. Some authors proposed that regardless of the severity of decisions, SDM is appropriate when there is uncertainty [10]. For example, both high-risk decisions, e.g. mastectomy versus lumpectomy in treating breast cancer, and low-risk decisions, e.g. lifestyle changes versus hyperlipidaemia medication, contain uncertainty and therefore SDM was deemed appropriate [10].

3.3.5. Trade-off

Authors proposed that SDM is appropriate in decisions characterized by containing trade-offs. Examples included trade-offs in the advantages and disadvantages of genital surgery for children with disorders of sex development [25] and of cancer screening [14].

Table 3
Features of the term ‘equipoise’.

Refs.	Core features of authors’ descriptions of ‘equipoise’	Used term
[40,46]	Multiple options (including maintaining status quo) for which potential benefits and disadvantages need to be weighed	Equipoise
[28]	Alternative options (based on evidence)	Equipoise
[31]	Multiple options with equal effectiveness, dependent on patient preferences	Equipoise
[70]	Multiple options, not one best option	Equipoise
[18]	Multiple options, not one best option (because of conflicting or inadequate evidence)	Equipoise
[59]	Multiple reasonable options	Equipoise
[32]	Multiple reasonable options dependent on patients values and preferences	Equipoise
[88]	Multiple reasonable options with trade off benefits and disadvantages, may vary in scientific uncertainty	Equipoise
[58]	Reasonable balance in benefits and disadvantages of options: when a majority of people would agree that it is reasonable to consider making a choice between competing options	Equipoise
[66]	Balance in benefits and disadvantages of options	Clinical Equipoise
[89]	Multiple reasonable options in clinical situations	Clinical Equipoise
[86]	Uncertainty potential benefits and disadvantages	Clinical Equipoise
[81]	Both healthcare professionals and patients agree that all options are in balance and patient preferences are paramount	Dual Equipoise
[43]	In clinicians point of view there is no best choice	Professional Equipoise
[58,59]	Multiple options, patient ‘free’ to choose	Professional Equipoise
[81]	Consensus among clinicians that there is no superior option, as a pre-condition for dual equipoise	Professional Equipoise

3.3.6. High impact of decision

High impact decisions may have serious implications for health outcomes or quality of life [24]; hold effects that emerge over time and contain multiple life domains [35]; entail potentially major harmful effects [27,48,90,100]; have consequences that are immediate and important [17]; impact family members/loved ones [75,87]; or heavily influence daily routines [70,79,87]. Some authors described SDM to be applicable in ‘major’ [14] or ‘high stake’ decisions [33,94,97]. Authors of one paper proposed ‘detailed SDM’ versus ‘everyday SDM’ to be appropriate for, respectively, major decisions and substantive everyday decisions. ‘Everyday SDM’ focuses on eliciting individual patient preferences but in a less detailed process than ‘detailed SDM’ [14]. Examples of substantive everyday decisions include: at what age to initiate breast cancer screening or prescribing cardiovascular preventive medicine [14]. Related to decision impact is a decision’s *irreversibility*, which was mentioned as a decision characteristic where SDM is deemed appropriate [70,81]. The irreversible impact of decisions in surgery for example, can potentially result in a radical life and health status change, making SDM especially important [70].

3.3.7. Patient commitment needed

Multiple authors identified decisions that require patient commitment for carrying out the treatment as decisions for which SDM is appropriate. Requiring such patient commitment particularly applies in (lifestyle) decisions in chronic care. Authors argued that an increase in patients’ involvement in decision making can stimulate patients to implement the decision [16,17,31]. In addition, SDM can help to align treatment options with individual patients needs and circumstances, and in turn positively affect treatment adherence [17,31,61,66,76]. With similar reasoning, authors advised practicing SDM in decisions requiring significant time commitment of patients, such as physiotherapy for chronic pain [54] or decisions regarding food allergy [60]. In addition,

exploring patients' circumstances and needs might improve the patient-clinician relationship, creating a situation in which patients feel safe to express their worries and beliefs. This enables to jointly identify the best fitting treatment, to which the patient is likely to adhere [66].

It was further argued that the involvement of patients in decision processes is essential when patients need to implement decisions in their own space and with their own resources. Patients know best how to evaluate options in terms of how realistic and feasible they are for the patient to carry them out [17]. Exploring patients' potential barriers for implementing the decision is especially important when decisions are *reversible*. Therapy adherence may be more difficult for patients if they have the possibility to revisit decisions over an extended period of time without immediate harm, for example decisions on hypertension treatment [17].

3.3.8. Decisions known to often entail misalignment in views

Different authors considered SDM appropriate for decisions for which it is known *beforehand* that clinicians' and patients' views are likely to be misaligned and each perspective needs to be considered. Examples included planning psychotherapy in youth mental health [31]

and non-emergent decisions in the intensive care unit which are possibly incompatible with common patient goals, such as offering a permanent feeding tube or placing a suprapubic urinary catheter [56]. Enrolment in clinical research intrinsically contains misalignment between the researchers' and patients' views because of competing interests. An alternative form for SDM was proposed here, focussing mainly on properly informing the patient and explicating the alignment of different options with patients' personal contexts and overall goals [86].

3.3.9. Every decision

Some authors considered SDM to be appropriate in every decision [28,62,79,86,92]. To illustrate, it was proposed that in surgery: "*all delivered care decisions independent of the level of evidence regarding treatment options or presence of equipoise SDM should be practiced*" [92]. Other authors nuanced this position by stating that in every decision reasonable attempts for SDM should be made [67] or that SDM is most commonly applied in decisions with clinical uncertainty, but can also be applied in decisions with certainty [62].

Tables 4 and 5 offers an overview of all the decision characteristics identified. In green, it shows the variety of decision characteristics for

Table 4

Overview of decision characteristics identified.

SDM deemed appropriate
<ul style="list-style-type: none"> • Preference-sensitive (11)¹ • Multiple options (11) • Equipoise (10) • Impact of decision is high (7) • Patient commitment is needed to carry out the decision (5) • Uncertainty of evidence (4) • Uncertainty of outcomes (4) • Trade-off involved in decision (2) • Uncertainty (2) • No best option (2) • One best option but likely to disagree (1) • Known to often entail misalignment in views (1) • Every decision (1) • Reversibility of decision (1) • Weight of the decision (heavy) • Long time frame to make decision • Irreversibility of decision • Value-sensitive
SDM deemed appropriate versus NOT appropriate in different papers ²
<ul style="list-style-type: none"> • One best option (3) • Weight of the decision (light) (1) • Trade-off between individual impact and public benefit • Short time frame to make decision
SDM deemed NOT appropriate
<ul style="list-style-type: none"> • No equipoise (1) • Patient request for therapy in conflict with clinician's judgment • Immediate life-saving measures needed • Potential threat for public safety • Options restricted by legal/institutional policies • Clinician implements decision (based on clinical expertise) • Behaviour change needed to carry out decision

1 (number) = in how many papers the decision characteristic was mentioned, only counted in papers describing SDM models (strategy 1). Decision characteristics without a number are only mentioned in papers included through strategy 2.

2 Decision characteristics both identified as a decision characteristic for which SDM is appropriate and for which it is not appropriate according to different authors.

which SDM was deemed appropriate and how often these were mentioned in papers describing SDM models (strategy 1). The most frequently mentioned decision characteristics (*preference-sensitive, multiple options* and *equipoise*) for which SDM was deemed appropriate had overlap; they all portrayed the presence of multiple (reasonable) options'. Other frequently-mentioned decision characteristics also related to the availability of multiple options: *trade-off* and *uncertainty*. Regardless of how decisions with multiple options are described or phrased, it clearly is deemed an important indicator for the appropriateness of SDM. Other decision characteristics did not relate to the number of options of the decision, such as: *decision impact, who is implementing the decision*, or the *reversibility/time frame* in which a decision can be made.

3.4. Decision characteristics on which authors differed regarding whether they deem SDM appropriate or not

3.4.1. Weight of the decision

Decisions described as 'major' [78,96,98], 'complex' [73], or 'important' [57] were all considered as decisions for which SDM is appropriate. Examples of such decisions included: hip replacement to manage pain, treatment for newly-diagnosed breast or prostate cancer [78], starting immunomodulatory therapies for multiple sclerosis [88], or surgery for carpal tunnel syndrome [57]. However, some authors argued that SDM is also applicable in case of other decisions that might be less 'major', as long as they entail multiple reasonable options with different side-effects and benefits. This was illustrated with the choice of cholesterol-lowering therapy for patients with no known coronary heart disease [78]. Other authors referred to the need for both patients and clinicians to become proficient in SDM, starting with minor decisions: "We are not surprised that patients shun making decisions about treatment for breast cancer if their prior experience gave little opportunity or encouragement in relatively minor medical situations" [33].

Yet other authors argued that some decisions can be so unimportant from a clinical perspective, that even when it may be appropriate to apply SDM because of the available multiple options with similar effects, it can be unfeasible to apply SDM for these decisions. An example included the decision between a cotton elastic compression wrap or a soft padding bandage in case of orthosis [57].

3.4.2. Time frame to make decisions

Some authors considered a *long time frame* to make decisions as a decision characteristic making SDM appropriate [56]. Having a *short time frame* to make decisions was mentioned both as a decision characteristic making SDM appropriate [67,81,97] and inappropriate [21, 32]. Examples of decisions for which authors considered SDM appropriate even though there is a short time frame to make the decision, are do-not-resuscitate decisions and cyanoacrylate versus sutures in treating wounds [67]. These authors further indicated that SDM is 'an ethical imperative, especially in the emergency department' [67].

Other authors deemed SDM not appropriate when decisions must be made quickly and in an emergency setting [21,32]. They mentioned that SDM was only appropriate when all of the following criteria were met: 1) clinical equipoise, 2) adequate/sufficient patient decision-making ability and 3) sufficient time. If one criteria is not met, other decision-making approaches apply, such as persuasion, informed consent, or physician-directed decision-making. An exception includes treatment that is incongruent with patients' goals, such as performing intubation to a terminally-ill patient in respiratory distress [32].

3.4.3. Decisions with one best option

Several authors argued that SDM can still be appropriate when only one best option exists. This may be the case when the decision encompasses other decisions that may be malleable and suitable for SDM, e.g. decisions about specifying treatment goals and deciding who to include as treatment participants in youth psychotherapy [31]. SDM was also

deemed applicable for decisions with one best option when illness severity is low, for example the decision about starting an antihistamine for mild seasonal allergies [76]. Moreover, decision situations with one best option in which it is *known beforehand that patients and clinicians are likely to disagree*, may benefit from SDM [31,82]. SDM was considered to improve the decision process by integrating evidence whilst informing the patient and elucidating the patients' perspective, which might differ from clinicians' [18,31,34]. For example, a mother demanding antibiotics for her child with a viral upper respiratory infection might come to understand the options better through an SDM process, and therefore more easily accept discharge without antibiotics [34]. However, other authors, using the same example of prescribing antibiotics for a viral respiratory infection, argued that it is not yet known whether SDM is effective or practical in such a decision entailing disagreement. At the same time, they also emphasize that the underlying communicative elements of SDM might benefit these decision situations and possibly prevent unnecessary antibiotic prescribing [58]. Following the same reasoning, some authors suggested that the steps of SDM should be followed in decisions with one best option, particularly the exploration of preferences. However, eventually clinicians may nudge patients according to their view [76]. Such a process was described by others as: 'an informed decision engineered according to doctor preference' in which the SDM process is not fully neglected, but ultimate decisional authority lies with the clinician in case of a possible 'incorrect' decision [59]. Authors of one paper identified a common set of communication skills from both SDM (in particular how to assist patients in identifying or developing their preferences), motivational interviewing and negotiation for decisional situations with one best option, which they named 'SDM-PLUS' [82].

Other authors considered decision situations with one best option as decisions in which SDM is inappropriate [9,10,32,62,78,81,91,94,95, 99]. Examples included decisions in medically threatening situations, such as antibiotics for sepsis, hospital admission for acute myocardial infarction, and melanoma resection [10,32,62,95,99]. Authors explained that SDM does not apply/is not required in these situations entailing high risk, because there is no 'real' choice [9,10,99]. Instead, an informed consent process is required [10], and negotiation and persuasion might be needed [32,95]. Especially when there is a high change of cure (with the best option), a clinician recommendation instead of SDM is considered 'ethically justifiable' [94]. Authors emphasize the importance of adequately informing patients in these processes [32,91,95]. The authors' choice of decision examples implied that refraining from doing the 'best treatment option' can cause harm to the patient, but this was not explicitly stated. An exception where SDM might still apply was mentioned in one paper: when religious beliefs go against the dominant choice, for example, an adult Jehovah's witness refusing blood transfusion because he believes this may jeopardize his chance on eternal life [95].

Decision examples with one best option and entailing low risk were also mentioned, such as lowering a diuretic because of high potassium levels [10]. Here, 'simple consent', a less extensive version of informed consent, was deemed sufficient [10]. Lastly, for decisions in managing chronic condition, which may often entail one best option, authors proposed that other strategies, such as motivational interviewing [78, 81], or even persuasion [78], might be a better fitting approach than SDM, and SDM 'might not be worth the investment' [81].

3.4.4. Trade-off between individual impact and public benefit

A special form of trade-off in decisions that authors mentioned was a *trade-off between individual impact and public benefit*, for example in decisions regarding vaccinations [72]. An argument for practicing SDM in these situations was that SDM can help make sense of available data and communicate the difference between population- and individual-based estimates of risks and benefits [72]. Other authors argued that it may be justifiable not to apply SDM to these decisions when potential public health benefits outweigh individual burden, particularly in case of

emergency [93]. They noted however that assessing this balance is difficult. This was illustrated by the decision whether or not to perform diagnostics on a child with bloody stool when there is suspicion for an E. coli outbreak; the minimal benefit and potential hassle in collecting stool for the patient and parent should be balanced against the potential public health benefit [93].

In summary, most ambiguity occurred regarding the decision characteristic ‘*decisions with one best option*’. SDM might be beneficial in these decisions when SDM elements such as sharing information and exploring preferences are effectively incorporated in the conversation. However, when there is a possibility of choosing a ‘wrong’ option, it is questioned whether the ultimate decisional responsibility truly lies with both the patient and the clinician, or rather with the clinician alone. Clinician-directed decision making strategies may be justified whilst still incorporating important (communicative) elements of SDM. Although major decisions were more frequently associated with SDM, minor decisions were also considered appropriate for SDM; as long as multiple reasonable options exist. Again, this was only considered so to some degree: decisions that are too unimportant were considered unfeasible to share. Authors did not state criteria for determining the weight/importance of decisions. Lastly, in decisions to be made in a short time frame, SDM might still be appropriate or even needed, unless medical urgency limits the time available for SDM. In the latter situation, SDM is potentially harmful and not appropriate, unless the treatment is incongruent with patients’ goals.

3.5. Decision characteristics for which SDM is deemed NOT appropriate

3.5.1. Patient request for therapy in conflict with clinician’s judgment

Authors deem SDM inappropriate when patients and clinicians hold conflicting views at the time of decision making. Reasons for such conflicts may be inappropriate patient requests, or inappropriate patient responses to medical situations. Examples include medically futile aggressive treatments in the face of inevitable death [67], excessive opioid prescriptions [54,67], and antipsychotic medication management [85]. In these situations, different authors believed SDM not to be possible [67], to be inappropriate [98], or challenging [54]. Clinical judgment may overrule inappropriate patient requests [54,98] or requests incompatible with best patients’ interest [67,85]. Authors proposed conflict resolution strategies instead of SDM [98], or informing patients on the clinician’s decision and offering alternatives if appropriate, such as a care transfer [67].

3.5.2. Immediate life-saving measures needed

Multiple authors considered SDM not appropriate when the decision is made under circumstances in which immediate life-saving measures are needed, such as: acute surgery decisions [70]; starting antibiotics for bacterial meningitis [62]; or cardiopulmonary resuscitation for an acutely unstable patient [56]. In these examples, delaying treatment initiation is potentially harmful. SDM is also considered ‘logistically impractical’ when a patient is acutely unstable [56]. Authors suggested to weigh per situation, whether time is crucial for life-saving measures or there is time to discuss options [70]. Others suggested that in making these decisions, patients should rather be informed than invited to participate [62]. Furthermore, authors recommend to discuss potential future (emergent) treatments prospectively as part of advance care planning [56].

3.5.3. Potential threat for public safety

SDM was not considered applicable and even potentially harmful in case decisions may impact public safety, or patients’ own safety [82,85]. Examples included discharging suicidal patients [82] or starting antipsychotic treatment in psychotic patients [85]. A paternalistic or directive approach was deemed needed in these cases [82,85].

3.5.4. Options restricted by legal and/or institutional policies

SDM could be constrained when legal or institutional policies restrict choice, as is the case in opioid prescribing [54], and whether or not to use extracorporeal life support (ECLS) in children with submersion injury [93]. Practice variation in the use of ECLS across paediatric centres indicates that there is not one best option, but since it is a scarce resource, its availability overrules the ability to employ SDM [93].

3.5.5. Clinician implements the decision (based on clinical expertise)

Multiple authors considered SDM logistically impractical [98] or even ‘absurd’ [93] in routine care decisions based on clinical expertise, such as the choice of vasoactive drip rates in the intensive care unit [98] or the frequency of checking vital signs [93]. In decisions that the clinician implements and for which the clinician is primarily responsible, the success of the implemented therapy can be a function of the clinician’s expertise. A clinician may hold particular experience and comfort with the different options, which may possibly affect the success of implementing the decision. For these decisions, such as the choice of ketamine versus propofol to sedate patients for fracture reduction [76], more ‘provider-oriented’ rather than ‘shared’ - decision making was considered justified [76].

3.5.6. Patient behaviour change necessary

When patient behaviour change is needed, motivational interviewing may be more appropriate than SDM [83]. The authors provided the example of whether or not to perform gastric bypass surgery for weight reduction. They considered SDM not applicable if the patient was not yet willing to lose weight, and first deemed a behaviour change process necessary [83].

To summarize, the original authors clearly agreed that in urgent situations in which life-saving measures are needed, and/or there is a potential threat for the patient’s or public safety, SDM is not appropriate and can even be harmful. A clinician directive approach is then needed. SDM might not be harmful, but rather impractical or unnecessary in decisions based on clinical expertise and implemented by the clinician (technical decisions) or when decisions ask for other conversation strategies because behaviour change is needed. Lastly, SDM can be restricted when a patient’s request is in conflict with clinicians’ judgment or when the decision is constrained by legal or institutional policies.

3.6. The settings of the decision characteristics

The decisions and decision characteristics identified in this review were collected from a broad range of clinical settings. Table 5 shows how often authors mentioned a particular decision characteristic per setting. Equipose, preference-sensitive decisions and decisions with high impact were mentioned in the highest number of different settings. Notably, decisions with one best option for which SDM was deemed *appropriate* were mentioned in mental healthcare and paediatric care, whilst decisions with one best option for which SDM was deemed *inappropriate* were most often mentioned in the emergency department, and also in gynaecology, neurology, oncology, primary care and surgery. This might relate to how urgent the decision is, which was mentioned as a limit to the applicability of SDM. Overall, decision characteristics for which SDM was deemed appropriate were most often mentioned in oncology, primary care/chronic care and paediatric care, and those or which SDM was deemed inappropriate were most often mentioned in primary/chronic care, surgery, and emergency care.

4. Discussion and conclusion

4.1. Discussion

We explored how authors describe the applicability of SDM depending on how decisions are characterized. Decision characteristics

Table 5
List of decision characteristics and how often they were mentioned per clinical setting.

	Allergy care	Childbearing mother with disease	Elderly care	Emergency Department	Enrolment research	Gynaecology	Intensive Care Unit	Mental healthcare	Neurology	Oncology	Paediatric care	Physiotherapy	Primary care / chronic care	Surgery / invasive treatment	Urology	Vaccination
SDM deemed appropriate																
Total number of decision characteristics per setting →	8	1	2	7	2	4	6	15	6	46	19	1	29	16	1	1
Preference-sensitive	2	1	1	1	1	2	3	2	11	4	4	6	1			
Multiple options	1						1		8	4	4	3				
Equipoise		1		3	1	2	2	1	4		1	2	1	1		
Impact of decision is high	1			1		1	3		6	2	3	2				
Patient commitment is needed to carry out the decision	3		1				1			1	5					
Uncertainty of evidence									4	3	2	1				
Uncertainty of outcomes									5	1	2					
Trade-off involved in decision							1			1	2	1				
Uncertainty								1	3				1			
No best option									2	2			1			
One best option but likely to disagree							2	1								
Decision known to often entail misalignment in views	1			1		1	1									
Every decision				1												
Reversibility of the decision													1			
Long time frame to make decision							1									
Weight of the decision (heavy)							1	2	1				3			
Irreversibility of the decision													2			
Value-sensitive						1										
One best option							1			1						
Short time frame to make decision				1					1			1				
Weight of the decision (light)												1				
Trade-off individual impact and public benefit																1
SDM deemed NOT appropriate																
Total number of decision characteristics per setting →				6	1	2	4	2	3	3			7	6		
No equipoise													1			
Patient request for therapy in conflict with clinician's judgment				1			1			1		1				
Immediate life saving measures needed						1		1						1		
Clinician implements decision (based on clinical expertise)						1				1				1		
Decision entails potential threat for public safety							2									
Options restricted by legal/institutional policies							1						1			
Behaviour change needed to carry out decision													1			
One best option				4	1			1	3			3	3			
Short time frame to make decision				1												
Weight of the decision (light)														1		
Trade-off individual impact and public benefit										1						

- The more saturated the colour, the more frequently a decision characteristic was mentioned in that particular setting.
 - [Grey shading] = decision characteristic both identified as a decision characteristic for which SDM is appropriate and for which it is not appropriate according to different authors.

Mental healthcare includes: mental health in general and specifically in youth.

Neurology includes: Multiple sclerosis, epilepsy, disorders of unconsciousness, meningitis.

Oncology includes: breast, prostate and head and neck cancer, unspecified, unspecified in paediatric patients.

Paediatric care includes: paediatrics in general, emergency, children with severe neurologic impairment, genital surgery children with disorders of sex development.

Primary care and chronic care includes: hypertension, pain management, cardiovascular disease management, lifestyle, chronic kidney disease, end-of-life decisions, lung cancer screening.

Allergy care includes: paediatric allergy care and food allergy care.

Emergency Department includes: cardiovascular diagnoses and care delivered at the emergency department in general.

for which SDM was deemed appropriate were often related to a decision having multiple (reasonable options), including ‘preference-sensitive decisions’ and decisions with ‘equipoise’. However, SDM was also deemed appropriate for less ‘typical’ decision characteristics, such as the effect of the decision in terms of impact and/or the level of patient engagement necessary to implement the decision. Some decision characteristics made SDM seem less appropriate or inappropriate. First, legal or institutional requirements may constrain whether SDM can take place. Second, in technical routine decisions carried out solely by the clinician and/or decisions that are clinically too unimportant, it may be unfeasible to engage in SDM. The challenge therein lies in deciding what those ‘technical’ and ‘unimportant’ decisions are, as such qualification may vary across patients. It is yet unknown whether patients would want to be included in technical decisions, which may lead to information overload. This could potentially impede their capacity to engage in decisions for which their input is more important. Overall, caution should be taken in assuming the importance of decisions for patients, and the ideal approach would be to ‘just ask them’. However, in the turmoil of daily practice this may be impossible for all decisions. Third, in some decisions, SDM may potentially be harmful. This can be the case when ‘wrong’ decisions can be made, leading to a potential threat to the patient or to others, and/or when decisions need to be made quickly due to medical urgency. However, even under these extreme conditions, when (life-saving) treatment is incongruent with a patient’s goal, SDM may still be needed. This shows the difficulty of determining ‘clear-cut’ guidelines as to when SDM is (in)appropriate.

This difficulty is further underlined by the ambiguity reflected in decision characteristics that different authors used to describe either as decisions for which SDM is appropriate versus inappropriate. In some cases, even exactly the same decision examples were used to argue for or against the appropriateness of SDM. Differences in definitions of SDM to which the original authors adhered could explain the different viewpoints. To illustrate, some authors reasoned that SDM is appropriate in decisions with one best option entailing (the possibility of) conflict, because elements of SDM can (still) benefit the decision process. Others considered SDM not to be appropriate in this case because even though steps of SDM should largely be followed, eventually the clinician is justified to steer towards the ‘better’ option, when a ‘wrong’ decision could be made. The different authors may vary in what they believe should be considered as SDM: following a large part of the process or also ultimately deciding together? Thus, not having a universal definition of SDM [1–3] may have caused some of the ambiguity in these study findings. Original authors used different definitions of SDM, or did not provide a definition. Additionally, some authors proposed different forms of SDM to be appropriate in different decision situations [14,65,76,86].

Regardless of the SDM definition used and whether authors deemed SDM appropriate or not, the importance of applying core elements of SDM, in particular exploring preferences, and the communicative behaviours needed for these core SDM elements (e.g., listening to the patient and leaving room for the patient to express themselves) was recognized. It can be argued that particular core elements of SDM and underlying communicative behaviours are always important, regardless of the decision to be made. SDM then is not something to be turned ‘on’ or ‘off’, but rather a decision-making approach entailing particular communication behaviours that become part of adequate communication during any clinical encounter. This brings us back to the lack of a unique definition of SDM, as it leaves open what should still be seen as SDM? Simply put, clinicians should always thrive for ‘good communication’ to happen. SDM focuses specifically on the actual and full involvement of patients in decisions that are made about their care. In today’s healthcare, we should be careful with the fluidity between the concepts of ‘SDM’ and ‘good communication’. The normality and importance of sharing decisions with patients in today’s practice is not fully embraced or implemented yet. Agreeing on a more tangible definition of SDM may allow healthcare culture to change more easily into

one in which patients get more say in the care that they receive. When we see SDM as an upgrade of ‘a good conversation’ the message to implement SDM may spread less effectively. Thus, we do think that a clear and shared idea on what an SDM process entails, or at least its core, would foster its successful implementation in clinical practice.

Core elements of SDM processes have already for a large part been identified [1–3]. A first step forward would be to determine which communicative behaviours are then minimally required to achieve SDM, depending on the decisional situation. For example, is there a different emphasis on certain communication behaviours for ‘minor’ routine care decisions than for major preference-sensitive decisions? Can agreement be reached regarding what communication behaviours would be minimally required when making decisions for which we found ambiguity whether or not SDM is appropriate? Such a framework would assist clinicians in implementing SDM in their daily encounters. Hargraves et al. developed a framework relevant to this proposition, as it describes different kinds of SDM, including their associated communication strategies, depending on the problem that SDM tries to solve in different (decisional) situations [102,103].

In interpreting the results of this study, it should first be noted that we focused on when original authors considered SDM to be appropriate, not when patients or clinicians prefer SDM or believe it to be appropriate. Evidence suggests that, when asked, patients and clinicians identify comparable decision characteristics to determine the applicability of SDM, such as time available for decision making, number of therapeutic options, and/or available evidence on efficacy [104]. We do not intend to make recommendations to clinicians about whether or not they should try and engage in SDM in particular decision situations. As illustrated above, knowing when SDM is appropriate or not is not an exact science and (communicative) elements of SDM should probably not be fully switched ‘on’ or ‘off’. Furthermore, some authors consider SDM as something to always thrive for, because it can be seen as an ethical imperative to foster patient autonomy [22,28,80,85,105]. In addition, not only the decision itself, but also other factors affect the applicability of SDM (or the possibility to apply it), such as patient cognition or patient preferences for SDM [106,107].

A strength of our review is that we combined different search strategies to identify papers describing decision characteristics. Furthermore, to our knowledge, this is the first study to describe how authors explain the frequently-used terms ‘preference-sensitive’ and ‘equipoise’, which can serve as input to developing consistent definitions of these terms. This study also has limitations. First, we made choices in grouping the decision characteristics which may not always reflect the original authors’ intentions. Second, we based our understanding of the terms ‘preference-sensitive’ and ‘equipoise’ on the descriptions from the included papers, without also incorporating information from the literature that the papers referenced, as our aim was to explore how the authors of the included papers had chosen to describe decisions. Third, we could not create mutually exclusive categories when grouping the decision characteristics while staying close to the text in the papers. For example, we extracted ‘multiple options’ and ‘uncertainty’ separately if preference-sensitivity was not mentioned, even though other authors described preference-sensitivity in terms of multiple options and/or uncertainty. Fourth, the original authors’ descriptions determined the limit to how extensively we could describe the decision characteristics, as we stayed close to their wording. For example, what exactly defines ‘major decisions’ was not always further explicated.

4.2. Practice implications

Most clinicians might already acknowledge the relevance of SDM in preference-sensitive decisions, decisions with multiple (reasonable) options, and situations of equipoise. This review shows that SDM can be relevant to decisions with other characteristics too, such as *when patient commitment is needed to carry out the decision* or decisions with *one best option*. Practicing SDM in these ‘less typical’ decisional situations can

even come with benefits for clinicians, such as improving their relationship with patients, offer care that fits better with their patients' preferences and personal circumstances, improve patients' knowledge, and increasingly activate patients in their own care. This is not to say that SDM should 'simply' always be attempted, as this may engender potentially adverse consequences in certain circumstances, especially when there is medical urgency. Neither would it suffice to only apply SDM for a limited amount of decisional situations. In most cases an SDM approach to decision making would not hurt, the process itself might even lead to benefits for both clinicians and patients. This leaves us somewhere in the middle with regard to what recommendations could be made. We do hope that clinicians and patients will soon have fully embraced the idea of sharing decisions, and that they practice SDM in decisions for which its relevance seems undisputed. This overview can help to identify when SDM should be thrived for and when it may be unfitting. The broad range of decisions for which the relevance of SDM is recognized can create awareness in clinicians in particular. It may stimulate them to (re)evaluate when they choose to try and engage in SDM, including decisions for which they did not consider SDM before. After all, it is the clinician who has the largest role in initiating SDM and it is up to them to navigate their ethical compass in trying to tailor their conversational strategy to the patient, the decision problem, and the circumstances as best as possible. Additionally, the current overview can provide input into SDM training programs, in which it is often asked when one should try and engage in SDM. These findings may finally inform campaigns and educational programs advocating for SDM, as it helps to determine in which settings and for which decision characteristics the need for SDM is commonly acknowledged, as well as when SDM is considered challenging or inappropriate.

4.3. Conclusion

Our review summarizes original authors' statements about decision characteristics for which SDM is considered to be appropriate or not. Our findings show a broad range of decision characteristics for which SDM is deemed appropriate, the ambiguity of some, and the limits of the applicability of SDM for certain decisions. Deciding when to apply SDM is no exact science, and communicative behaviour and core elements underlying the SDM process might be needed in most clinical encounters. Identifying which SDM elements are always required, and which may vary depending on the decisional situation needs to be further investigated. This overview of decisions may stimulate clinicians to (re-) evaluate SDM as the approach of choice in making decisions in clinical practice, and to further develop their ethical compass as when to try and engage in SDM.

CRediT authorship contribution statement

Dorinde E.M. van der Horst: Methodology, Investigation, Formal analysis, Conceptualization, Writing – original draft. **Mirjam M. Garvelink:** Investigation, Validation, Writing – review & editing. **Willem Jan W. Bos:** Conceptualization, Supervision, Writing – review & editing. **Anne M. Stiggelbout:** Conceptualization, Supervision, Writing – review & editing. **Arwen H. Pieterse:** Methodology, Investigation, Validation, Writing – review & editing.

Funding

This work was supported by a personal grant to WB from St. Antonius hospital and funding from the Netherlands Organization for Health Research and development (ZonMW) (registration number 516007001).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence

the work reported in this paper.

Acknowledgments

The authors acknowledge the supportive work of Jan Schoones in developing the search strategy.

Authors contribution

The idea for the article originated from WB, AS and DH. DH performed the literature search and wrote the initial draft of the article. DH and AP conducted the title/abstract and full text screening. DH, AP and MG performed data analysis. WB, AS, MG and AP all contributed to writing the article by providing feedback and rewriting sections.

Declaration of interest

None.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.pec.2022.09.015.

References

- [1] Bomhof-Roordink H, Gärtner FR, Stiggelbout AM, Pieterse AH. Key components of shared decision making models: a systematic review. *BMJ Open* 2019;9. <https://doi.org/10.1136/bmjopen-2019-031763>.
- [2] Makoul G, Clayman ML. An integrative model of shared decision making in medical encounters. *Patient Educ Couns* 2006;60:301–12. <https://doi.org/10.1016/j.pec.2005.06.010>.
- [3] Moumjid N, Gafni A, Brémond A, Carrère MO. Shared decision making in the medical encounter: are we all talking about the same thing. *Med Decis Mak* 2007; 27:539–46. <https://doi.org/10.1177/0272989X07306779>.
- [4] Elwyn G, Frosch D, Thomson R, Joseph-Williams N, Lloyd A, Kinnersley P, et al. Shared decision making: a model for clinical practice. *J Gen Intern Med* 2012;27: 1361–7. <https://doi.org/10.1007/s11606-012-2077-6>.
- [5] Stiggelbout AM, Pieterse AH, de Haes J.C.J.M. Shared decision making: concepts, evidence, and practice. *Patient Educ Couns* 2015;98:1172–9. <https://doi.org/10.1016/j.pec.2015.06.022>.
- [6] Coulter A. National strategies for implementing shared decision making (engl.). *Gütersloh, Germany: Bertelsmann Stiftung*; 2018. p. 66.
- [7] Stacey D, Légaré F, Lewis K, Barry MJ, Bennett CL, Eden KB, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev* 2017;(2017). <https://doi.org/10.1002/14651858.CD001431.pub5>.
- [8] Merchant F, Dickert N, Horward D. Mandatory shared decision making by the centers for medicare & medicaid services for cardiovascular procedures and other tests Faisal. *JAMA* 2018;320:641–2. <https://doi.org/10.1001/jama.2018.6617>.
- [9] Whitney SN. A new model of medical decisions: exploring the limits of shared decision making. *Med Decis Mak* 2003;23:275–80. <https://doi.org/10.1177/0272989X03256006>.
- [10] Whitney SN, McGuire AL, McCullough LB. A typology of shared decision making, informed consent, and simple consent. *Ann Intern Med* 2003;140:54–9.
- [11] Charles C, Gafni A, Whelan T. Shared decision-making in the medical encounter: what does it mean? (or it takes at least two to tango); 1997.
- [12] Grant E v, Summapund J, Matlock DD, Vaughan Dickson V, Iqbal S, Patel S, et al. Patient and cardiologist perspectives on shared decision making in the treatment of older adults hospitalized for acute myocardial infarction. *Med Decis Mak* 2020; 40:279–88. <https://doi.org/10.1177/0272989X20912293>.
- [13] Schoenfeld EM, Goff SL, Elia TR, Khordipour ER, Nault KA, Lindenauer PK, et al. Physician-identified barriers to and facilitators of shared decision-making in the Emergency Department: an exploratory analysis. *Emerg Med J* 2019;36:346–54. <https://doi.org/10.1136/emered-2018-208242>.
- [14] Caverly TJ, Hayward RA. Dealing with the lack of time for detailed shared decision-making in primary care: everyday shared decision-making. *J Gen Intern Med* 2020;35:3045–9. <https://doi.org/10.1007/s11606-020-06043-2>.
- [15] Navar AM, Stone NJ, Martin SS. What to say and how to say it: effective communication for cardiovascular disease prevention. *Curr Opin Cardiol* 2016; 31:537–44.
- [16] Murray E, Charles C, Gafni A. Shared decision-making in primary care: tailoring the Charles et al. model to fit the context of general practice. *Patient Educ Couns* 2006;62:205–11. <https://doi.org/10.1016/j.pec.2005.07.003>.
- [17] Montori VM, Gafni A, Charles C. A shared treatment decision-making approach between patients with chronic conditions and their clinicians: the case of diabetes. *Health Expect* 2006;9:25–36. <https://doi.org/10.1111/j.1369-7625.2006.00359.x>.

- [18] Moore CL, Kaplan SL. A framework and resources for shared decision making: opportunities for improved physical therapy outcomes. *Phys Ther* 2018;98:1022–36. <https://doi.org/10.1093/PTJ/PZY095>.
- [19] Park ES, Cho IY. Shared decision-making in the paediatric field: a literature review and concept analysis. *Scand J Caring Sci* 2018;32:478–89.
- [20] Gillick MR. Re-engineering shared decision-making. *J Med Ethics* 2015;41:785–8. <https://doi.org/10.1136/medethics-2014-102618>.
- [21] Probst MA, Noseworthy PA, Brito JP, Hess EP. Shared decision-making as the future of emergency cardiology. *Can J Cardiol* 2018;34:117–24. <https://doi.org/10.1016/j.cjca.2017.09.014>. Shared.
- [22] Chor J, Stulberg DB, Tillman S. Shared decision-making framework for pelvic examinations in asymptomatic, nonpregnant patients. *Obstet Gynecol* 2019;133:810–4. <https://doi.org/10.1097/AOG.00000000000003166>.
- [23] Ng CJ, Lee YK, Abdullah A, Abu Bakar AI, Tun Firzara AM, Tiew HW. Shared decision making: a dual-layer model to tackling multimorbidity in primary care. *J Eval Clin Pract* 2019;25:1074–9. <https://doi.org/10.1111/jep.13163>.
- [24] Kane HL, Halpern MT, Squiers LB, Treiman KA, McCormack LA. Implementing and evaluating shared decision making in oncology practice. *CA Cancer J Clin* 2014;64:377–88. <https://doi.org/10.3322/caac.21245>.
- [25] Karkazis K, Tamar-Mattis A, Kon AA. Genital surgery for disorders of sex development: implementing a shared decision-making approach. *J Pediatr Endocrinol Metab* 2010;23:789–805. <https://doi.org/10.1515/jpem.2010.129>.
- [26] Jansen J, Naganathan V, Carter SM, McLachlan AJ, Nickel B, Irwig L, et al. Too much medicine in older people? Deprescribing through shared decision making. *BMJ (Online)* 2016;353:1–6. <https://doi.org/10.1136/bmj.i2893>.
- [27] Dobler CC, Midthun DE, Montori VM. Quality of shared decision making in lung cancer screening: the right process, with the right partners, at the right time and place. *Mayo Clin Proc* 2017;92:1612–6. <https://doi.org/10.1016/j.mayocp.2017.08.010>.
- [28] Truglio-Londrigan M, Slyer JT. Shared decision-making for nursing practice: an integrative review. *Open Nurs J* 2018;12:1–14. <https://doi.org/10.2174/1874434601812010001>.
- [29] Lenzen SA, Daniëls R, van Bokhoven MA, van der Weijden T, Beurskens A. Development of a conversation approach for practice nurses aimed at making shared decisions on goals and action plans with primary care patients. *BMC Health Serv Res* 2018;18:1–11. <https://doi.org/10.1186/s12913-018-3734-1>.
- [30] Charles C, Gafni A, Whelan T. Decision-making in the physician-patient encounter: revisiting the shared treatment decision-making model. *Soc Sci Med* 1999;49:651–61.
- [31] Langer DA, Jensen-Doss A. Shared decision-making in youth mental health care: using the evidence to plan treatments collaboratively. *J Clin Child Adolesc Psychol* 2018;47:821–31.
- [32] Probst MA, Kanzaria HK, Schoenfeld EM, Menchine MD, Breslin M, Walsh C, et al. Shared decisionmaking in the emergency department: a guiding framework for clinicians. *Ann Emerg Med* 2017;70:688–95.
- [33] Towle A, Godolphin W. Framework for teaching and learning informed shared decision making. *Br Med J* 1999;319:766–71. <https://doi.org/10.1136/bmj.319.7212.766>.
- [34] Saidinejad M. The patient-centered emergency department. *Adv Pediatr* 2018;65:105–20. <https://doi.org/10.1016/j.yapd.2018.04.008>.
- [35] Grim K, Rosenberg D, Svedberg P, Schön UK. Shared decision-making in mental health care—a user perspective on decisional needs in community-based services. *Int J Qual Stud Health Well-Being* 2016;11:1–8. <https://doi.org/10.3402/qhw.v11.30563>.
- [36] Rusiecki J, Schell J, Rothenberger S, Merriam S, McNeil M, Spagnoletti C. An innovative shared decision-making curriculum for internal medicine residents: findings from the University of Pittsburgh Medical Center. *Acad Med* 2018;93:937–42. <https://doi.org/10.1097/ACM.0000000000001967>.
- [37] Shay LA, Lafata JE. Understanding patient perceptions of shared decision making. *Patient Educ Couns* 2014;96:295–301. <https://doi.org/10.1016/j.pec.2014.07.017>.
- [38] Peek ME, Quinn MT, Gorawara-Bhat R, Odoms-Young A, Wilson SC, Chin MH. How is shared decision-making defined among African-Americans with diabetes. *Patient Educ Couns* 2008;72:450–8. <https://doi.org/10.1016/j.pec.2008.05.018>.
- [39] Joseph-Williams N, Williams D, Wood F, Lloyd A, Brain K, Thomas N, et al. A descriptive model of shared decision making derived from routine implementation in clinical practice ('Implement-SDM'): qualitative study. *Patient Educ Couns* 2019;102:1774–85. <https://doi.org/10.1016/j.pec.2019.07.016>.
- [40] Légaré F, Stacey D, Pouliot S, Gauvin FP, Desroches S, Kryworuchko J, et al. Interprofessionalism and shared decision-making in primary care: a stepwise approach towards a new model. *J Interprof Care* 2011;25:18–25. <https://doi.org/10.3109/13561820.2010.490502>.
- [41] Eliacin J, Salyers MP, Kukla M, Matthias MS. Patients' Understanding of Shared Decision Making in a Mental Health Setting. *Qual Health Res* 2015. <https://doi.org/10.1177/1049732314551060>.
- [42] Rennke S, Yuan P, Monash B, Blankenburg R, Chua I, Harman S, et al. The SDM 3 circle model: a literature synthesis and adaptation for shared decision making in the hospital. *J Hosp Med* 2017;12:1001–8. <https://doi.org/10.12788/jhm.2865>.
- [43] Elwyn G, Edwards A, Kinnersley P, Grol R. Shared decision making and the concept of equipoise: the competences of involving patients in healthcare choices. *Br J Gen Pract* 2000;50:892–7.
- [44] Elwyn G, Tsulukidze M, Edwards A, Légaré F, Newcombe R. Using a "talk" model of shared decision making to propose an observation-based measure: observer OPTIONS Item. *Patient Educ Couns* 2013;93:265–71. <https://doi.org/10.1016/j.pec.2013.08.005>.
- [45] van de Pol MHJ, Fluit CRMG, Lagro J, Slaats YHP, Olde Rikkert MGM, Lagro-Janssen ALM. Expert and patient consensus on a dynamic model for shared decision-making in frail older patients. *Patient Educ Couns* 2016;99:1069–77. <https://doi.org/10.1016/j.pec.2015.12.014>.
- [46] Légaré F, Stacey D, Gagnon S, Dunn S, Pluye P, Frosch D, et al. Validating a conceptual model for an inter-professional approach to shared decision making: a mixed methods study. *J Eval Clin Pract* 2011;17:554–64. <https://doi.org/10.1111/j.1365-2753.2010.01515.x>.
- [47] Lown BA, Hanson JL, Clark WD. Mutual influence in shared decision making: a collaborative study of patients and physicians. *Health Expect* 2009;12:160–74. <https://doi.org/10.1111/j.1369-7625.2008.00525.x>.
- [48] Bomhof-Roordink H, Fischer MJ, van Duijn-Bakker N, Baas-Thijssen MC, van der Weijden T, Stiggelbout AM, et al. Shared decision making in oncology: a model based on patients', health care professionals', and researchers' views. *Psychooncology* 2019;28:139–46. <https://doi.org/10.1002/pon.4923>.
- [49] Simon D, Schorr G, Wirtz M, Vodermaier A, Caspari C, Neuner B, et al. Development and first validation of the shared decision-making questionnaire (SDM-Q). *Patient Educ Couns* 2006;63:319–27. <https://doi.org/10.1016/j.pec.2006.04.012>.
- [50] Volk RJ, Shokar NK, Leal VB, Bulik RJ, Linder SK, Mullen PD, et al. Development and pilot testing of an online case-based approach to shared decision making skills training for clinicians. *BMC Med Inf Decis Mak* 2014;14:1–9. <https://doi.org/10.1186/1472-6947-14-95>.
- [51] Elwyn G, Durand MA, Song J, Aarts J, Barr PJ, Berger Z, et al. A three-talk model for shared decision making: multistage consultation process. *BMJ (Online)* 2017;359. <https://doi.org/10.1136/bmj.j4891>.
- [52] Clarke G, Rosencrance G, Hall RT. Physician-patient relations: no more models. *Am J Bioeth* 2004;4:W16–9. <https://doi.org/10.1162/152651604323097934>.
- [53] Jansen J, McKinn S, Bonner C, Muscat DM, Doust J, McCaffery K. Shared decision-making about cardiovascular disease medication in older people: a qualitative study of patient experiences in general practice. *BMJ Open* 2019;9:e026342.
- [54] Matthias MS, Talib TL, Huffman MA. Managing chronic pain in an opioid crisis: what is the role of shared decision-making? *Health Commun* 2020:1–9.
- [55] Engelhardt EG, Pieterse AH, van der Hout A, de Haes HJ, Kroep JR, van Ufford-Mannesse P, et al. Use of implicit persuasion in decision making about adjuvant cancer treatment: a potential barrier to shared decision making. *Eur J Cancer* 2016;66:55–66.
- [56] Turnbull AE, Sahetya SK, Needham DM. Aligning critical care interventions with patient goals: a modified Delphi study. *Heart Lung* 2016;45:517–24.
- [57] Zhuang T, Shapiro LM, Ring D, Akelman E, Ruch DS, Richard MJ, et al. Which decisions for management of carpal tunnel syndrome and distal radius fractures should be shared. *J Hand Surg Am* 2020;45:690–7 [e7].
- [58] Elwyn G, Gwyn R, Edwards A, Grol R. Is "shared decision-making" feasible in consultations for upper respiratory tract infections? Assessing the influence of antibiotic expectations using discourse analysis. *Health Expect* 1999;2:105–17.
- [59] Gwyn R, Elwyn G. When is a shared decision not (quite) a shared decision? Negotiating preferences in a general practice encounter. *Soc Sci Med* 1999;49:437–47.
- [60] Anagnostou A, Hourihane JOB, Greenhawt M. The role of shared decision making in pediatric food allergy management. *J Allergy Clin Immunol: Pract* 2020;8:46–51. <https://doi.org/10.1016/j.jaip.2019.09.004>.
- [61] Blaiss MS, Steven GC, Bender B, Bukstein DA, Meltzer EO, Winders T. Shared decision making for the allergist. *Ann Allergy Asthma Immunol* 2019;122:463–70.
- [62] Colligan E, Metzler A, Tiryaki E. Shared decision-making in multiple sclerosis. *Mult Scler* 2017;23:185–90.
- [63] de Ligt KM, van Egdom LSE, Koppert LB, Siesling S, van Til JA. Opportunities for personalised follow-up care among patients with breast cancer: a scoping review to identify preference-sensitive decisions. *Eur J Cancer* 2019;28:e13092.
- [64] Forner D, Noel CW, Shuman AG, Hong P, Corsten M, Rac VE, et al. Shared decision-making in head and neck surgery: a review. *JAMA Otolaryngol Head Neck Surg* 2020.
- [65] Herlitz A, Munthe C, Törner M, Forsander G. The counseling, self-care, adherence approach to person-centered care and shared decision making: moral psychology, executive autonomy, and ethics in multi-dimensional care decisions. *Health Commun* 2016;31:964–73.
- [66] Kahler C, Aebi-Popp K, Bernasconi E, de Tejada B, Nadal D, Paioni P, et al. Is breastfeeding an equipoise option in effectively treated HIV-infected mothers in a high-income setting? *Swiss Med Wkly* 2018;148:w14648.
- [67] Kraus CK, Marco CA. Shared decision making in the ED: ethical considerations. *Am J Emerg Med* 2016;34:1668–72.
- [68] Martínez-González NA, Plate A, Senn O, Markun S, Rosemann T, Neuner-Jehle S. Shared decision-making for prostate cancer screening and treatment: a systematic review of randomised controlled trials. *Swiss Med Wkly* 2018;148:w14584.
- [69] Narayan M, Matlock D. Shared decision-making in older persons with cardiovascular disease. *Curr Cardiovasc Risk Rep* 2015;9. (<http://www.springer.com/medicine/cardiology/journal/12170>).
- [70] Niburski K, Guadagno E, Mohtashami S, Poenaru D. Shared decision making in surgery: a scoping review of the literature. *Health Expect* 2020;22:22. (<http://ovid.dsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=medp&AN=32700367>).
- [71] Politi MC, Lewis CL, Frosch DL. Supporting shared decisions when clinical evidence is low. *Med Care Res Rev* 2013;70:1138–288.

- [72] Politi MC, Wolin KY, Légaré F. Implementing clinical practice guidelines about health promotion and disease prevention through shared decision making. *J Gen Intern Med* 2013;28:838–44.
- [73] van Beek-Peeters J, van Noort EHM, Faes MC, de Vos A, van Geldorp MWA, Minkman MMN, et al. Shared decision making in older patients with symptomatic severe aortic stenosis: a systematic review. *Heart* 2020;106:647–55.
- [74] Langford AT, Williams SK, Applegate M, Ogedegbe O, Braithwaite RS. Partnerships to improve shared decision making for patients with hypertension – health equity implications. *Ethn Dis* 2019;29:97–102.
- [75] Greenhawt M. Shared decision-making in the care of a patient with food allergy. *Ann Allergy Asthma Immunol* 2020.
- [76] Opel DJ. A 4-step framework for shared decision-making in pediatrics. *Pediatrics* 2018;142:S149–s156.
- [77] Bailo L, Vergani L, Pravettoni G. Patient preferences as guidance for information framing in a medical shared decision-making approach: the bridge between nudging and patient preferences. *Patient Prefer Adherence* 2019;13:2225–31.
- [78] Barry MJ. Shared decision making: informing and involving patients to do the right thing in health care. *J Ambul Care Manag* 2012;35:90–8.
- [79] Deegan PE. Shared decision making must be adopted, not adapted. *Psychiatr Serv* 2014;65:1487. (<http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2015-04418-013&site=ehost-live>).
- [80] Drake RE, Deegan PE. Shared decision making is an ethical imperative. *Psychiatr Serv* 2009;60:1007. (<http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2009-11985-002&site=ehost-live>).
- [81] Elwyn G, Frosch D, Rollnick S. Dual equipoise shared decision making: definitions for decision and behaviour support interventions. *Implement Sci* 2009;4:75.
- [82] Hamann J, Heres S. Adapting shared decision making for individuals with severe mental illness. *Psychiatr Serv* 2014;65:1483–6.
- [83] Elwyn G, Dehlendorf C, Epstein RM, Marrin K, White J, Frosch DL. Shared decision making and motivational interviewing: achieving patient-centered care across the spectrum of health care problems. *Ann Fam Med* 2014;12:270–5. <https://doi.org/10.1370/afm.1615>.
- [84] Mercuri M, Upshur RE, Gafni A. Guidelines should not recommend the type of decision-making for the medical encounter. *Patient Educ Couns* 2020;15:15. (<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=medp&AN=32473839>).
- [85] Mistler LA, Drake RE. Shared decision making in antipsychotic management. *J Psychiatr Pract* 2008;14:333–44.
- [86] Moulton H, Moulton B, Lahey T, Elwyn G. Can consent to participate in clinical research involve shared decision making? *AMA J Ethics* 2020;22:E365–71.
- [87] Nelson KE, Mahant S. Shared decision-making about assistive technology for the child with severe neurologic impairment. *Pedia Clin N Am* 2014;61:641–52.
- [88] Palace J. Partnership and consent in MS treatment choice. *J Neurol Sci* 2013;335:5–8.
- [89] Pickrell WO, Elwyn G, Smith PE. Shared decision-making in epilepsy management. *Epilepsy Behav* 2015;47:78–82.
- [90] Politi MC, Studts JL, Hayslip JW. Shared decision making in oncology practice: what do oncologists need to know? *Oncologist* 2012;17:91–100.
- [91] Pynnonen MA, Hawley ST. A patient-centered approach to clinical practice guidelines in otolaryngology. *Otolaryngol - Head Neck Surg* 2014;150:910–3. (<http://oto.sagepub.com/content/by/year>).
- [92] Ubbink D, Hageman M, Legemate D. Shared decision-making in surgery. *Surg Technol Int* 2015;26:31–6.
- [93] Weiss EM, Clark JD, Heike CL, Rosenberg AR, Shah SK, Wilfond BS, et al. Gaps in the implementation of shared decision-making: illustrative cases. *Pediatrics* 2019; 143.
- [94] Whitney SN, Ethier AM, Frugé E, Berg S, McCullough LB, Hockenberry M. Decision making in pediatric oncology: who should take the lead? The decisional priority in pediatric oncology model. *J Clin Oncol* 2006;24:160–5.
- [95] Whitney SN, Holmes-Rovner M, Brody H, Schneider C, McCullough LB, Volk RJ, et al. Beyond shared decision making: an expanded typology of medical decisions. *Med Decis Mak* 2008;28:699–705.
- [96] Armstrong MJ. Developing the disorders of consciousness guideline and challenges of integrating shared decision-making into clinical practice. *J Head Trauma Rehabil* 2019;34:199–204. (<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=prem&AN=31058760>).
- [97] Waldron T, Carr T, McMullen L, Westhrop G, Duncan V, Neufeld S, et al. Development of a program theory for shared decision-making: a realist synthesis. *BMC Health Serv Res* 2020;1:1–17.
- [98] Kon AA, Davidson JE, Morrison W, Danis M, White DB, of Critical Care M, et al. Shared decision making in ICUs: an American College of Critical Care Medicine and American Thoracic Society Policy Statement. *Crit Care Med* 2016;44: 188–201.
- [99] Woolf SH. Editorial: the logic and limits of shared decision making. *J Urol* 2001; 166:244–5. [https://doi.org/10.1016/S0022-5347\(05\)66136-8](https://doi.org/10.1016/S0022-5347(05)66136-8).
- [100] Shaw S, Hughes G, Stephens T, Pearse R, Prowle J, Ashcroft RE, et al. Understanding decision making about major surgery: protocol for a qualitative study of shared decision making by high-risk patients and their clinical teams. *BMJ Open* 2020;10:e033703.
- [101] Peek ME, Quinn MT, Gorawara-Bhat R, Odoms-Young A, Wilson SC, Chin MH. How is shared decision-making defined among African-Americans with diabetes. *Patient Educ Couns* 2008;72:450–8. <https://doi.org/10.1016/j.pec.2008.05.018>.
- [102] Hargraves IG, Montori VM, Brito JP, Kunneman M, Shaw K, Lavechia C, et al. Patient education and counseling purposeful SDM: a problem-based approach to caring for patients with shared decision making. *Patient Educ Couns* 2019;102: 1786–92. <https://doi.org/10.1016/j.pec.2019.07.020>.
- [103] Hargraves IG, Fournier AK, Montori VM, Bierman AS. Generalized shared decision making approaches and patient problems. Adapting AHRQ's SHARE approach for purposeful SDM. *Patient Educ Couns* 2020;103:2192–9. <https://doi.org/10.1016/j.pec.2020.06.022>.
- [104] Müller-Engelmann M, Donner-Banzhoff N, Keller H, Rosinger L, Sauer C, Rehfeldt K, et al. When decisions should be shared: a study of social norms in medical decision making using a factorial survey approach. *Med Decis Mak* 2013; 33:37–47. <https://doi.org/10.1177/0272989X12458159>.
- [105] Elwyn G, Tilburt J, Montori V. The ethical imperative for shared decision-making. *Eur J Pers Cent Health* 2013;1:129. <https://doi.org/10.5750/ejpc.v1i1.645>.
- [106] Waldron T, Carr T, McMullen L, Westhrop G, Duncan V, Neufeld SM, et al. Development of a program theory for shared decision-making: a realist synthesis. *BMC Health Serv Res* 2020;20:59.
- [107] Müller-Engelmann M, Keller H, Donner-Banzhoff N, Kronen T. Shared decision making in medicine: the influence of situational treatment factors. *Patient Educ Couns* 2011;82:240–6. <https://doi.org/10.1016/j.pec.2010.04.028>.