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Unravelling clinicians' shared decision-making adoption: a qualitative exploration through the lens of diffusion of innovations theory

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ABSTRACT

Objectives This study uses the diffusion of innovations (DOI) theory to comprehensively understand the adoption of shared decision-making (SDM) in clinical practice, specifically focusing on the 'knowledge' and 'persuasion' stages within DOI. We aim to understand the challenges and dynamics associated with SDM adoption, offering insights for more patient-centred decision-making in healthcare.

Design This qualitative study employs a modified framework analysis approach, integrating ethnographic and interview data from prior research, along with additional interviews. The framework used is based on the DOI theory.

Study setting and participants This study was conducted in the obstetrics and gynaecology department of a tertiary teaching hospital in the Eastern region of the Netherlands. It included interviews with 20 participants, including gynaecologists, obstetrics registrars and junior doctors currently practising in the department. Additionally, data from prior research conducted within the same department were incorporated, ensuring the maintenance of contextual consistency.

Results Findings reveal a complex interplay between SDM's benefits and challenges. Clinicians value SDM for upholding patient autonomy and enhancing medical practice, viewing it as valuable for medical decision-making. Decision aids are seen as advantageous in supporting treatment decisions. Challenges include compatibility issues between patient and clinician preferences, perceptions of SDM as time-consuming and difficult and limitations imposed by the rapid pace of healthcare and its swift decisions. Additionally, perceived complexity varies by situation, influenced by colleagues' attitudes, with limited trialability and sparsely observed instances of SDM.

Conclusions Clinicians' decision to adopt or reject SDM is multifaceted, shaped by beliefs, cognitive processes and contextual challenges. Cognitive dissonance is critical as clinicians reconcile their existing practices with the adoption of SDM. Practical strategies such as practice assessments, open discussions about SDM's utility and reflective practice through professional development initiatives empower clinicians to make the best informed decision to adopt or reject SDM.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study builds on a substantial body of prior research and well-established psychological theories.
⇒ A thorough and structured approach was used, incorporating diverse data sources and employing framework analysis for data analysis.
⇒ While the risk for construction and interpretation related to the framework analysis approach was mitigated by reflecting on researchers' roles and inherent biases, it remains a potential concern.
⇒ The study's reliance on data from a single obstetrics and gynaecology department may limit its ability to fully capture the diversity of challenges and facilitators present in implementing shared decision-making within different healthcare contexts.

INTRODUCTION

Shared decision-making (SDM) emerged as a transformative approach in medicine in the past decades, revolutionising the decision-making process by placing patients at the centre.[1] It lets patients and healthcare providers make healthcare decisions together, incorporating evidence alongside patients' preferences and values.[2] Unlike evidence-based medicine, which quickly gained traction and transformed medical practice,[3 4] SDM has faced and still faces challenges in achieving widespread adoption.[5 6]

Many studies have reported barriers to SDM implementation, including a non-supportive healthcare system, time constraints, lack of support and the complexity inherent in both healthcare professionals' and patients' abilities to engage effectively in SDM.[7–11] To overcome some of these barriers, studies have highlighted the necessity of changes in organisational culture and healthcare policies to foster an environment conducive to SDM implementation, including an emphasis on organisational leadership activities aimed at promoting SDM implementation.[8–11] Additionally, various facilitators

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have been identified to promote SDM implementation. These include increasing awareness and knowledge of SDM, providing training and educational programmes on SDM, incorporating SDM into clinical guidelines and quality standards and using decision support tools and aids to facilitate the SDM process.[7–11]

Despite concerted efforts, the implementation of SDM remains challenging, laborious and inconsistent.[6–8] SDM's complexity necessitates a comprehensive approach to understanding the intricate dynamics involved.[7 9] To investigate SDM's enigma, this study employs the diffusion of innovations (DOI) theory, developed by Rogers over 50 years ago, to provide a comprehensive framework for a deeper insight into the SDM adoption process in clinical practice.[12]

DOI theory introduces the concept of innovation, defined as an idea or technology perceived as new by potential adopters, and highlights diffusion as the process through which innovations spread.[12] The diffusion process encompasses both planned and spontaneous dissemination of ideas, ultimately leading to social change within a given system.[12] One illustrative example provided by Rogers himself is the dissemination of family planning methods and birth control techniques, which revolutionised reproductive health practices and contributed to declines in birth rates, and improvements in maternal and child health worldwide.[12] In addition to tangible innovations such as birth control, Rogers also discusses more abstract concepts, such as ideas or practices. For instance, the diffusion of the idea of sustainable agriculture within the agricultural community represents a shift towards environmentally friendly, economically viable and socially responsible farming practices, away from conventional, intensive farming techniques.[12]

Despite its relative unfamiliarity among medical professionals, DOI theory has gained substantial recognition and credibility. Both within and outside the medical and health research domains, numerous studies have successfully employed DOI theory-based models to investigate the introduction of new technologies and ideas; however, the majority of these studies have focused on categorising individuals based on their propensity to adopt a new innovation.[13–19] The advantage of DOI theory in disseminating abstract concepts such as SDM lies in another aspect of the theory, known as the 'diffusion of innovation model', or the innovation-decision process.[12] This model identifies five essential stages in the diffusion process: 'knowledge', 'persuasion', 'decision', 'implementation' and 'confirmation'. In the first stage, 'knowledge', individuals become aware of the innovation's existence and gain an understanding of how it functions. In the 'persuasion' stage, individuals form attitudes towards the innovation, weighing its advantages and disadvantages to determine whether to adopt it. The 'decision' is then made to either adopt or reject the innovation based on the assessment made during the persuasion stage. 'Implementation' involves individuals using the innovation in practice, integrating it into their routines and workflows, while 'confirmation' entails seeking reinforcement for their decision to adopt the innovation and adjusting their usage accordingly.

While all five stages of the diffusion process are significant, our study places particular emphasis on the first two stages, 'knowledge' and 'persuasion', as they precede the critical decision by any potential adopter to either adopt or reject the innovation. Therefore, we used these stages in our attempt to comprehensively assess and understand SDM adoption or rejection among healthcare professionals. Our goal was to uncover the underlying mechanisms influencing clinicians' decisions to adopt or reject. Drawing on one obstetrics and gynaecology department in the Netherlands as an illustrative case, which has been previously examined in SDM studies resulting in a wealth of qualitative data,[20 21] our study aims to deepen the understanding of SDM's implementation challenges. Subsequently, when considered alongside relevant other theoretical frameworks, the findings of this study could potentially inform policy and practice, guiding efforts towards promoting enhanced, patient-centred decision-making approaches.

METHODOLOGY
Study design
This study uses a modified framework analysis approach,[22–24] drawing on two sources of data: ethnographic and interview data from two previous studies[20 21] and separate data obtained through additional interviews. The framework approach provides a systematic and transparent methodology for analysing qualitative data.[22] It comprises five distinct research phases: 'familiarisation', 'identifying a thematic framework', 'indexing', 'charting and mapping' and 'interpretation'.[23] The modification consisted of conducting supplementary interviews and using those as an important additional data source after the process of data familiarisation with the previously existing data. This alteration was necessary because it became evident that the existing ethnographic and interview data did not adequately address all components outlined within the DOI theory-based framework.

Setting
This study took place in the obstetrics and gynaecology department of a tertiary teaching hospital in the Eastern region of the Netherlands. The participants comprised both experienced gynaecologists and less experienced clinicians, including registrars in obstetrics and gynaecology.

Framework analysis
Phase I: familiarisation
In this phase, a team of three researchers (LS, JWMA and FS), all providing gynaecological care and familiar with ethnographic research, reviewed data from two prior research projects on SDM in the same department.[20 21] The first study was a hospital ethnography that aimed

to study physician culture in relation to SDM practice.[20] The second study investigated registrars' views on SDM, as an addition to pilot testing a patient feedback tool.[21] The data were collected in 2018 and 2019, respectively. They included written observations and field notes from witnessing consultations and multidisciplinary meetings, as well as 20 interview transcripts from interviews focusing on clinicians' and nurses' attitudes and behaviours regarding SDM. No patients were interviewed in these research projects.

Our research team discussed these data in light of the DOI theory to feed the subsequent phase in our framework analysis. Specifically, we conducted a preliminary thematic examination, aligning with the initial two stages of the innovation-decision process outlined by Rogers, namely 'knowledge' and 'persuasion'.[12] It became apparent that more than existing data were needed to fill a potential DOI theory-based framework. For example, the way clinicians interpret the attributes of SDM was not consistently apparent in the previous on-site observations, and its coverage in earlier interviews was insufficient. Therefore, additional data were gathered through focused interviews with clinicians working in the department and not interviewed before.

Modification: additional data collection

A semistructured interview guide was developed, incorporating elements from the 'knowledge' and 'persuasion' stages and exploring physician attitudes towards SDM in-depth. Additionally, to gain deeper insights into physician attitudes towards SDM, the same interviewees were asked to complete the Attitudes toward Decision aids fOr PatienTs (ADOPT) adjective checklist. The ADOPT list of adjectives is specifically designed to explore attitudes towards SDM.[25] Interviewees were invited to highlight those adjectives they associated with SDM and reflect on their choices. The complete interview guide can be found in the online supplemental appendix A. Two junior interviewers, under the supervision of an experienced researcher (LS), conducted the interviews between June and July 2020. All interviews were recorded and subsequently transcribed verbatim. We obtained informed consent from all participants to use interview data for research purposes. Data saturation was achieved after conducting 20 additional interviews, indicating that further interviews were unnecessary to obtain new insights. Eight interviewees (40%) were fully trained gynaecologists, with an average age of 40.2 years (ranging from 35 to 50 years). 10 (50%) were registrars, with an average age of 33.0 years (ranging from 27 to 37 years). Two (10%) were junior doctors who had completed medical school but had yet to start their specialty training, a common occurrence in the Dutch medical training system. The first junior doctor was 27 years old, and the second was 30 years old.

Phase II: identifying and establishing a thematic framework

The framework used in this study aligns with the initial two stages of the innovation-decision process, namely 'knowledge' and 'persuasion', which were also employed during phase I, the familiarisation phase, of our current study.[12] Consequently, the framework in our study was named the innovation-decision framework. During the familiarisation phase and drawing on Rogers' manuscript, significant subthemes were identified within the broader themes 'knowledge' and 'persuasion'. For further elaboration on these themes and subthemes, refer to Table 1. Additionally, a third theme, 'prior conditions', was incorporated into the framework. This theme pertains to the circumstances and factors preceding the introduction of an innovation. According to Rogers, prior conditions are crucial in adoption and diffusion dynamics within a social system, as they establish a conducive or hindering environment for the adoption process to unfold more smoothly and effectively.[12] These prior conditions involve socioeconomic factors, such as education level or income, cultural norms, the presence or absence of leaders advocating the innovation and the alignment of current policies and regulations with the diffusion of an innovation.[12] Once again, table 1 provides detailed insights into all themes and subthemes within our framework. For a comprehensive rationale behind the inclusion of each theme in our DOI-based framework, please refer to online supplemental appendix B.

Phase III: indexing

The additional focused interviews were initially open coded by two interviewers (KR and IJ) using the Atlas.ti software programme.[26] Collaborative discussions with LS led to the development of a comprehensive codebook, ensuring consensus on specific coding decisions. This iterative process involved alternating between interviews, transcription and coding.

Phase IV: charting and mapping

Following the coding phase, the codes were organised into subthemes aligned with the innovation-decision framework. The organisation of codes into subthemes was a collaborative effort between KR and LS for subthemes relating to 'prior conditions' and 'knowledge,' and between IJ and LS for subthemes relating to 'persuasion'. Throughout this process, agreements were reached on the mapping of data to ensure consistency and accuracy in the analysis. Next, data from the previous research projects were integrated into these subthemes where applicable, guided by the outcomes of the preliminary thematic examination conducted during phase 1 of our study. The results section provides a narrative description of the findings.

Phase V: interpretation

Data interpretation occurred throughout all phases of the research process, as is common in qualitative research. This approach ensured a comprehensive depth

Table 1 Innovation-decision framework, based on work from Rogers[12]

	'Prior conditions' The contextual factors within a social system that shape the status quo when introducing an innovation.	Phase 1: Knowledge; Influenced by 'Characteristics of the decision-making unit' The attributes, traits, and dynamics of the potential adopters	Phase 2: Persuasion; Determined by "Perceived characteristics of the innovation" The subjective perceptions and evaluations of an innovation formed by potential adopters
THEME			
SUB-THEME	'Previous practice' The established behaviours, routines, and methods individuals or social systems use before introducing an innovation.	'Socioeconomic characteristics' The demographic and economic factors that shape individuals' societal positions and roles.	'Relative advantage' The perceived benefits and advantages of adopting an innovation compared with the existing alternatives or practices.
	'Felt needs/problems' The perceived gaps or challenges that individuals or social systems recognise and desire to address.	'Personality variables' Individual traits, attitudes, and psychological characteristics that influence the adoption and diffusion of innovations.	'Compatibility' The degree to which an innovation is perceived as consistent, harmonious, and compatible with potential adopters' existing values, beliefs, needs, and experiences.
	'Innovativeness' The degree to which an individual or social system is open to adopting new ideas or innovations.	'Communication behaviour' How information and messages about an innovation are disseminated and exchanged among individuals or within a social system.	'Complexity' The perceived difficulty, intricacy, or complexity associated with adopting and using an innovation.
	'Norms of the social system' The established standards, values, and expectations that guide behaviour within a particular group or community.		'Trialability' The degree to which an innovation can be experimented with or tested on a limited basis before fully committing to its adoption.
			'Observability' The extent to which the results or benefits of adopting an innovation are visible and easily observable by others within a social system.

of understanding. After all data were collected, the final interpretation was conducted by the broader research team (LS, JWMA, DB and FS), contributing diverse perspectives and enriching the overall insights drawn from the study.

Research team and reflexivity

All authors bring experience from their work within a gynaecology department, potentially introducing bias into their work. This bias was mitigated in one of the previous datasets, as one study was conducted in partnership with independent, external medical anthropologists.[20] Additionally, the interviewers and coders in this study had yet to acquire clinical experience. LS is a trained medical educationalist who was an obstetrics and gynaecology registrar during data collection. JWMA is a gynaecological oncologist with expertise in qualitative research and extensive experience conducting research focused on person-centred care. She has worked both domestically and internationally, thereby cultivating a deep understanding of various healthcare systems and the complexities associated with their implementation. DB is a retired gynaecologist and a Professor in Reproductive Medicine. FS is a gynaecologist and a Professor in Health Systems Innovation and Education.

RESULTS

Results are presented in alignment with the (sub)themes from our DOI-based framework.

Prior conditions: previous practice

Drawing primarily from data from the two previous studies, it was observed that medical evidence from clinical trials played and still plays a significant role in practice guidelines and clinicians' daily practice. Patient perspectives were not consistently prioritised in meetings or initial treatment decisions. The training of medical professionals emphasised medical knowledge and guidelines rather than coaching on handling patient preferences. In situations with limited medical evidence, clinicians strived to reach a consensus within the team before discussing treatment options with patients. While clinicians often assumed they knew what was best for their patients, they also demonstrated dedication to patient well-being by actively seeking to understand their needs and providing comprehensive support.

Prior conditions: felt needs

Accurately identifying genuine felt needs for using SDM posed a challenge, as felt needs are less apparent in interviews and observational data. However, indications of an intrinsic desire to involve patients in their care pathways were observed. An example is the patients' presence and active participation during morbidity and mortality meetings at the department,[27] which is not common in the Dutch healthcare system.

In interviews, physicians demonstrated a strong awareness of patients' wishes and preferences, highlighting the necessity for tailored decision-making. Explicitly

mentioned reasons supporting the need for SDM included patient autonomy, adherence to good medical practice, the perception of SDM as the gold standard and the belief that SDM is the optimal approach in medical decision-making. The explicit incorporation of SDM into patient consultations, such as through decision aids and other SDM-supporting materials, through initiation by patients, or promoted by clinicians or their supervisors, increased the perceived need for SDM. One registrar made a concrete suggestion on how to foster SDM integration into group meetings dedicated to discussing patient cases:

> I think one sentence should be used: 'The patient prefers:…' That says enough, and one can carry that with oneself. Source: additional interviews, registrar #2

However, there were also instances when a limited need for SDM was expressed. Most clinicians believed that SDM should primarily be employed when multiple comparable treatment options are available or when choices are unclear while still ensuring safety boundaries:

> I think it is important that you stay within medically safe options. However, if there are comparable options: yes. And the patient has a choice: Yes, it is necessary. They have to deal with the result, not us. Source: additional interviews, gynaecologist #7

Prior conditions: innovativeness
The level of innovativeness was hard to establish from the data as well. However, based on a few SDM-related initiatives initiated and visible within the department during data collection, an innovative nature was suggested. For example, the gynaecological oncology department was in the middle of a research project designing cancer-specific decision aids,[28] and initiated the previously mentioned patient participation at morbidity and mortality meetings.[27] In general, we observed many interactions concerning the discussion of new (scientific) insights and the application of up-to-date scientific knowledge.

Prior conditions: norms of the social system
As in any social system, cultural and language differences between clinicians and patients influence decision-making. Direct communication was common in the department under study, and gynaecologists were typically approachable, involved and open to new insights. Empathy and involvement were prominent traits among gynaecologists towards both patients and colleagues. However, a hierarchical structure was still observed within team meetings, with gynaecologists generally holding decision-making power over others. Nurses were present in meetings but usually did not actively participate in discussions or treatment decision-making.

Clinicians generally valued the well-being and opinions of patients. However, some prioritised their own opinions over patients' wishes, for example, prioritising survival chances over the quality of life during decision-making. We also observed that dealing with uncertainty was a concern for clinicians, and uncertainties were more frequently discussed among physicians than with patients.

Knowledge: socioeconomic characteristics
The group of clinicians, both gynaecologists and registrars, were very homogeneous. Specifically, they exhibited similarities regarding their higher socioeconomic status and cultural backgrounds.

Knowledge: personality variables
Certain clinicians demonstrated higher interest and engagement in SDM than others. Through our observations, we noticed distinct personality differences among physicians, with some individuals displaying more assertiveness and expressing their opinions more firmly than others. The doctors themselves also acknowledged these differences.q

Knowledge: communication behaviour
We identified a notable absence of emphasis on SDM in local protocols and national guidelines. Moreover, during meetings and handovers, patients' preferences were lacking in discussion, meaning SDM was hardly integrated. Additionally, we observed variations in engagement and assertiveness among participants during group discussions. It became evident that more proactive and assertive individuals often assumed leadership roles when shaping policies and making decisions.

Persuasion: relative advantage
The use of decision aids offered specific advantages, benefiting both clinicians and patients in the process of making treatment decisions. They provided valuable structure, assisting in clarifying the patient's preferences and desires. They were crucial in presenting a comprehensive and realistic understanding of treatment options and their potential outcomes to the patient. As one participant highlighted:

> Well, for example, I use the decision aid for heavy menstrual blood loss (…). That also gives me structure. One uses it as a handle to have that conversation. Source: previous interview data,[21] registrar #7

Participants considered it advantageous that SDM allowed patient interests to be visible, leading to better understanding and insight into the patient's thoughts and feelings. It led to a stronger doctor–patient relationship, with patients appreciating the shared responsibility between clinicians and patients in the decision-making process, as well as improved health outcomes, better quality of care and providing patients with better explanations and informed decision-making. SDM involved patients more consciously in the decision-making process, making them aware of disadvantages and reducing regret or blame in case of adverse outcomes:

You also create clear expectations with the patient by explaining which treatment option has risks and what success rates comprise. So, I also think that, ultimately, if a treatment does not work, patients will at least appreciate being included in the process. Source: additional interviews, gynaecologist #3

Multiple interviewees suggested that SDM improved compliance and patient motivation, leading to potentially more effective treatment. According to them, SDM was associated with increased patient satisfaction, a better feeling about the treatment, and reduced regret. According to the clinicians, patients felt seen, heard and taken seriously during SDM.

The exercise with the adjective list, where interviewees had to indicate which adjectives described their attitude towards SDM best, underlined this positive stance towards SDM. There, the adjective 'rewarding' was chosen by eleven out of 20 participants, against none of them choosing the adjective 'unrewarding'.

All these relative advantages, however, were downsized by felt disadvantages. For example, the often-mentioned belief that SDM is 'time-consuming'; eight participants chose this adjective for SDM. Others, however, described that although it may initially take time, SDM ultimately saves time by fostering patient awareness and understanding, preventing future difficulties or regrets:

At first, I thought: 'Geez, that takes much time.' However, one has a satisfied patient who does not come up with many questions afterwards, saving time. So that is also an advantage. Source: additional interviews, registrar #4

Other often chosen adjectives from the ADOPT adjectives list describing SDM as potentially disadvantageous were 'difficult' or 'laborious', each chosen by three out of 20 participants. Furthermore, although clinicians often felt more appreciation from patients when applying SDM principles, varying levels of interest from colleagues for SDM were described. In intercollegial interactions, negative aspects associated with SDM often received more attention than success stories.

Persuasion: compatibility
During our practice observations, we noticed that physicians dedicated considerable attention to providing proper patient information during consultations. Some clinicians extended consultation times to ensure adequate patient education. However, SDM was predominantly observed in follow-up consultations when care was less guideline-driven or clear-cut. Examples highlighted the challenges of balancing SDM and the performance of simple medical actions, particularly in diagnostic procedures. For instance, a biopsy was taken during a routine patient consultation without extensive patient involvement in decision-making.

Another compatibility issue arose when a patient's wishes diverged from the doctor's belief regarding this

patient's optimal course of action. Then, varying levels of support were observed among clinicians, and instances indicated that the patients' opinions were not always prioritised. Overall, there were considerable variations between individual physicians regarding how extensively patients' needs and wishes were addressed.

In our additional interviews, the adjective 'realistic' was chosen seven times, and most participants believed that SDM aligned with their current practice. However, according to the interviewees, not all patients desire SDM, and team policies or strong advice can override it. A few clinicians expressed that SDM was unsuitable for certain patients who find it burdensome or are unable to make choices, suggesting that a paternalistic approach might be more suitable in such cases. Some admitted to being more controlling in specific situations, such as when there is a superior medical option, when patients explicitly request the doctor to decide or when patients face difficulties in decision-making. Emergencies were also perceived as less suitable for SDM, and time constraints were mentioned as a reason to be more controlling:

Well, in my experience, if you have a hectic consultation schedule and end up running forty-five minutes behind at the end of the day, that [SDM] becomes constrained by time pressures. You think: Well, [a particular treatment option] would suit this woman. Consequently, you start steering towards a specific course of action more rapidly, rather than calmly engaging with the decision aid, discussing the options, and allowing the patient to leave and revisit the matter in the following week. Source: additional interviews, gynaecologist #3

We observed several limitations concerning time constraints: short consultation times, swift treatment protocols limiting the available time for clinicians and their patients to engage in a collaborate decision-making process and a fast-paced discussion of individual patient cases during meetings. As a result, there was limited space for SDM.

Persuasion: complexity
Our interviews showed that levels of experience in gynaecology care provision impacted the perceived difficulty of SDM, as registrars more frequently mentioned finding SDM challenging compared with senior clinicians. The perceived complexity of executing SDM was situationally determined and aligned with the compatibility issues mentioned earlier. Factors such as patient intelligence and their ability to understand the SDM process and content, influenced by language barriers and cultural differences as well, played a significant role in determining the difficulty for healthcare professionals. Difficulties arose when options were unequal, patient preferences were unclear, unrealistic patient wishes existed or clinicians were biased due to their opinions.

If you feel that a patient makes a choice that is very remote from you, which you do not support yourself,

then it gets difficult. Because then, as a doctor, I might not want to participate in this treatment because that is not good for this patient. Is that shared decision-making? To me, it is not shared decision-making because we did not do it together. Source: additional interviews, junior doctor #2

Sometimes, colleagues complicate the SDM process as well. Some participants expressed a lack of appreciation and felt the need to justify their decisions to colleagues when their decision-making deviated from the usual or medically preferred practice. As one registrar puts it:

When I did that [SDM] with that patient, I felt very good about it. I thought, 'Wow, I had a good conversation with that lady. (…) We weighed everything from both sides. [We made] a good decision'. However, I had to discuss it with the obstetrician for another half hour, who ultimately could not proceed. (…) That is almost bizarre that you get so much resistance. Source: additional interviews, registrar #10

Persuasion: trialability
In the focused interviews, we found that while some participants (nine out of 20) did not actively or consciously experiment with SDM or faced challenges, many felt they had the freedom to explore different approaches and techniques. However, the opportunity to experiment was influenced by factors such as their level of training or experience, which supervisor was involved, or the specific cases they encountered:

In more complex cases, the supervisor usually leads discussions. So, I have not had much experience with those academic care problems yet. I think I have not had the opportunity to start experimenting [with that] on my own. However, depending on the supervisor, I might get the chance if I ask for it. Source: additional interviews, registrar #3

A few participants mentioned a lack of knowledge and guidance on effective experimentation as barriers to exploring SDM. Time pressure was also identified as a significant limitation to SDM experimentation.

Persuasion: observability
Our observations showed a general lack of discussion about SDM in teaching moments, handover discussions and tumour board meetings. Furthermore, it was only sporadically observed in other meetings.

Most participants mentioned discussing SDM with their colleagues sometimes. These discussions tended to focus more on the medical aspect and patient perspective rather than specific conversation techniques related to SDM:

For example, if you have a difficult case or difficulty deciding with a patient, I sometimes talk about that with colleagues. We then discuss what I found particularly difficult in reaching a decision (…). However,

we also discuss medical content, like 'What would you do in this situation? Would you give these drugs or something else?' Source: additional interviews, junior doctor #1

10 out of 20 interviewed physicians did not observe the use of SDM by their colleagues, mainly because it occurred during individual patient consultations without colleagues being present. Some participants had suspicions about its application or the lack thereof.

DISCUSSION
The adoption or rejection of SDM is a complex process that requires careful consideration of its benefits alongside acknowledgement of existing limitations and challenges. Using Rogers' framework has been instrumental in examining this intricate process, providing a comprehensive approach to identifying the key attributes influencing SDM adoption within our study's context. Through evaluating the characteristics, traits and dynamics of potential adopters, as well as assessing subjective perceptions and evaluations of the innovation, we gained deeper insights into clinicians' decisions to embrace or decline SDM.

In our study setting, clinicians acknowledged the need to use SDM, to uphold patient autonomy and adhere to good medical practice. They perceived SDM as a potentially valuable approach to medical decision-making, with decision aids offering specific advantages for both clinicians and patients in treatment decision-making and SDM adoption. However, clinicians also recognised the limitations and challenges associated with SDM. Disadvantages found are perceptions that it is time-consuming, difficult or laborious. Compatibility issues arose when patients' wishes differed from clinicians' views or when equivalent treatment options were unavailable, and the pace of healthcare practice sometimes hindered SDM execution. The perceived complexity of SDM varied depending on the situation and often aligned with compatibility issues. Colleagues also contributed to SDM's perceived complexity, as clinicians felt pressure to justify their decisions towards them, and there was a lack of appreciation for good SDM practice. Additionally, clinicians did not recognise the trialability of SDM, and SDM was sparsely observed, both in meetings and doctor–patient encounters.

The use of theory to explain implementation failure is not new in itself. Multiple theories have been applied to capture factors influencing SDM implementation, including normalisation process theory (NPT).[29–31] NPT examines the mechanisms by which new and complex practices, technologies or interventions become routine and normalised within social contexts, focusing on the processes of implementation, embedding and integration.[29 30] It has often been used for evaluations of innovation implementation.[31] Examples from within SDM research include the evaluation of routine embedment of decision aids

within healthcare settings,[29] and the exploration of healthcare providers' perspectives on implementing SDM in routine practice.[30] However, NPT highlights innovation benefits rather than delving into reasons for rejection.[31] In our perspective, recognising and understanding the adverse influences impacting SDM adoption is pivotal for establishing a foundation to drive innovation. Therefore, NPT was deemed less beneficial for the development of our framework and DOI theory was chosen to feed the framework's content instead.

Moreover, current change practices and evaluation theories such as NPT tend to overlook complexities associated with behavioural change, often adopting a reductionist approach when addressing barriers to SDM. The reductionist approach simplifies the determinants of change by treating them as measurable independent variables, assuming that addressing these variables successfully will automatically result in a shift in practice.[32] This linear and causal perspective fails to encompass the complete intricacy of SDM adoption. Our study introduces a novel framework for evaluation based on the DOI theory, aiming to comprehend better why clinicians fail to adopt SDM. The next logical step would involve better facilitation of behavioural change, yet without assuming the causal relationships mentioned above.

Efforts to enhance the implementation of SDM have been ongoing, as overviewed in a series of articles following the International SDM Conference in 2022.[33] Furthermore, a 2021 review thoroughly examined strategies for integrating patient decision aids into routine healthcare settings, drawing insights from 23 implementation studies.[34] Key success factors identified included collaborative development with patient groups, adaptation of aids to local contexts, securing senior-level endorsement and demonstrating SDM benefits through outcome measures. However, despite their significance, these findings may oversimplify the complexities of real-world scenarios. As the same researchers acknowledged, results from controlled studies may not accurately mirror practical experiences, potentially leading to underperformance and slow adoption of decision aids.[34] Thus, understanding the root causes of implementation delays is crucial, extending beyond the factors highlighted for successful implementation. Moreover, it is essential to recognise that implementing decision aids does not inherently ensure successful SDM; rather, decision aids serve as supportive tools for SDM but do not substitute for the practice itself. Consequently, despite our framework analysis, it is imperative to delve into the reasons behind unsuccessful SDM implementation. This involves considering insights from psychology and behavioural change.

Cognitive dissonance theory, initially proposed by Festinger in 1957, offers valuable insights for understanding behavioural change.[35] This theory explains the psychological discomfort individuals experience when they hold conflicting beliefs or attitudes.[35 36] In the context of SDM, clinicians who recognise the importance of patient involvement may experience cognitive dissonance when confronted with their current practices, which lack SDM. This discomfort can compel them to seek justifications for their existing approaches. For example, they may cite time constraints or difficulties in implementing SDM for patients with low health literacy as good reasons for not executing SDM, as clinicians participating in our study mentioned as well. Additionally, clinicians may find reassurance in patient satisfaction with their current practices, which further discourages using SDM. Moreover, the preference for the status quo, commonly known as the status quo bias, reinforces these arguments against SDM adoption in certain situations.[37]

Despite the potential adverse effects, cognitive dissonance can also serve as a powerful motivator for behavioural change, particularly when individuals hold conflicting solid beliefs.[38 39] In our opinion, it is crucial to carefully address these dissonances in order to achieve practice change successfully. The following steps can aid in this process.

First, it remains essential to identify professionals' current cognitions and beliefs. A thorough understanding of the consonant and dissonant beliefs influencing professionals' decisions to adopt or reject SDM is essential to address them effectively. Conducting practice assessments, similar to the approach used in our study, can be instrumental in uncovering these often covert beliefs.

Second, there needs to be more open discussions surrounding these beliefs, particularly regarding the usefulness of SDM. While open communication within healthcare settings has been examined, mainly about professional or patient safety concerns and the importance of speaking up during incidents,[40 41] research on open communication in other contexts remains relatively limited.[42] However, open communication is closely intertwined with significant, well-described psychological constructs, such as those outlined in social interdependence theory.[43–45] This theory explores how individuals' actions are influenced by their perceived interdependence, whether positive through cooperation towards shared goals or negative through competition and rivalry.[43] Contextual factors play a mediating role in determining whether interdependence is constructive. Mediating factors include valuing diverse perspectives, addressing emotions alongside factual information and maintaining open-mindedness (p109–110).[43] These findings align with a Dutch study highlighting the significance of an 'open culture' encompassing various aspects such as thoughts, emotions, attitudes, safety and well-being.[42] These insights underscore the importance of openly discussing SDM beliefs and experiences. They extend beyond what is typically stated in the literature as an existing 'culture supporting SDM'.[8 10] Through discussions with colleagues, making an informed argument to

either adopt or reject SDM becomes possible. It is only through this process that a culture truly supportive of SDM can emerge.

Third, and in connection with the previous argumentation, fostering reflection is paramount. Reflective practice has long been recognised as an effective approach in continuous professional education, surpassing the limitations of simply prescribing or teaching new methods.[46] Through self-reflection, professionals critically evaluate their behaviours and decide whether to change or maintain them. Hence, openly addressing the cognitions and beliefs that hinder or promote the decision to adopt SDM is crucial. To foster behavioural change, training initiatives should not solely focus on straightforward situations. They should also address challenging scenarios where practitioners commonly decide against SDM due to how they resolve their dissonant beliefs. Understanding the arguments used and facilitating open-minded discussions weighing these arguments is once again crucial in the decision to either adopt or reject the use of SDM.

This need for facilitated reflections becomes even more apparent when considering more experienced professionals. Reflective practice and subsequent practice change tend to decline with increased experience, necessitating additional efforts to facilitate reflections among more experienced practitioners.[47] Particularly in these cases, advocating solely for SDM as the best approach is unlikely to yield positive results. Instead, concerted efforts should be made to challenge prevailing beliefs and practice routines, maintaining an open attitude towards potential flaws in the SDM approach in certain situations. Ultimately, regardless of external or cultural influences, the individual professional possesses the agency to either adopt or reject SDM.[48 49] Therefore, addressing these individuals most effectively is essential.

Our study acknowledges several limitations. One limitation concerns the framework analysis approach, which inherently risks being influenced by the researchers' preconceptions and assumptions, despite our proactive measures to mitigate bias through critical reflection on our backgrounds. We further addressed this limitation by drawing on well-established psychological theories to formulate broadly relevant recommendations. Additionally, we employed DOI theory as an existing framework to guide our data analysis, providing a structured and theoretically grounded approach. Furthermore, our study focused solely on the role of clinicians within SDM, overlooking patient perspectives within this collaborative process. This decision was driven by the recognition that clinicians often determine the use of SDM. Another limitation is our study's narrow focus on obstetrics and gynaecology within a single hospital department in the Netherlands. While this specialty is dynamic and characterised by preference-sensitive healthcare decisions, the findings may not be generalizable due to the unique nature of the field. For example, decision-making in obstetrics and gynaecology often occurs under time constraints, such as

during critical moments of childbirth or cancer diagnosis. However, it was not our goal to identify universal and generalisable study results. Instead, our findings underscore the importance of conducting comprehensive practice assessments, similar to our approach, before formulating implementation strategies for any medical specialty or department. This ensures that strategies are tailored to the unique dynamics of each local context.

CONCLUSION

Adopting or rejecting SDM is a complex process influenced by beliefs, cognitions and contextual challenges. Our DOI-based framework analysis aids in identifying these influential factors. Cognitive dissonance plays a significant role as clinicians seek justifications for their current practices or for embracing SDM. By employing strategies such as practice assessments, fostering open discussions on the usefulness of SDM, and promoting reflective practice in, for example, continuing professional development initiatives, we can empower individual clinicians to make the best choices regarding the adoption of SDM. Future research should focus on understanding the cognitive and behavioural factors influencing SDM adoption and developing evidence-based strategies within a certain practice setting, to empower informed decision-making in adopting or rejecting SDM practice. The framework employed in our study holds promise for conducting localised practice assessments, enabling the identification of implicit beliefs specific to each setting. Leveraging this assessment can inform the design of effective implementation strategies suited to local contexts.

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Interview Guide

Interview Guide

Interview Date:

Interview Start Time:

Interviewer:

This research is about the application of shared decision-making in medical practice.

I am ... and together with a fellow interviewer, we will conduct these interviews.

Interviews will be recorded, securely stored, and the results will be processed anonymously. Afterwards, the audio files will be deleted. Do you agree to participate in this interview and allow the use of the results for scientific research?

Are you a gynaecologist or a resident? How old are you? If you are a resident, what year of training are you in? What is your subspecialty (if applicable)?

Can you circle the words from the word cloud you associate with shared decision-making (SDM) and explain your choices?

(See separate word cloud on the next page, encourage explaining choices aloud for recording purposes)

Can you please explain what you understand by SDM?

What are your thoughts on shared decision-making? How and to what extent have you learned about it?

In which situations do you believe the use of SDM is necessary?

Are there situations where SDM hinders rather than helps?

Do you believe providing (structured) education to residents is necessary? If yes/no, please elaborate on why.

Should the hospital invest more funds in developing resources to support/promote SDM? Can you explain your answer?

Would you be willing to allocate time specifically for discussions about SDM? Why or why not?

What are your experiences with the current use of SDM in practice?

What challenges can make it difficult to implement?

What benefits do you see for yourself and the patient in using SDM? Can you provide an example from your practice?

Do you think SDM aligns well with your practice? Why or why not?

Do you find it challenging to apply SDM? If yes, what specifically do you find difficult? And if it's easy, do you ever encounter difficult situations?

Do you feel the freedom to experiment with SDM in practice? If so, how?

Do you recognize different approaches to SDM in practice? Can you provide examples?

If you believe you have put in extra effort for an SDM conversation and it goes well, are your colleagues interested in it? Do you receive recognition for it? How do you notice that?

Do you ever discuss with colleagues how to approach SDM? To what extent does your and your colleagues' engagement with SDM come up in discussions and handover moments?

I have completed my questions. Is there anything else you want to share that hasn't been addressed? If you have any further questions, you can contact me via email. Would you like to receive the final product via email? Thank you for the interview.

Next page: Word cloud, loosely base on Aarts et al, 2022. [1]

[1] J.W.M. Aarts, M.D. Dannenberg, P. Scalia, G. Elwyn, Development of an adjective-selection measure evaluating clinicians' attitudes towards using patient decision aids: The ADOPT measure, Patient Educ Couns 105(8) (2022) 2785-2792.

Word cloud:

regressive

disruptive

easy

worthwile

time-saving   collaborative

efficient

vooruitstrevend

rewarding   worthless   difficult

undesirable   laborious

respectful

necessary

unrewarding

ethical

harmonious

cumbersome

unethical

flexible

familiar

time-consuming

unrealistic

disrespectful

pleasing

unnecessary

unfamiliar

effortless   realistic

frustrating

inefficient

prescriptive   ineffective

divisive

desirable   other …

convenient

All words are applicable   None of the words are applicable

Supplemental material

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Appendix B: Innovation-Decision Framework, extended version, including rationale for each theme. Based on work from E.M. Rogers, 2003 [1]

THEME	**"Prior conditions"** - Refer to the contextual factors within a social system that shape the status quo when introducing an innovation.	**Phase 1: Knowledge;** Influenced by **"Characteristics of the decision-making unit"** - Refer to the attributes, traits, and dynamics of the potential adopters.	**Phase 2: Persuasion;** Determined by **"Perceived characteristics of the innovation"** - Refer to the subjective perceptions and evaluations of an innovation formed by potential adopters.
SUBTHEMES	**"Previous practice"** - Refers to the established behaviours, routines, and methods individuals or social systems use before introducing an innovation. It is essential to assess how an innovation, like Shared Decision Making (SDM), deviates from or aligns with previous practice. This understanding helps determine the compatibility and potential challenges of implementing SDM within existing routines and facilitates tailored strategies for adoption. **"Felt needs/problems"** - Refer to the perceived gaps or challenges individuals or social systems recognize and desire to address. These subjective needs or problems play a crucial role in driving the adoption of innovations, as people are more receptive to solutions that address their perceived issues. Understanding and aligning innovations with these felt needs/problems increases the likelihood of acceptance and adoption.	**"Socioeconomic characteristics"** - Refer to the demographic and economic factors that shape individuals' societal positions and roles. These characteristics include income, education level, occupation, and social status. Understanding socioeconomic characteristics helps identify potential patterns of adoption and diffusion of innovations, as they can influence access to resources, information, and the ability to adopt and sustain new practices. **"Personality variables"** - Refer to individual traits, attitudes, and psychological characteristics that influence the adoption and diffusion of innovations. These variables encompass factors such as openness to change, risk tolerance, adaptability, and the willingness to try new things. Understanding personality variables helps predict and explain individual differences in accepting and adopting innovations, as they shape individuals' receptiveness and readiness to embrace new ideas or practices.	**"Relative advantage"** - Refers to the perceived benefits and advantages of adopting an innovation compared to the existing alternatives or practices. It assesses the extent to which potential adopters perceive an innovation as superior, advantageous, or beneficial. Understanding the relative advantage is crucial in predicting and explaining the adoption decisions, as individuals are more likely to adopt innovations that offer clear advantages over the status quo. **"Compatibility"** - Refers to the degree to which an innovation is perceived as consistent, harmonious, and compatible with potential adopters' existing values, beliefs, needs, and experiences. It assesses the fit between the innovation and the sociocultural context in which it is introduced. Understanding compatibility helps predict and explain the adoption of innovations, as individuals are more likely to adopt innovations that align with their existing practices and do not require significant changes or disruptions.

SUBTHEMES

"Innovativeness"

- Refers to the degree to which an individual or social system is open to adopting new ideas or innovations. It represents the willingness to be among the first to try and adopt novel practices or technologies. Understanding the level of innovativeness helps identify potential early adopters and assess the speed and extent of innovation diffusion within a given population or system.

"Norms of the social system"

- Refer to the established standards, values, and expectations that guide behaviour within a particular group or community. They are the shared beliefs and practices, defining what is acceptable or appropriate within that social context. Understanding the norms of a social system is essential in assessing the potential acceptance and adoption of an innovation, as they shape the collective attitudes and behaviours towards change

"Communication behaviour"

- Refers to how information and messages about an innovation are disseminated and exchanged among individuals or within a social system. It encompasses the channels, methods, and patterns of communication used to spread knowledge and influence the adoption process. Understanding communication behaviour helps identify influential sources, effective communication channels, and the dynamics of information flow that impact the diffusion of innovations within a given context.

"Complexity"

- Refers to the perceived difficulty, intricacy, or complexity associated with adopting and using an innovation. It assesses the effort, knowledge, skills, or resources required to understand and implement the innovation. Understanding complexity is important in predicting and explaining the adoption process, as individuals are more likely to adopt innovations perceived as simple and easy to use rather than those that are overly complex or burdensome.

"Trialability"

- Refers to the degree to which an innovation can be experimented with or tested on a limited basis before fully committing to its adoption. It reflects the opportunity for potential adopters to try out an innovation and assess its effectiveness and suitability in their specific context. Understanding trialability helps predict and explain the adoption process, as individuals are likelier to adopt innovations that can be quickly and safely tested and evaluated before fully committing.

"Observability"

- Refers to the extent to which the results or benefits of adopting an innovation are visible and easily observable by others within a social system. It pertains to the ability to witness and perceive the positive outcomes or consequences of adopting the innovation. Understanding observability helps predict and explain the adoption process, as individuals are more likely to adopt innovations that have observable benefits, as it provides social proof and encourages others to adopt as well.

[1] E.M. Rogers, Diffusion of innovations, Free Press, New York, 2003.