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**SYSTEMATIC REVIEW** **Open Access**

# Shared decision-making in type 2 diabetes: a systematic review of patients' preferences and healthcare providers' perspectives

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## Abstract

**Background** Shared decision-making (SDM) is crucial for type 2 diabetes mellitus (T2DM) management due to the complexity of treatment options. This systematic review sought to understand T2DM patients' preferences and diabetes care providers' perspectives regarding SDM, and the barriers and facilitators to SDM.

**Methods** Five databases were searched from 2000 to 2023 (Medline/PubMed, Web of Science, Scopus, PsycINFO, and Embase). All included papers were quantitative and qualitative studies regarding preferences of patients with T2DM for SDM, perspectives of providers on SDM, and their barriers and facilitators to SDM. Quantitative findings were extracted as percentages, and qualitative findings were extracted as presented in the original research paper. Study selection was carried out independently by two authors, with discrepancies resolved by consensus and by consultation with the supervisor. The Joanna Briggs Institute Checklist for Qualitative Research and for Cross Sectional Studies was used to evaluate the risk of bias of included papers.

**Results** Thirty-four studies were included in this review; 22 focused on T2DM patients' decision-making preferences, 7 focused on perspectives of diabetes care providers, and 5 addressed both. Of the 27 studies of T2DM patients, 20 (ten quantitative and ten qualitative studies) reported that respondents preferred and valued SDM and wanted to make decisions in collaboration with a provider. Of the 12 studies of providers, only 5 reported that providers had positive views towards SDM and preferred to involve patients in decision-making. A comprehensive list of SDM facilitators and barriers included patient factors (facilitators like higher health literacy and motivation, and barriers like blind trust in physicians and poor health), provider factors (facilitators like a physician's information-giving behavior and medical knowledge/technical skills, and barriers like a paternalistic attitude and poor interpersonal style), and context factors (facilitators like physician accessibility and availability, and barriers like a lack of system support and low continuity).

**Conclusion** Although SDM is important for most patients living with diabetes, the evidence from included studies suggest that providers in diabetes practice do not universally express positive views towards SDM. Because T2DM patients and their providers need to work together to implement the SDM approach satisfactorily, there is a need to encourage more providers to do so.

**Keywords** Shared decision-making, Type 2 diabetes mellitus, Patient participation, Patient preferences, Patient involvement

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## Introduction

Patient-centered care has been a focus of quality of health care improvement efforts over the past 25 years, and has been defined as care that respects and responds to patient preferences, needs, and values, and ensures that these guide clinical decisions (IOM Crossing the quality chasm, 2001) [1]. Incorporating patient preferences and values into disease management not only increases patient satisfaction but also leads to better compliance, improved health outcomes, and more efficient use of available resources. Barry and Edgman-Levitan (2012) consider the process of actively engaging patients in major health care decisions, referred to as shared decision making (SDM), as the most essential attribute of patient-centered care models [2]. SDM has thus become a standard of person-centered care models. Within these models, optimal SDM is when patients and healthcare providers work together to make informed health care decisions that align with the patient's values, preferences, and clinical situation, aiming for the best possible outcomes [1, 2].

The definition of SDM depends on the disease or condition being treated, i.e., there must be treatment choices. Further, the type of disease is one of the main factors affecting patients' preferences in decision-making [3]. Thus, it is especially important to understand SDM within the context of a specific disease. Type 2 diabetes mellitus (T2DM) is a common, chronic, complex, costly disorder that puts a considerable burden on patients, families, and healthcare systems [4, 5]. In diabetes care, because different evidence-based management options usually need to be considered, each with different ways of placing considerable demands on a patient's life, SDM is essential [6, 7]. Further, the outcomes of T2DM depend strongly on patient self-management (e.g., monitoring glucose, lifestyle modification, controlling diabetes distress) in addition to medical treatments/medications. Thus, when patients actively participate and comprehend the reasons behind care decisions, the effects of their treatment for T2DM are enhanced [8].

Because of this, there are approaches to SDM tailored for people living with T2DM. In this regard, Serrano et al. have suggested three different approaches for SDM application that address particular challenges in diabetes management: information, choice, and conversation [9].

In the information approach for diabetes, it is suggested that if patients are better informed about their diabetes and available therapies, they will be better able to participate in decision-making. Similar to this, it is suggested that better decisions will be made if clinicians have access to patient preferences or context [6, 9]. The choice approach focuses on the importance of patient choice in selecting medications or management strategies. The goal of this approach is to help diabetes patients and their clinicians come to an agreement as to what the best treatment is, with particular focus on helping individuals consider what matters to them as they make a treatment choice [9, 10]. Serrano et al.'s third approach to SDM, conversation, holds that the challenge of making treatment decisions does not stem primarily from a lack of information for patients or clinicians, nor is it primarily about providing people with choice. In this approach it is life with illness that makes deciding on a best course of action challenging. In this approach, the uncertainties, practical difficulties, costs, and emotional strain of living with diabetes and its treatments means there is seldom a simple choice to resolve a clinical diabetes situation. As a result, diabetes patients and their clinicians must work together to create plans of action in response to the troubling and confusing situations. It is via conversation that patients and clinicians explore the situation and discuss the different options (e.g., adding a new diabetes medication) that might meet the demands of the situation [6, 8, 9].

To summarize the Serrano et al. framework for T2DM care, SDM definitions need to be tailored to include not only patients' preferences and values for participating in decisions but also for being fully informed and empowered about their illness and possible treatments and for having in-depth conversations to create a plan of action in light of their situation.

However, the order of SDM approaches is not necessarily rigid or fixed. The importance of the order may vary depending on the context and the specific decision being made. While there are generally suggested sequences for the approaches, it is important to consider the individual needs of the patient and adapt the process accordingly [11]. From a practice perspective, flexibility in the order can be beneficial. Different diabetes patients may have unique preferences or priorities, requiring a personalized strategy to their decision-making process. By allowing flexibility, healthcare providers can tailor the SDM process to meet the specific needs and circumstances of each diabetes patient [12, 13].

Whatever the rational basis of SDM, there is consensus that it is only achievable when both parties (patient and provider) commit to decision-making responsibilities [14–16]. Nonetheless, without providers being willing and interested in SDM, there can be no process of SDM. Diabetes care providers' attitudes and behaviors toward SDM (favorable or negative) therefore affect patients' ability to participate in the decision-making process and the successful implementation of SDM [17]. Thus, it is pivotal to specify the overall level of support for SDM that exists amongst providers in diabetes care.

Another point worth mentioning is the justification for focusing on preferences, even though many people may not have extensive experience with SDM. Focusing on preferences is crucial because these preferences significantly influence the actual practice and effectiveness of SDM. Evidence suggests a correlation between patient preferences for SDM and higher rates of SDM implementation and success [18, 19]. Furthermore, mismatches between patient and provider preferences can create barriers to effective SDM implementation, leading to suboptimal outcomes [20]. Therefore, understanding these preferences can help anticipate challenges and develop strategies to promote and facilitate SDM, ultimately leading to improved patient-centered care and satisfaction [21]. However, to our knowledge, no review of the literature has focused on summarizing qualitative studies with evidence from quantitative studies on preferences of people with T2DM for SDM or considered the perspective of both patients and providers. In this study, we sought to answer the following questions: What are the preferences among patients with T2DM regarding SDM and participation in care plans? What is the perception of providers on SDM in T2DM? What are the barriers and facilitators of SDM from both patients' and providers' perspectives in diabetes care?

## Methods

We planned a systematic review because we had focused on specific research questions. This method allowed us to comprehensively synthesize existing research on SDM in T2DM, and providing a detailed and thorough understanding of both patients' preferences and healthcare providers' perspectives. This review was not registered but is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guideline (Supporting information 1) [22].

### Search strategy

An electronic literature search of the databases Medline/PubMed, Web of Science, Scopus, PsycINFO, and Embase was performed covering the years 01 January 2000 to 30 August 2023. According to the literature, the recency of the publication was strongly related to an increase in preference for shared decisions, especially in and after 2000 [3]. Therefore, we chose the year 2000 as a starting point.

The search was run using Medical Subject Headings (MeSH) and keywords derived from the initial search. As different databases employ different MeSH-terms, the terms were modified to fit each database. Therefore, variations of the following search terms were used: "type 2 diabetes mellitus" AND "shared decision making" OR "patient participation" OR "patient involvement" OR "participatory decision making" OR "patient engagement" OR "patient activation" AND preference OR perception OR perspective. The search strategy used in PubMed included a mix of MeSH terms and keywords searched within the title and abstract as follows:

("Diabetes Mellitus, Type 2" [Mesh]) OR ("Type 2 Diabetes Mellitus" [Title]) OR ("Type 2 Diabetes Mellitus" [Title/Abstract]) AND ("Decision Making, Shared" [Mesh]) OR ("Decision Making" [Mesh]) OR ("Shared Decision Making" [Title/Abstract]) OR ("Participatory Decision Making" [Title/Abstract]) OR ("Patient Participation" [Mesh]) OR ("Participation, Patient" [Mesh]) OR ("Patient Participation" [Title/Abstract]) OR ("Patient Involvement" [Mesh]) OR ("Involvement, Patient" [Mesh]) OR ("Patient Involvement" [Title/Abstract]) OR ("Patient Activation" [Mesh]) OR ("Activation, Patient" [Mesh]) OR ("Patient Activation" [Title/Abstract]) OR ("Patient Engagement" [Mesh]) OR ("Engagement, Patient" [Mesh]) OR ("Patient Engagement" [Title/Abstract]) AND ("Patient Preferences" [Mesh]) OR ("Preference, Patient" [Mesh]) OR ("Preferences, Patient" [Mesh]) OR ("Patient Preferences" [Title/Abstract]) OR ("Perception" [Mesh]) OR ("Healthcare Providers Perspective" [Title/Abstract]) OR ("Physicians Perspective" [Title/Abstract]) OR ("Clinicians Perspective" [Title/Abstract]) OR ("Physicians Preference" [Title/Abstract]) OR ("Clinicians Preference" [Title/Abstract]) OR ("Healthcare Providers Preference" [Title/Abstract]) OR ("Healthcare Providers View" [Title/Abstract]) OR ("Physicians View" [Title/Abstract]) OR ("Clinicians View" [Title/Abstract]) (Language: English, Publication Date: 2000–01-01 to 2023–08–30).

The search terms and search strategies for the other databases appear in Supporting information 2. Additionally, the reference lists of included articles and citation tracking of included studies were checked to identify relevant sources. Important texts and key reviews were also scrutinized to ensure a comprehensive understanding of SDM in diabetes care. Since it was anticipated to find only a small number of publications, a sensitive search strategy was used.

### Study selection and data collection processes

The retrieved documents were exported to the EndNote reference manager (version X9.1, 2019) and checked for duplicates. The documents that remained were screened according to the following inclusion criteria:

1. Studies that incorporated preferences of patients with T2DM for SDM and to be involved in decision making about their care; or studies that incorporated perspectives of providers on SDM and patient

involvement in T2DM; or studies that incorporated perspectives of both of them;
2. Quantitative or qualitative methods studies;
3. Studies published from 01 January 2000 to 30 August 2023;
4. Studies in English; and
5. Peer-reviewed articles and thesis reports.

The manual review was carried out in 2 stages. Two of the authors independently screened all titles and abstracts to identify those pertinent to the research questions (MP and GG). When it was not possible to determine eligibility from the abstract, the full article was screened. Pertinent studies were selected by cross-examining the studies. Disagreements in selecting studies were resolved by discussion and consensus between the two authors and also by consultation with the supervisor (EN).

Studies in the following categories were excluded: letters to the editor, editorials, reviews, books, meeting abstracts, personal opinions, proposed models of care, decision making tools, intervention studies, and papers related to type 1 diabetes. Also, we excluded studies that focused solely on the perceptions of the concept of involvement in the treatment and did not consider the patients' preference and value for doing so. A table of excluded studies with reasons for exclusion appears in Supporting information 3. Since this review aimed to investigate patients' preferences as well as providers' perspectives, studies with quantitative or qualitative methods were included [23].

### Data extraction

Two review authors (MP and AS) extracted data independently from the included studies using a data extraction form. Any discrepancies were resolved by discussion until consensus was reached, or if required, through consultation with the supervisor (EN). Specified data was extracted from each of the studies to compare them: author, country, publication year, study design (qualitative or quantitative methods), the instrument used to measure decision making preference, research objective, study population (number and characteristics of the study group, mean age), patients' decision making preference, providers' perspective to SDM, approach of SDM that had been assessed, and barriers and facilitators of SDM in the diabetes care context. Before extracting the data, we pilot-tested the data extraction form on two of the included studies to ensure that all data elements were captured.

### Data synthesis

We followed the integrated design (also called convergent syntheses) for integrating qualitative and quantitative evidence within a mixed-method review [24]. In integrated design, the methodological differences between qualitative and quantitative studies are minimized as both kinds of studies are viewed as producing findings that can readily be synthesized into one another because they address the same research purposes and questions. This can be done by transforming qualitative data into quantitative data or quantitative data into qualitative data, depending on the needs of the study [24]. One approach to integration is results-based convergent synthesis design. In this design, the qualitative and quantitative findings are first synthesized separately, and then integrated. This is done by comparing and contrasting the findings and looking for ways in which they can be reconciled [24, 25].

To extract patients' decision-making preferences across quantitative studies that used different measures, we dichotomized the findings of each study in terms of 1) whether the majority of respondents in a study preferred to leave their decisions to providers or 2) preferred to share the decision-making and play a more active role [3].

Moreover, across qualitative studies, we extracted findings as presented in the original research paper (e.g., themes identified by the study's authors and the authors' interpretations of these data) as outlined in Sect. 21.11 of the Cochrane Handbook for Systematic Reviews of Interventions [26]. In this regard, in qualitative studies, preferences, values, and opinions about SDM that were mentioned by participants and considered important by the authors were included in the results of this review. In other words, we used the same themes and results reported by the study's authors in their study, without additional interpretation. We used one table to organize and summarize the findings of qualitative and quantitative studies separately, to compare the findings of different studies, to understand the unique contributions of each study type before integration and to identify trends.

We then conducted a subsequent descriptive analysis of qualitative and quantitative studies to represent the evidence compactly, revealing a general view of patients' preferences for SDM in T2DM across studies. In this regard, we counted the number of qualitative studies in which the authors' interpretation of the study results indicated the preference of the participants for SDM, as well as the number of quantitative studies in which the majority preferred SDM [24].

Also, we used the definitions in Table 1 to determine which approach of SDM was present to address particular challenges in diabetes management in the reviewed documents.

**Table 1** Suggested approaches of SDM in diabetes management

| Approach | Definition [6, 8, 9] | Definition for this study |
|---|---|---|
| Information | More and clearer information will lead to empowered patients who are better able to contribute to medical decision-making (better decisions are the result of better information). Preference for information may be independent of the wish to be involved in decision-making | Patients were asked about their preferences of being better informed about their illness and possible treatments |
| Choice | Importance of patient choice in selecting medications or management strategies (better decisions are the result of better communication and patient-provider interaction) | Patients were asked about their preferences for being involved in making treatment choices and decisions |
| Conversation | Importance of an empathic and diagnostic conversation between patients and their providers, through which patients and their providers collaborate in the decision-making process and create plans of action in response to the challenges of living with diabetes | Patients were asked about their preferences and experiences about being involved in agenda-setting, collaborative goal-setting, analyzing personal situational problems, and shaping action to the demands of the situation |

### Quality appraisal

Two authors performed quality assessment independently (MP and GG) and any lack of consensus was resolved by discussion or by a third author (EN). For the studies that were eligible for review, the Joanna Briggs Institute (JBI) critical appraisal tools for Analytical Cross-Sectional Studies (8 questions) and Qualitative Research (10 questions) were used to assess the methodological quality of a study and to determine the possibility of bias in reviewed studies. Each question is responded as "Yes," "No," "Unclear," or "Not applicable" [27]. In this study, when all items were answered "yes", the risk of bias were considered low, and if any item was classified as "no" or "unclear", a high risk of bias were expected. No scores were assigned; results were expressed by the frequency of each classification of the evaluation parameters. We used the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework to assess the overall certainty of the evidence for two key questions (patient preference and provider perspective towards SDM). Issues related to the risk of bias, inconsistency, indirectness, and imprecision were considered when assessing the certainty of evidence, and the grade was specified four categories as high, moderate, low, and very low [28].

## Results

### Summarizing the results

The number of studies resulting from the systematic search is shown in Fig. 1 in accordance with the PRISMA guideline. Our initial database search retrieved 2368 studies. After excluding duplicates, 2211 studies underwent title/abstract review (Supporting information 4). Thirty-four studies were included in the final analysis because they specifically focused on existing empirical evidence about patients' preferences and/or healthcare providers' perspectives toward SDM in the context of diabetes care.

Table 2 presents an overview and summary of all included studies. The majority of studies ($n=20$, 59%) originated from Western countries, mostly in the USA ($n=9$), followed by the Netherlands ($n=4$), the UK ($n=3$), Germany ($n=2$), Canada ($n=1$), and Australia ($n=1$). Sixty-five percent of the included studies ($n=22$) were related to recent years from 2015 to 2023. Half of the papers were qualitative ($n=17$) and the rest were quantitative (i.e., survey). Eight of the reviewed papers reported on a mixed sample that included T2DM participants [29–36]. Seven papers specifically reported perspectives of a total of 1328 healthcare providers (family and internal physicians, general practitioners, endocrinologists, and pharmacists) on SDM and patient involvement in T2DM [14–16, 37–40]. Five qualitative papers explored the perspectives of both patients and providers regarding patient involvement in decision-making in the management of T2DM [41–45]. It is of note that two of the included studies were published PhD theses.

### Quality appraisal of the review

Among cross-sectional studies ($n=17$), nine were considered to have a low risk of bias [29–32, 35, 36, 50, 52, 59]. The two main methodological risks of bias for cross-sectional studies were the lack of identification of confounding factors and the strategies adopted to deal with them (Table 3). Among qualitative studies ($n=17$), nine were considered to have a low risk of bias [15, 41–43, 45, 61, 62, 65, 66]. Two risks of bias that were common among qualitative studies were: (1) lack of a statement locating the researcher culturally or theoretically; and (2) failing to account for the potential influence of the researcher on the research, and vice versa (Table 4). The profile of GRADE evidence was shown in Table S1 (appended). The results demonstrated moderate certainty of evidence for

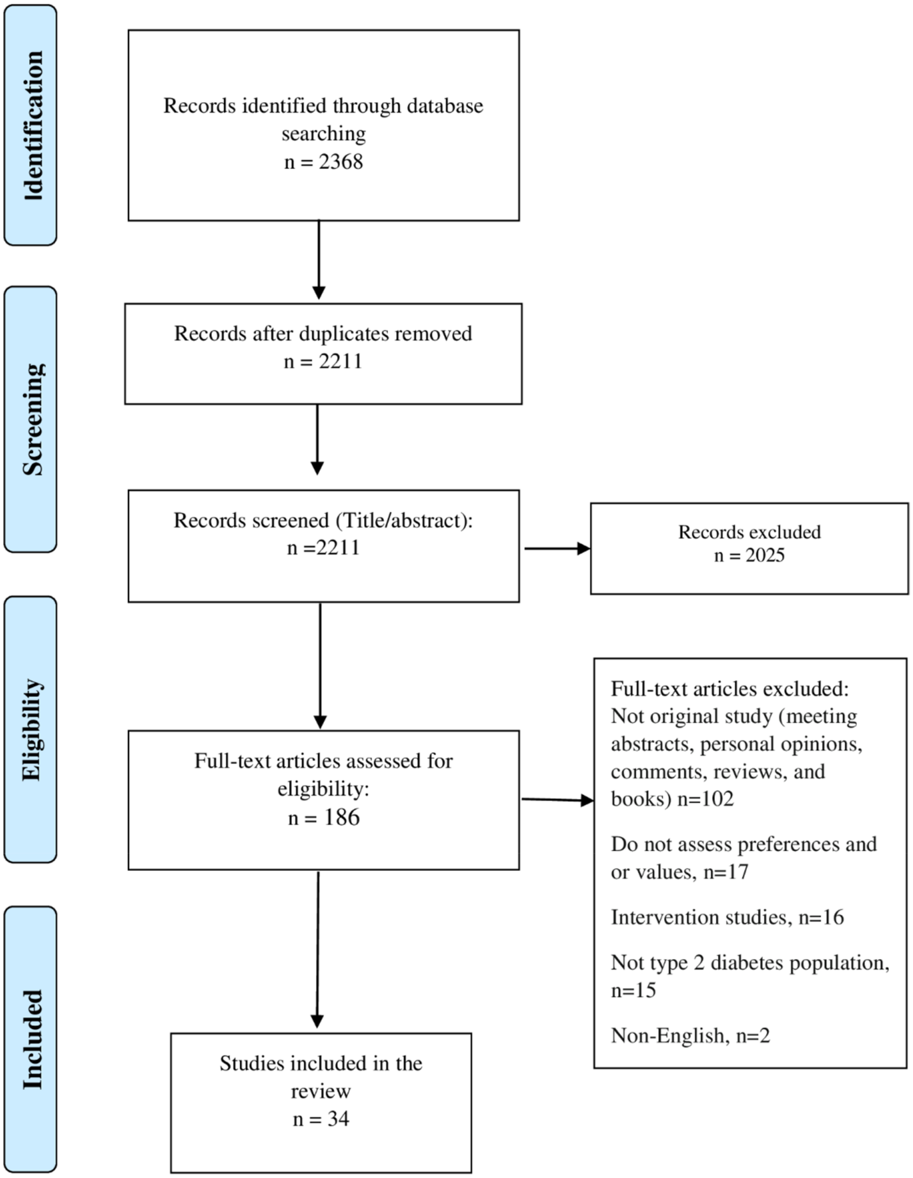

**Fig. 1** PRISMA flowchart for study selection

patients' preferences for SDM and low certainty of evidence for providers' perspective towards SDM.

### Tools used in assessing patients decision-making preferences

Decision-making preferences was measured using a variety of instruments in the included studies (Table 2). In four studies [29, 30, 32, 35], Levinson et al.'s instrument was used [46]. This instrument is a single standardized question for decision-making preference with 4 response options. In four other studies [8, 47, 56, 60], Degner et al.'s instrument (the Control Preferences Scale (CPS)) and its modified versions were used [48]. This measure assesses patient preferences for control over decision-making about their medical care. In two studies [33, 36], the Autonomy Preference Index (API), a well-established and widely used measure [49] was used to assess participants' preference for autonomy in decision-making. The Discrete Choice Experiment (DCE) questionnaire [58] was used to elicit patient preferences in two studies [57, 59]. The DCE requires respondents to make a series of choices between hypothetical alternatives, each of which is described by a set of attributes. One study [50] used Veg et al.'s survey [51] that includes three questions

**Table 2** Characteristics of included studies

| **A. Studies investigating patients' preferences to SDM: The first 16 studies are quantitative, and the next six are qualitative** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Study & Country** | **Method and instrument used to measure DM preference** | **Research objective** | **Participants** | **Participants' ethnicity** | **Approach of SDM assessed** | **Patients' DM preference** | **Providers' perspective to SDM** |
| Arora et al. (2000), USA [29] | Cross-sectional survey; five-point Likert scale measuring opinion on: 'I prefer to leave decisions about my medical care up to my doctor'; adapted from Levinson et al. [46] | To recognize the determinants of patient preferences for participation in medical DM | $N=2,197$ patients with chronic disease including T2DM<br>Patient mean age: 65.6 y | Native Americans, African American | Sharing information and making choice | A majority of the patients (69%) preferred to leave their decisions to the physicians | NA |
| Sekimoto et al. (2004), Japan [47] | Cross-sectional survey; questions regarding patient anticipated desire for treatment information, personal DM participation, family involvement in DM, and knowledge of the probability of various treatment outcomes (a modified version of the Control Preference Scale-CPS-developed by Degner et al. [48]) | To explore whether patients would want to participate in treatment DM if complete information about their diagnosis and treatment options were given | $N=134$ patients with T2DM<br>Patient mean age: males 56.8 y, females 60.9 y | Asian | Sharing information and making choice | A majority of the respondents expressed a preference for making decisions in collaboration with physicians Also, 60% of respondents chose to follow the physician's idea when it conflicted with their own preference | NA |
| Schneider et al. (2006), Germany [33] | Cross-sectional survey; Autonomy Preference Index (API) [49] | To examine whether the patients' preference to be involved in DM was associated with reasons for encounter, psychological or demographic characteristics | $N=234$ patients in general practice (including T2DM)<br>Patient mean age: males 43 y, females 45 y | German | Information sharing and making choice | Patients with chronic diseases had lower scores in participation preference; however, the preference for information was high in this group | NA |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gorter et al. (2011), Netherlands [50] | Cross-sectional survey; five-point Likert scale measuring opinion about: "taking responsibility for diabetes management", "preferred person to determine their personal treatment targets", "willingness to take medication to attain treatment targets" (adapted from Veg et al. [51]) | To study patients' opinions about taking responsibility for managing their diabetes and setting treatment targets | *N* = 994 people with T2DM Patient mean age: 65 y | 97.1% Western and the rest non-Western | Making choice | 62% agreed to take responsibility for their diabetes, and 48% preferred the setting of treatment targets to be in cooperation with their physician | NA |
| Peek et al. (2011), USA [52] | Cross-sectional survey; Patient-Practitioner Orientation Scale (PPOS) [53] | To determine racial differences in patient preferences for SDM | *N* = 974 patients with T2DM<br>Patient mean age: 58 y | Black/African American, or white/Caucasian | Information sharing, making choice, and SDM conversations | Approximately two-third of patients agreed with shared roles in information sharing and decision making; and one-third agreed with shared roles in agenda setting. There were no statistically significant differences by race | NA |
| Van den Brink-Muinen et al. (2011), Netherlands [34] | Cross-sectional survey; 5 items regarding DM (designed for this study), 1 question regarding the importance patients attached to being involved in DM (derived from the Quote-Comm) [54],<br>1 question of the experienced involvement in DM adapted from Makoul et al. [55] | To describe the importance patients attach to involvement in DM when various care types are considered | *N* = 812 chronically ill and disabled patients including diabetes and multi-morbidity<br>Patient age range: 38–80 y | Dutch | Making choice | Patients attached importance to SDM regarding their care; however, this importance varied in different contexts of care. Most importance to SDM was given about occupational healthcare issues | NA |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Chi et al. (2017), USA [30] | Cross-sectional survey; a single standardized question for DM preference with 4 response options (adapted from Levinson et al.), "do you prefer to…": (a) make decisions without much advice, (b) get their advice and then make decisions, (c) make decisions together, and (d) leave decisions up to them [46] | To explore preferences for decision making among older adults | *N* = 2,017 older adults with chronic conditions including T2DM<br>Patient age range: 65– ≥ 85 y | White-non Hispanic, Black-non Hispanic, Hispanic, Others | Making choice | Most patients preferred to participate in DM. Patients with multiple conditions were less likely to prefer SDM | NA |
| Marahrens et al. (2017), Germany [56] | Cross-sectional survey; a vignette with 5 figures (a modified version of Degner et al. scale) | To assess factors associated with the preferred role of the ophthalmologist in the DM processes | *N* = 810 individuals attending secondary diabetes care centers<br>Patient age range: 18–90 y | German | Sharing information and making choice | 74.3% of patients preferred SDM between ophthalmologist and patient and 17.4% wanted an ophthalmologist-dominant decision-making style | NA |
| Tinelli et al. (2017), Cyprus [57] | Cross-sectional survey; The discrete-choice experiment (DCE) questionnaire [58] | To find out preferences of patients when choosing their care, and how they value alternative SDM services compared to their 'current' option | *N* = 51 respondents with diabetes from UK and 90 respondents from Cyprus<br>Patient mean age: Cyprus 59.3 y, England 69.2 y | English and Greek | Accurate information about their care, choosing their treatment options, and SDM conversations | People with diabetes valued SDM services, although the importance of the service features changed across healthcare systems | NA |
| Kayyali et al. (2018), United Kingdom [31] | Cross-sectional survey; instrument designed for this study | To investigate patients' experiences and preferences for SDM and receiving medication information at the transition of care and their awareness of community pharmacy services | *N* = 357 inpatients with long-term conditions including T2DM<br>Patient age range: 18- ≥ 60 y | English | Sharing information and making choice | 62.2% of patients wanted to be involved in the decisions about their treatment. However, only 40% were consulted about their prescribed medications | NA |
| Tinelli et al. (2018), Cyprus [59] | Cross-sectional survey; The discrete-choice experiment (DCE) questionnaire | To measure patient preferences for their diabetic care in community setting | *N* = 162 patients with diabetes<br>Patient mean age: 62.7 y | Greek-Cypriots | Detailed information, making choice, and SDM conversations | Cypriot valued SDM processes regarding their care for diabetes. They preferred to be able to choose their treatment options and manage their care | NA |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Wang et al. (2019), Taiwan [8] | Cross-sectional survey; SDM-Q-9 scale, five items on patient's role preference in DM (derived from CPS by Degner et al.) | To investigate the key factors for the participation of patients in SDM | *N* = 372 patients with T2DM<br>Patient age range: ≤ 54– ≥ 75 y | Asian | Making choice | About 50.4% of the participants preferred physician DM, 39.3% SDM, and 10.3% preferred patient DM | NA |
| Ruhnke et al. (2020), USA [32] | Cross-sectional survey; a single item with five-point options: I prefer to leave decisions about my medical care up to my doctor; adapted from Levinson et al | To investigate the association of patient preferences for participation in medical decisions with care satisfaction | *N* = 13902 hospitalized patients admitted to the general internal medicine service (including T2DM)<br>Patient mean age: 56.7 y | Mostly African American (74%) | Sharing information and making choice | Nearly 71% of patients preferred to delegate decisions to their physician | NA |
| Panchal e t al. (2021), USA [60] | Cross-sectional telephone survey; Control Preference Scale for decision-making (CPS) adapted from Degner et al | To investigate whether the educational attainment of women with prediabetes is associated with their preferred DM approach and to assess whether a SDM diabetes prevention intervention might be acceptable in this patient population | *N* = 264 women with a history of GDM and obesity<br>Patient mean age: 37 y | Mostly White, African American (7%), Asian/Pacific Islander (7%) | Making choice | 80% of women preferred to make decisions with their providers, regardless of educational attainment | NA |
| Alzubaidi et al. (2022), United Arab Emirates [35] | Cross-sectional survey; three items with 5-point options: 'I prefer to rely on my doctor's knowledge and not try to find out about my condition on my own'(knowledge); 'I don't prefer that my doctor offers me choices and asks my opinion'(options); 'I prefer to leave decisions about my medical care up to my doctor'(decision); adapted from Levinson et al | To assess Arabic-speaking patients' preference for involvement in DM and to characterize people who preferred involvement in DM | *N* = 516 patients with chronic disease, including T2DM (213/516)<br>Patient age range: 18–75 y | Asian | Sharing information and making choice | Although nearly half of the participants (46.9%) preferred that their physician offer treatment options and ask for their opinions, 75.4% preferred to leave decisions about their care up to the physician | NA |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Emana et al. (2023), Ethiopia [36] | Cross-sectional survey; Autonomy Preference Index (API) | To assess the engagement of patients with selected chronic non-communicable diseases in health care decision-making and associated factors | *N* = 406 patients with chronic diseases, including diabetes mellitus (144/406)<br>Patient age range: ≤ 29– ≥ 60 y | Mostly Oromo | Information sharing and making choice | 83.1% agreed that the important medical decision should be made by health care provider. On the other hand, a small percentage (12.8%) of participants disagreed to comply with health care providers advice, even if they disagreed with it | NA |
| Peek et al. (2009), USA [61] | Semi-structured in-depth interviews and focus groups; constructs of the Charles SDM model (1999) | To explore the barriers and facilitators to SDM among African-Americans with diabetes | *N* = 51 people with T2DM<br>Patient mean age: 62 y | African-Americans | Information sharing, making choice, and SDM conversations | Participants valued SDM and described feeling disempowered where they did not have the right to be involved in care decisions | NA |
| Stenner et al. (2011), United Kingdom [62] | Semi-structured interviews | To explore patients' views on involvement in healthcare decisions | *N* = 41 patients with diabetes<br>Patient mean age: 67 y | Mostly white British (83%) | Sharing information and making choice | Patients were happy with their involvement in DM. However, views varied over the level of information required and the extent of desired involvement, with many patients preferring the practitioner to make decisions about the most appropriate treatment for them | NA |
| Beverly et al. (2014), USA [63] | Semi-structured group interview | To assess older adults' values and preferences regarding type 2 diabetes care | *N* = 25 older adults with T2DM<br>Patient mean age: 71.3 y | White-American | Making choice | Older adults preferred to take an active role in their treatment | NA |
| Lee et al. (2015), Malaysia [64] | Semi-structured in-depth interviews; based on the Ottawa Decision Support Framework | To explore patients' views on their decision-making role preference and factors influencing this during insulin initiation | *N* = 22 patients with T2DM<br>Patient age range: 28–67 y | Malay, Chinese, Indian | Making choice | Eleven patients preferred an active role in DM, whereas six patients preferred a passive one | NA |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| du Pon et al. (2019), Netherlands [65] | Semi-structured interviews and focus groups | To identify factors that help or hinder patients from actively participating in medical consultations | *N* = 20 patients with T2DM<br>Patient age range: 68–77.8 y | Mostly white | NA | Patients valued the importance of SDM. However, the majority were satisfied with their providers' manners of communication as encouraging and seldom felt the need to participate more actively | NA |
| Makwero et al. (2022), Malawi [66] | Unstructured in-depth interviews and focus groups | To understand patients' perspectives concerning barriers precluding their participation in SDM | *N* = 39 patients with diabetes<br>Patient mean age: - | African | Information sharing, making choice, and SDM conversations | Patients preferred to participate in SDM and felt that their involvement would enhance adherence to decisions about their care. Participants yearned for adequate dialogue and meaningful engagement to clarify their stories. They also expressed the need for healthcare providers to ask questions and explain the reasons behind certain decisions | NA |

**B. Studies investigating providers' perspectives to SDM: The first study is quantitative, and the remaining are qualitative**

| Study & Country | Method and instrument used to measure DM preference | Research objective | Participants | Participants' ethnicity | Component of SDM assessed | Patients' DM preference | Providers' perspective to SDM |
|---|---|---|---|---|---|---|---|
| Heisler et al. (2009), USA [37] | Cross-sectional survey; one question with five answer alternatives: "how in general you would prefer to make decisions about treatment for your patients' diabetes" | To explore the association between physicians' SDM preferences and their diabetes patients' receipt of recommended processes of care | *N* = 1217 family and internal physician | Mostly White (40%), Hispanic (14%), Black (17%), Asian or Pacific Islander (19%) | Making choice | NA | 58% reported a preference for equally sharing decision-making with patients |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Shortus et al. (2013), Australia [40] | In-depth interviews based on grounded theory | To investigate provider perspectives on the role of patient involvement in DM in diabetes | $N = 29$ general practitioners and endocrinologist | Australian | NA | NA | Providers described a conflict between their responsibilities to deliver best diabetes care and to respect patients' rights to make decisions They sought to manage patient involvement in DM according to their objectives (limited SDM) |
| Rosenberg-Yunger et al. (2017), Canada [14] | Semi-structured telephone interviews; constructs of the Elwyn model of SDM | To describe pharmacists' perceptions and awareness of SDM within their provision of general diabetes management, and potential challenges of implementing SDM | $N = 16$ community pharmacists | Canadian | Sharing information and making choice | NA | Many participants did not have a complete grasp of the concept of SDM. They were less familiar with introducing choices and helping patients explore preferences and make decisions |
| Tong et al. (2017), *** Malaysia [15] | Semi-structured interviews and focus groups | To explore the barriers and facilitators to implementing SDM and patient decision aids in a developing country in diabetes | $N = 25$ healthcare providers and healthcare policymakers | Malay, Indian, Chinese | NA | NA | The participants highlighted that there is a lack of SDM culture in the current practice, and that providers still have paternalistic attitudes |
| Wildeboer et al. (2017), Netherlands [16] | Semi-structured interviews | To investigate views of practice staff towards SDM and a patient-oriented treatment decision aid for patients with T2DM | $N = 17$ Specialized assistants | Dutch | Sharing information, making choice, and SDM conversations | NA | Many participants expressed positive views toward SDM and involving patients in conversations and deliberations |
| Sachs et al. (2019), Denmark [39] | Semi-structured interviews and focus groups | To assess physicians' experiences with factors influencing patients' risk perceptions and preferences and to explore how they perceive patients with diabetes to be suited for involvement in regulatory decisions | $N = 13$ medical physicians (endocrinologist and general practitioner) | Danish | NA | NA | Physicians acknowledged patients should be involved in decisions regarding their own medical treatment. But meanwhile, they believed that patients are not suited to be included in regulatory decisions |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Moazzam Baig et al. (2020), Pakistan [38] | In-depth interviews based on grounded theory | To explore the physician's perspective regarding DM and its implementation | *N* = 11 endocrinologist | Asian | NA | NA | Physicians were not convinced about using SDM |

**C. Studies investigating both patients' preferences and providers' perspectives: All studies here are qualitative**

| Study & Country | Method and instrument used to measure DM preference | Research objective | Participants | Participants' ethnicity | Component of SDM assessed | Patients' DM preference | Providers' perspective to SDM |
|---|---|---|---|---|---|---|---|
| Tiedje et al. (2013), USA [43] | Semi-structured in-depth interviews and video-recorded consultations | To study the mismatch that continues between idealized decision-making models and the messiness of clinical realities | *N* = 19 primary care clinicians and 22 patients with T2DM<br>Patient mean age: 57 y | White | Sharing information and making choice | Patients' described roles in DM often suggested active involvement. However, patients vastly described the clinician as expert, highlighting reliance on clinicians' knowledge and expertise | Clinicians discussed tendencies toward paternalistic DM and underlined that DM was not simple |
| Al-Juwair et al. (2019), Saudi Arabia [41] | Semi-structured interviews | To explore the views and experiences of both patients and providers of diabetes care about patient involvement in decision-making | *N* = 6 consultants in diabetes and 40 patients with T2DM<br>Patient mean age: 50 y | Asian | NA | Patients valued opportunities to be involved in everyday DM about their care; however, many reported that they did not feel actively listened to, respected, and empowered to do so | Most participants reported that SDM was challenging because most patients did not feel they had enough knowledge and confidence to do so |
| Atan et al. (2019), Malaysia [42] | In-depth interviews | To explore the experiences and perspectives of patients and providers on patient involvement in decision-making in the management of T2DM in Malaysia | *N* = 19 providers and 24 T2DM patients<br>Patient mean age: 54 y | Malay, Indian, Chinese | Making choice | Patients preferred SDM regarding their diabetes care and described it as a way for their concerns, preferences, and values to be heard and addressed by their providers. However, they were agreed with the idea of providers having more responsibility in making the final decision | Although most of the participants were aware of the benefit of involving patients in discussions about their condition and preferences, they preferred to make final decisions |

**Table 2** (continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Zheng et al. (2020), China [45] | Semi-structured in-depth interviews; based on the Ottawa Decision Support Framework | To identify patient decisional needs, from both patients' and practitioners' perspectives, when considering treatment intensification | $N = 28$ practitioners and 35 patients with T2DM<br>Patient mean age: 60 y | Chinese | Making choice | Most of the patients wanted to have valid information on the risks and benefits of medications. They wished for more engagement in DM when choosing medications | Most practitioners reported that patients did not have the ability to make medical decisions |
| Vedasto et al. (2021), Tanzania [44] | Semi-structured in-depth interview | To understand experiences of patients and health care providers on SDM and the use of decision aids | $N = 4$ healthcare providers and 7 patients with T2DM<br>Patient age range: 46–76 y | African | Sharing information, making choice, and SDM conversations | Patients valued the role of SDM. Most patients reported that they are engaged in SDM and that it is very important | Providers reported that they like to involve patients in making decisions |

*DM* Decision-making, *SDM* Shared decision-making, *T2DM* Type 2 diabetes mellitus, *Y* Year, *NA* Not applicable

**Table 3** Risk of bias for each cross-sectional study assessed by Joanna Briggs Institute critical appraisal checklist

| Studies | Criteria | | | | | | | | Risk of bias summary |
|---|---|---|---|---|---|---|---|---|---|
| | 1* | 2* | 3* | 4* | 5* | 6* | 7* | 8* | |
| Heisler, 2009 [37] | Y | N | Y | Y | Y | Y | Y | Y | High |
| Arora, 2000 [29] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Sekimoto, 2004 [47] | N | Y | Y | Y | Y | Y | Y | Y | High |
| Schneider, 2006 [33] | Y | Y | Y | Y | Y | U | Y | Y | High |
| Chi, 2017 [30] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Gorter, 2011[50] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Kayyali, 2018 [31] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Marahrens, 2017 [56] | Y | Y | Y | Y | Y | N | Y | Y | High |
| Panchal, 2021[60] | Y | Y | Y | Y | Y | N | Y | Y | High |
| Peek, 2011 [52] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Tinelli, 2017 [57] | Y | Y | Y | Y | N | Y | Y | Y | High |
| Tinelli, 2018 [59] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Van den Brink-Muinen, 2011 [34] | Y | Y | Y | Y | N | Y | Y | Y | High |
| Wang, 2019 [8] | N | Y | Y | Y | U | U | Y | Y | High |
| Ruhnke, 2020 [32] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Alzubaidi, 2022 [35] | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Emana, 2023 [36] | Y | Y | Y | Y | Y | Y | Y | Y | Low |

* *Y* Yes, *N* No, *U* Unclear, *NA* Not applicable

1* Criteria for inclusion in the sample clearly defined

2* Study subjects and the setting described in detail

3* Exposure measured in a valid way

4* Objective and standard criteria for measurement

5* Confounding factors identified

6* Strategies for dealing with the confounding factors stated

7* Outcomes measured in a valid and reliable way

8* Appropriate statistical analysis

about participants' self-perceived role in diabetes treatment. One study [52] used the Patient-Practitioner Orientation Scale (PPOS) [53], a widely used instrument that assesses attitudes and preferences about patient-provider relationship and shared decision-making. One study [34] used a question derived from the Quote-Comm survey (quality of communication through the patient's eyes) [54] to assess the importance respondents attached to being involved in the decision-making process. Finally, one study developed their own questionnaire that covered two areas: knowledge/ experience/opinion of SDM and the patient's involvement in decisions made about changes to their medication [31].

### Type of SDM approach that had been assessed in the studies

Across the 28 studies that mentioned the type of SDM approach considered, the choice approach was found in all studies, followed by the information approach in 16 (59%) of the studies [29, 31–33, 35, 36, 43, 44, 47, 52, 56, 57, 59, 61, 62, 66] and the Conversation approach in 7 (26%) of the studies [16, 44, 52, 57, 59, 61, 66]. These approaches to SDM in examining beneficiaries' preferences were in part derived from the study tools that were used, and it showed these tools did not cover different SDM approaches at the same time.

### T2DM patients' preferences for SDM

Altogether, 27 of the 34 included studies focused on the decision-making preferences and values of patients with T2DM. Across these studies, 20 of them (74%), including ten quantitative [30, 31, 34, 47, 50, 52, 56, 57, 59, 60] and ten qualitative [41–45, 61, 63–66] studies, reported that respondents preferred and valued SDM and wanted to make decisions in collaboration with a provider. By comparison, seven (26%) of the studies (6 quantitative and 1 qualitative) reported that the majority of respondents wanted to leave their decisions to a provider [8, 29, 32, 33, 35, 36, 62] (see Table 2). However, several other points need to be added to this result. In Sekimoto et al.'s study, although patients primarily preferred to participate in decision-making, they stated that they would

**Table 4** Risk of bias for each qualitative study assessed by Joanna Briggs Institute critical appraisal checklist

| **Studies** | **Criteria** | | | | | | | | | | **Risk of bias summary** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1*** | **2*** | **3*** | **4*** | **5*** | **6*** | **7*** | **8*** | **9*** | **10*** | |
| Shortus, 2013 [40] | Y | Y | Y | Y | Y | Y | U | Y | Y | Y | High |
| Rosenberg-Yunger, 2017 [14] | Y | Y | Y | Y | Y | N | U | Y | Y | Y | High |
| Tong, 2017 [15] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Wildeboer, 2017 [16] | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | High |
| Sachs, 2019 [39] | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | High |
| Moazzam Baig, 2020 [38] | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | High |
| Tiedje, 2013 [43] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Al-Juwair, 2019 [41] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Atan, 2019 [42] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Zheng, 2020 [45] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Vedasto, 2021[44] | Y | Y | Y | Y | Y | N | U | Y | Y | Y | High |
| Beverly, 2014 [63] | Y | Y | Y | Y | Y | U | Y | Y | Y | Y | High |
| Lee, 2015 [64] | Y | Y | Y | Y | Y | Y | U | Y | Y | Y | High |
| Peek, 2009 [61] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| de Pon, 2019 [65] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Stenner, 2011 [62] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |
| Makwero, 2022 [66] | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Low |

[*] *Y* Yes, *N*=No, *U* Unclear, *NA* Not applicable

1* Congruity between the stated philosophical perspective and the research methodology

2* Congruity between the research methodology and the research question or objectives

3* Congruity between the research methodology and the methods used to collect data

4* Congruity between the research methodology and the representation and analysis of data

5* Congruity between the research methodology and the interpretation of results

6* A statement locating the researcher culturally or theoretically

7* The influence of the researcher on the research, and vice- versa addressed

8* Participants, and their voices, adequately represented

9* The research ethical according to current criteria, and evidence of ethical approval stated

10* The conclusions drawn in the research report flow from the analysis, or interpretation, of the data

choose to respect the physician's view if it conflicted with their own preference [47]. Also, in Atan et al.'s study, although patients preferred SDM regarding their diabetes care, they agreed with the idea of physicians having more responsibility in making a final decision [42]. On the other hand, among the studies in which patients had lower scores in preference for participation, one reported the highest scores in preference for information [33]. Also, in another study, although 50.4% of patients preferred to delegate decisions to the physician, 49.6 percent preferred to participate in decisions in any way, showing very close results [8]. Likewise in another study, though participants preferred to leave decisions up to the physician, half of them preferred that their physician offer them treatment options and ask for their opinions [35].

### Diabetes care providers' perspective towards SDM

Altogether, 12 of the 34 included studies focused on the perspectives of diabetes care providers on SDM and patient involvement (11 qualitative and 1 quantitative study) (Table 2). In four qualitative studies, the results of the studies indicated that providers had generally positive views towards SDM and preferred to involve patients in conversations and deliberations [16, 39, 40, 44]. In the other seven qualitative studies, their authors' interpretations indicated that providers do not prioritize the SDM in their current practice [14, 15, 38, 41–43, 45]. In some studies, providers did not have a complete grasp of the concept of SDM and were less familiar with its principals and implementation [14, 38]. Tong et al., Tiedje et al., and Atan et al. found that some clinicians expressed a tendency toward a paternalistic decision-making style; although most clinicians were aware of the benefit of the SDM approach, they preferred to make final decisions themselves [15, 42, 43]. In another two studies, providers believed that SDM was challenging and patients did not have enough knowledge, confidence, and skill to make medical decisions [41, 45]. Together, this evidence indicates that generally speaking the attitude of diabetes care providers toward SDM was not positive, or they did not consider it applicable. In this regard, one of the studies in which providers generally agreed with SDM found that providers also sought to manage patient involvement in decision-making according to their objectives [40]. It means being more accepting of a limited SDM approach. Moreover, although the results of the only quantitative study (Heisler et al.) in this section showed that over half of providers (58%) reported a preference for SDM, most reported practicing "physician-dominant" decision-making style with most of their patients [37].

### Barriers and facilitators of SDM in diabetes care

Nearly all studies (31 out of 34) reported either barriers, facilitators, or both to implementing SDM in diabetes care practice. In Table 5, we organized the variables identified in terms of whether they were patient-related, provider-related, or context-related. For each variable, we distinguish study results determining that the variable is a facilitator (positively associated with patient preference for SDM) or a barrier (negatively associated with patient preference for SDM).

A lack of patient knowledge, awareness, and health literacy about the condition and medications [8, 14, 30, 31, 33, 38, 47, 56, 61, 64] emerged as one of the most frequently mentioned barriers among patient-related factors in included studies, next to the belief that doctors – as experts and authority figures – know best, doctors tell you what to do, and blind trust in the doctor [15, 31, 32, 43, 44, 61, 64]. Likewise, higher health literacy and patient knowledge [8, 56, 61, 62] emerged as one of the most frequently mentioned facilitators among patient-related factors in included studies, next to the patient's responsibility for care and motivation to participate [14, 64, 65]. Moreover, good interpersonal style and communication skills emerged as the most frequently mentioned facilitators among provider-related factors in included studies [8, 14, 38, 42, 45, 61–63, 65]. Limited consultation time emerged as one of the most frequently mentioned barriers among context-related factors in the included studies, especially in resource-limited settings that have a high patient-to-provider ratio [8, 15, 38, 41, 44].

## Discussion

It has been claimed that SDM depicts the pinnacle of individualized and patient-centered care, which requires a commitment from both parties (patient and provider) [6]. An understanding of and responsiveness and respect to the individual preferences of patients with T2DM is influential in improving the quality of provided care [10]. Therefore, this systematic search and review of the literature sought to understand patients' and healthcare providers' SDM preferences and perspectives in the context of diabetes care. Altogether, 34 studies could be identified that examined either topic with qualitative or quantitative study methods.

Overall, this review suggests that there may be a trend towards patients' preferences for SDM in the management of T2DM. In three-quarters of the included studies, the majority of patients valued and preferred SDM, with moderate quality of evidence supporting this trend. This finding, highlighting the preference of diabetes patients for SDM, can support policies that emphasize patient rights and autonomy in healthcare decisions, aligning with global movements towards patient-centered care.

However, our findings also showed several nuances in patients' preferences and values across included studies, reflecting the complexity and diversity of decision-making in T2DM. For example, some patients preferred to participate in decision-making but deferred to the provider's opinion if there was a conflict [47]. Some patients preferred SDM, but also acknowledged that providers should have more responsibility in making the final decision [42]. Another preference seen was that even though some T2DM patients agreed that the final decision should be made by their provider, they still wanted to be involved in the decision-making by being informed about treatment options and having their opinions asked for [8, 33, 35]. These nuances suggest that SDM is rather a dynamic and individualized process that requires flexibility and responsiveness from both patients and providers.

In addition, these results may be indicative of the difference between the decision-making process and the decision responsibility. A model of SDM proposed by Edwards and Elwyn (2006) emphasizes the importance of distinguishing between these two aspects and argues that focus should be placed more on the process of involving patients in decision-making rather than attaching importance to who actually makes the final decision. Therefore, patients who prefer to leave the responsibility of the final decision to their provider may still want to participate in the decision-making process, have their voices heard, and be integrated into their treatment plans [67]. In further confirmation of these results, the study by Rake et al. underscores the critical importance of eliciting patients' personal perspectives and integrating into clinical decision-making as an important aspect of SDM [68]. This approach aligns with Serrano et al.'s conversation approach [9], which emphasizes the importance of dialogue and interaction between patients, and providers to elicit patient preferences, values and situations. By incorporating patients' personal perspectives, healthcare providers can tailor treatment plans to individual needs and preferences, enhancing the overall quality of care.

**Table 5** Facilitators and barriers of SDM in diabetes care: patient, provider, context

| Variable/Factor | Barriers | Facilitators |
|---|---|---|
| **Patient factors** | | |
| Demographic [30, 33, 43, 44, 47, 50, 52, 56, 60] | Older age, less education, male, patients with job-related or financial challenges | Younger age, higher education, female |
| Health literacy, knowledge of illness and treatments [8, 14, 30, 31, 33, 35, 38, 47, 56, 61, 62, 64] | Lower health literacy | Higher health literacy, patients' knowledge of HbA1c values |
| Social support [64, 65] | | Family support, presence of a spouse |
| Trust in physician [15, 31, 32, 61, 64] | High and blind trust in physicians | |
| Health status [29, 30, 50] | Poor health, mobility problems, poor glycemic control | |
| Comorbidity [29, 30] | Multi morbidity, clinical depression | |
| Attitudes and beliefs [14, 15, 31, 43, 44, 64, 65] | Physicians know best | Patient's responsibility for care, motivation to participate |
| Self-efficacy for self-management [61] | Low self-efficacy | |
| Passivity [14–16, 65] | Forgetting to ask questions | Preparation for the visit, patient receptiveness |
| Unwillingness [16, 65] | Unwillingness to participate | |
| **Provider factors** | | |
| Demographics [37] | | Female physicians |
| Attitudes and beliefs [15, 40] | Paternalistic attitude, belief in the conflict between respecting patients' autonomy and delivering high-quality care | |
| Interpersonal style [15, 40, 42, 61, 65, 66] | Poor interpersonal style | Physician's encouraging words for patient participation (i.e., words that increase the patient's self-confidence for participation, e.g., "You can do it.") |
| Communication skills [8, 14, 38, 42, 45, 62, 63, 66] | Poor communication skills | Effective physician–patient relationship, physician's information-giving behavior, physicians who use colloquial language to explain |
| Technical skills [61] | | Physician medical knowledge/technical skills |
| **Context factors** | | |
| System support [41, 59, 61] | Lack of support, inadequate patient education | Preferred policy change |
| Continuity of care [15, 41] | Low continuity (i.e., when patients do not have access to the same provider or team of providers throughout their care) | |
| Resources [14, 42, 61] | Lack of resources, lack of private space | Educational paper-based or online tools, physician accessibility and availability |
| Time constraints [8, 14, 15, 38, 41, 44, 65, 66] | Limited consultation time, shortage of time during consultations | Adequate time to discuss with the physician |
| Patient-provider relationship [15, 30, 42, 61, 66] | Language discordance between patients and providers, patient-physician power imbalance | Integration SDM into the care pathway |
| Characteristics of patient panel [39, 56] | Diversity in the risk perceptions and preferences of patients, higher frequency of consultations per year | |
| Provider training [14, 42] | | Provider training in motivational interviewing |

Because the concept of SDM arose from the Western ideals of patient autonomy and empowerment, it has been suggested that it might not be preferred by patients in non-Western countries where values may differ [69]. In fact, in a majority of non-Western studies included in this review, diabetes patients preferred SDM, although there was a small number of non-Western studies (seven in Asia [8, 35, 41, 42, 45, 47, 64] and three in Africa [36, 44, 66]) compared to Western ones. Our results indicate that SDM may be gradually becoming a valuable approach from the point of view of non-Western patients, and that globalization brings Western views to non-Western countries [70]. Findings from a systematic review on SDM preferences of non-Western ethnic minority cancer patients concluded that high preferences for passive participation among Asian and Middle-Eastern patients are most likely related to their low level of English language proficiency [71]. This was also demonstrated in our review, where non-Western patients preferred SDM when they did not face linguistic barriers with providers in their country. Moreover, the only study in this review that specifically examined racial differences in patients' preferences for SDM found that African Americans with diabetes were as likely as whites from a similar social class to want to participate in decision-making, and also suggested race does not appear to predict differences in preferences, at least among patients with diabetes [52].

Regarding barriers and facilitators to SDM, our findings revealed that one of the important barriers was a lack of patients' knowledge and health literacy about their condition. In SDM, the patient and healthcare provider must primarily share knowledge and information, values, and preferences, ultimately leading to mutual healthcare decisions. Limited health literacy can affect patients' ability to understand and use health information, communicate with providers, and participate in the decision-making process. Although it does not mean that patients necessarily need to be educated first in SDM skills before participating in the SDM approach, patients' empowerment for participation in decision-making is necessary for effective SDM implementation, without which the patient would not have the courage and self-confidence needed to participate. This issue can jeopardize patients' ability to perform these decisions in their daily routines and even lead to medication non-adherence [72]. To further confirm this, Muscat et al. have recently proposed an expanded model of SDM that incorporates health literacy concepts [73]. Their expanded model points to patient health literacy skills as a key component, and suggests that patients need knowledge and skills to participate in the SDM process in much the same way that providers need skills to engage with their patients.

Our finding that patients often believed that "doctors know best" was another important modifiable barrier. The results of a previous review showed that having these beliefs made even patients who were able to participate in decision-making still reluctant to engage with their doctors [74]. Therefore, interactions with healthcare providers may affect patients' preferences, as reported in many of the studies included in this review [8, 14, 38, 42, 45, 52, 61, 63, 65]. By way of effective therapeutic communication, healthcare providers may be able to motivate diabetes patients to participate in decision-making [75].

It is worth noting that while many barriers and facilitators we have identified and listed are consistent with those reported in other studies [76], our list is derived from studies specifically addressing the context of diabetes care. Additionally, we also identified barriers and facilitators unique to diabetes care, such as patients' knowledge of HbA1c values and poor glycemic control. These insights can inform the development of targeted interventions to address these issues and promote more effective SDM implementation in diabetes care.

Regarding perspectives of providers on SDM and patient involvement in T2DM, in two thirds of the included studies, diabetes care providers did not express positive views towards SDM; in comparison to more SDM, a paternalistic approach was preferred and practiced. This finding was supported by low quality of evidence. We suggest that SDM did not garner support for reasons such as the idea of the patients' inability and their lack of self-confidence to participate meaningfully in decision-making. Healthcare providers' lack of awareness of the correct definition of SDM and their lack of experience in implementing this approach were also other reasons for this result. Therefore, in addition to empowering patients for participation, efforts directed at healthcare provider training (e.g., working with universities to get SDM into the curriculum for medical students and pre- and post-registration courses and workshops for healthcare providers) to grow an understanding of what forms SDM and what the aims of an SDM approach are may be an effective way to increase SDM implementation. In this regard, the MAGIC program (Making Good Decisions in Collaboration), launched by the Health Foundation in the UK in 2010, is a practical example. The aim of this program was to design, test, and identify the best ways to embed SDM into routine primary and secondary care. Findings showed that interactive skills training workshops based on a SDM model help promote positive attitudes, skills improvement, and coherence. Workshop evaluations also showed that role-play-based training emphasizing practical skills worked better than theory-heavy presentations [77]. Another practical example is an integrated and comprehensive SDM and health literacy training program for health professionals which has been recently developed and pilot tested in three European countries. Findings revealed that this training improved health professionals' skills to enhance patient autonomy in decision-making [78].

Despite the growing emphasis on SDM through policy and research, its implementation in routine practice remains slow. This sluggish adoption is primarily due to systemic challenges, including resistance to change among healthcare providers, insufficient institutional support for SDM initiatives, and logistical hurdles that complicate the integration of SDM into existing workflows. These systemic challenges must be addressed within provider training programs to facilitate the widespread adoption of SDM. Overcoming these obstacles requires a concerted effort to cultivate a culture that values patient engagement and decision-making, alongside robust support systems that enable the seamless integration of SDM into everyday clinical practice [79].

## Limitations

When numerous preference-eliciting surveys are conducted, a systematic review of them may be required to synthesize and sum up the findings. However, this systematic review focusing on patients' preferences and providers' perspectives regarding SDM in the diabetes care context is the first of its kind, and no comparable studies have been conducted. However, some limitations are important to mention. First, T2DM patients' preferences and decisional needs might develop over time as they gain experience and move through different stages of responsibility for managing their condition. It has also been found that illness trajectory is fundamental in developing decision-making skills about diabetes self-management, which can affect preferences [80]. Only a few of the included studies focused explicitly on the phase of the disease or timing to assess patients' preferences (e.g., treatment intensification phase in diabetes in Zheng et al. [45] and Lee et al. [64] studies). However, in these two qualitative studies in which patients specifically were in the treatment intensification phase, in addition to high preference for SDM, they were eager to receive more information on the risks and benefits of new medications supposed to be added to their regimen [45, 64]. So, it may be concluded that the information approach in SDM (Table 1) is preferred and valued, especially by patients who are in the phase of treatment intensification along the diabetes illness trajectory.

Second, a subtle point in the included studies in our review was the lack of explicit reporting on participants' prior exposure to SDM. This ambiguity makes it difficult to discern whether reported views reflect genuine preferences for SDM or are influenced by prior exposure (or lack thereof) to different decision-making approaches. Consequently, the aggregated results may obscure important differences in perspectives between those with and without prior SDM experience [81]. To address this limitation, future research should explicitly assess participants' prior exposure to SDM and then analyze their preferences and perspectives based on this stratification. This approach would provide more nuanced insights into how prior experience shapes views on SDM and allow for the development of more targeted and effective SDM implementation strategies.

Third, the authors intended to include Persian language studies in this systematic review, but no such studies were found. Overall, the number of studies focusing on the preferences of patients and providers in T2DM in non-Western countries was small compared to those in Western countries.

Fourth, although we used a detailed search strategy and searched the specialized databases, the search was restricted to publications in English for pragmatic points. We also only searched electronic databases and performed hand searches of peer-reviewed systematic reviews. So, we still cannot be sure that all relevant data were found. Moreover, the data of our interest may not be the primary outcome for some studies, which makes relevant data difficult to find.

Fifth, there was no protocol for this systematic review. Registering a systematic review protocol in advance enhances the rigor and trustworthiness of the review [82]. This might reduce the rigor and trustworthiness of our review.

Another limitation of this study was potential confounding factors that were not adjusted for in the included studies. Examples of confounding factors include not considering the duration of diabetes in many studies [30–34, 44, 47, 52, 57, 60, 64] and the duration of the provider-patient relationship considered only in three studies [45, 47, 61] which may affect patients' desires for SDM.

The other possible limitation of this study was the concern about the generalizability of the included qualitative studies. Qualitative studies are typically conducted with small samples of participants, which seems to limit the generalizability of their findings. However, it has been recommended that it is incorrect to assert that one cannot generalize from a single case. Generalization depends on the case being discussed and how it is chosen [83].

And the last point we should be aware of is that the included studies reveal perceptions of SDM, not how SDM actually takes place.

## Conclusion

This systematic review provides evidence of patients' preferences and providers' views on the application of SDM in diabetes care and its facilitators and barriers from the perspectives of both of them. Overall, in most studies it was reported that patients with T2DM prefer to participate in treatment decision-making about their care plan; however, many diabetes care providers are not convinced about using SDM yet. The correct implementation of SDM is not achievable unless both parties—patients and healthcare providers—have the desire to engage in the process of decision-making. Thus, it is important to probe and work on the modifiable barriers to SDM to improve its implementation in diabetes practice.

The findings from this review can help facilitate the treatment decision-making process in diabetes. As further aspects of research, we recommend the consideration of the patient's disease phase and the presence of comorbidities when assessing their preferences, values, and needs. We also recommend research to the topic of preferences for shared participation and decision-making in diabetes management among more traditional and non-Western societies.

## Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12913-024-12160-z.

Supplementary Material 1. Supporting information 1. PRISMA 2020 Checklist.

Supplementary Material 2. Supporting information 2. Search terms and search strategy.

Supplementary Material 3. Supporting information 3. A table of excluded studies with reasons for exclusion.

Supplementary Material 4. Supporting information 4. Endnote file of all retrieved articles and articles that were included in this review.

Supplementary Material 5: Table S1. The profile of GRADE evidence.

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**Authors' contributions**
MP and EN conceptualized the study. MP outlined the research proposal, aims, and questions. MP, AS and GG performed the review. MP and AS drafted the manuscript. All authors edited and approved the final version of the manuscript.

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**Data availability**
All data generated or analyzed during this study are included in this published article [Supporting information 4].

## Declarations

**Ethics approval and consent to participate**
Ethical approval for the study was obtained from the medical research ethics committee of the Tehran University of Medical Sciences (IR.TUMS.EMRI.REC.1401.048).

**Consent for publication**
NA.

**Competing interests**
The authors declare no competing interests.

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## Publisher's Note