

Review Article

Healthcare professionals' behaviour regarding the implementation of shared decision-making in screening programmes: A systematic review

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ABSTRACT

Objective: To explore the barriers to and facilitators of healthcare professionals' implementation of SDM regarding screening programmes.

Method: A systematic review was conducted in PubMed, Cochrane Library, CINHAL, and PsycInfo. The barriers and facilitators identified were classified into three factors based on their origin: patients, healthcare system performance, and healthcare professionals themselves.

Results: Eight studies were selected: seven related to cancer screening. The most significant facilitators were literacy and interest in active participation, both of which have their origins in patients. The most significant barriers identified for the first time in a systematic review were legal conflict, lack of remuneration and lack of flexibility in clinical guidelines in screening programmes.

Conclusion: The results of this study show that there are differences between barriers and facilitators for SDM when it is applied in the context of healthy people who perform preventive activities, particularly screening, in contrast to general medical consultation contexts.

Practical implications: The authors suggest that to advance in the practice of SDM, we need to develop and disseminate training documents. Further, SDM should be incorporated into clinical guidelines. There should be more studies focusing on healthcare professionals' behaviour within the context of the uncertainty of screening programmes.

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1. Background

The chief function of screening programmes is the early detection of diseases [1]. Nevertheless, the unwanted effects of screening programmes have been dealt with in scientific discussions over the past few decades. The most discussed effects include overdiagnosis, false positives, false negatives, and over-treatment [2–4]. This increasing emphasis in literature is associated with an increase in the uncertainty of screening programmes, which arises the need for a change in the decision-making model. This need could be satisfied by shared decision-making (SDM), which allows healthcare professionals and patients to arrive at a joint decision based on the knowledge of the risks and benefits of screening programmes and also considers the patient's values and preferences [5].

SDM has been employed since the 1970s, especially in European countries, Canada, and the United States [6,7]. Elwyn et al. (2010) defined SDM as a model in which '*professionals and patients share the best available evidence when making a decision. Patients are supported to consider the options available, and thus be able to make an informed decision*' [8]. In other words, it seeks to improve people's participation in the health-disease process through a horizontal relationship between patients and healthcare professionals [9]. In contrast to the paternalistic model, in which the patient plays a passive role, and the interventions are proposed by the healthcare professional [10]; the SDM approach considers the patient's values, beliefs, and preferences as well as the risks and benefits associated with therapeutic options [11]. Evidence supports the fact that patients prefer to be active participants in the conversation in which healthcare professionals provide the necessary information; patients report greater satisfaction with the care process when effective and reliable communication is established [12,13].

Based on the previous literature, the main barriers to the implementation of SDM from the perspective of professionals include deficiency of time during clinical encounters, and patient's characteristics and current health situation. The factors that facilitate SDM include professionals' motivation and the belief that SDM can have a positive impact on specific health outcomes [14]. However, the use of SDM has not been generalised in the clinical context [15] or screening programmes [12].

SDM has been studied in various health contexts [14], from therapeutic -patients who are sick and seek, their disease to be treated- to preventive -people who are in a healthy condition and seek to avoid falling into disease [16]. Preventive activities include

actions to adopt healthier lifestyle changes, consumption of drugs to reduce the risk of some diseases - such as statins [17] - and screening. The SR of Gravel, et al. [6] includes some of these scenarios, even though a specific study for screening has not been carried out. Having specific studies in this area is important since in recent decades, experts have discussed the difficulty of knowing the magnitude of overdiagnosis, which causes uncertainty about one of its main adverse effects. In other words, the main adverse effect of screening involves treating a disease unnecessarily, while in other preventive activities the adverse effects are different and are focused on those derived from the medication. Therefore, barriers and facilitators other than those derived from already studied in other SRs [6].

Moreover, there is evidence from the SDM professionals' perspective also in various health contexts [18], but it has not been done exhaustively in screening contexts either, as this is an increasingly frequent practice within the actions of their profession. In this context, the decision does not include discussing various options, but rather participating -or not- in the screening, which sometimes means that this discussion can be confused with Informed Consent [19].

Thus, for example, other countries have focused on the implementation of SDM in screening programs through patient decision aids (PtDAs) with the collaboration of public and private institutions [14,20–22]. Examples include Canada, Germany, the United Kingdom, and the United States [23]. Specifically, the Swiss Medical Association in Switzerland contends that SDM is the ideal model for a preventive approach [7] and has conducted research on colon cancer screening programs [24–26].

Despite the aforementioned research, we have no knowledge about other systematic review (SR) which has emphasised healthcare professionals' perspectives regarding the application of SDM in screening programmes and the possibility of overcoming barriers. Accordingly, this SR explored the barriers to and facilitators of healthcare professionals' implementation of SDM in the context of screening programmes.

2. Methods

2.1. Study design

A SR was conducted based on the recommendations of the Cochrane Manual for Systematic Reviews of Interventions, version 5.1.0 [updated March 2011] [27].

2.2. Literature search and data sources

The search was performed between April and May 2019 in four databases—PubMed, Cochrane Library, Cumulative Index to Nursing and Allied Health Literature, and PsycInfo, using the keywords 'shared decision-making', 'screening', 'health personnel', 'barriers', and 'facilitators' with their variants in each database. The search was not limited by language or year (Fig. 1).

2.3. Inclusion and exclusion criteria

Original research articles with quantitative, qualitative, or mixed methodologies that referred to the facilitators of and barriers to SDM in the context of screening by healthcare professionals who performed direct clinical care were included. We also included studies that did not explicitly define SDM but incorporated a balanced discussion of the benefits and adverse effects of screening programmes to facilitate an informed decision.

Some publications were excluded, for example, those involving combined perceptions of professionals and patients and which lacked clarity regarding the person who issued the answers.

2.4. Study selection

The database search was conducted by three teams of researchers (MJH-MJP, MC-MF, and MJH-VR), each of which applied the inclusion and exclusion criteria in the three phases of the process: reading the title ($n = 977$), reading the abstract ($n = 748$), and reading the full text of each article ($n = 106$). Duplicate studies ($n = 128$) and studies that did not report original research, such as SRs, bulletins, theses, posters, and conference or

dissertation documents ($n = 101$), were excluded. Other studies were excluded: studies on the perceptions of administrative personnel, students, or patients ($n = 315$); studies pertaining to person-centred medicine ($n = 123$); studies that did not assess screening programmes ($n = 204$) and studies that, while encompassing SDM did not delve into its barriers and facilitators or only evaluated the implementation of PtDAs ($n = 98$).

Disagreements concerning the inclusion and exclusion criteria were resolved through discussion with another researcher pair (MC-MJP).

2.5. Data extraction and quality appraisal

One researcher (MJH) extracted the following data from the selected articles: title, authors, year of publication, journal of publication, country of study, type of study, study methodology, participants' characteristics, study screening type, degree of acceptance of SDM, and evidence quality (Table 1).

Two researchers (MJH-MC) independently used the *QualSyst* [36] tool to determine the quality of the studies. The studies were assigned values between 0 and 1, with lower numbers representing poor quality study. The corresponding author of the study was contacted in case of methodological doubts. Discrepancies in evaluation were resolved by a third researcher (MJP).

2.6. Data analysis and synthesis

The selected articles presented heterogeneous methodologies. For this reason, we chose to analyse individual study results. They were not considered representative of the sum of their statistical measures as a whole, that is, only thematic synthesis was conducted (Table 2).

Thematic synthesis [38] employed an inductive process. Three researchers (MJH, MC, MJP) independently read the papers and structured the analysis using the steps proposed by Strauss and Corbin [36]. First, in the citations included in the retrieved articles, they identified sections where healthcare professionals mentioned their perceptions of the difficulty or ease of SDM implementation. Second, the citations were grouped into codes (units that revolve around the same idea) and finally into categories (higher-grade units). Third, the categories were identified as barriers and facilitators. Barriers and facilitators were classified according to three factors based on their origin (who or what influenced the perception or attitude of the healthcare professional): the professional him/herself, patients, or healthcare system performance [38].

Once the researchers (MJH, MC, MJP) independently structured the categories into barriers and facilitators, the results were compared, and discrepancies were discussed until an agreement was reached.

Subsequently, the articles selected for this SR were classified according to the percentage of adherence to SDM [29,30,33–35]. Thus, according to Pollard, Bansback, and Bryan's classification, four categories were identified [39]: *Strong support for SDM* ($>80\%$ adherence to SDM), *Mild support for SDM* ($60\%–80\%$ adherence to SDM), *Indifference towards SDM* ($40\%–60\%$ adherence to SDM), and *Lack of support for SDM* ($<40\%$ adherence to SDM). Articles that did not present a percentage or degree of adherence were not categorized [31].

3. Results

3.1. Description of included studies

The first database search yielded 977 studies: 30 in PubMed, 265 in PsycInfo, 393 in the Cumulative Index to Nursing and Allied

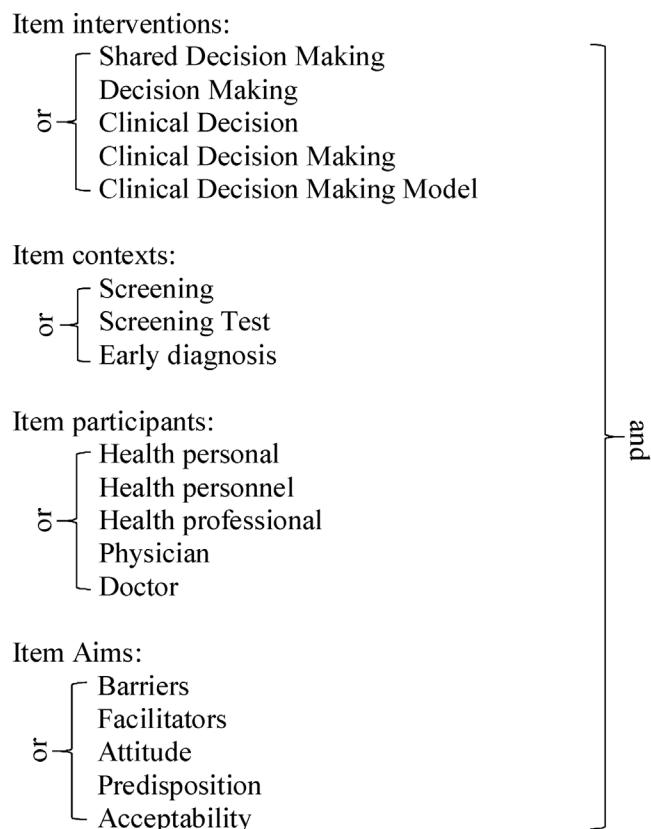


Fig. 1. Search strategy.

Each item was combined with the Boolean term OR and among items with the Boolean term AND.

Table 1
Characteristics of the articles (n = 8).

Article	Authors	Year	Journal	Country	Aim / purpose	Type of study	Methodology	Participants (n)	Screening	Acceptability SDM in screening **	Qualsyst
Are Physicians Discussing Prostate Cancer Screening with Their Patients and Why or Why Not? A Pilot Study [28]	Guerra C., Jacobs S., Holmes J. & Shea J.	2007	Journal of General Internal Medicine	USA	To identify factors that either facilitate or prevent discussion about prostate cancer screening	Qualitative	In-depth, semi-structured interviews. The Walsh and McPhee Systems Model of Clinical Preventive Care as a conceptual framework	Health professionals (18) = internal medicine (14) and family medicine (4) physicians	Prostate cancer	Indifference toward SDM	0,75
Physicians' attitudes about shared decision making for prostate cancer screening [29]	Davis K., Haisfield L., Dorfman C., Krist A. & Taylor K.	2011	Family Medicine	USA	To assess both attitudes and factors which influenced on the SDM process for primary care providers (PCPs) using participative practices in prostate cancer screening	Quantitative	Surveys	Health professionals (135) = primary care physicians; academic clinicals (16), internes/residents (84), community clinicians (35)	Prostate cancer	Indifference toward SDM	0,72
Prenatal screening for Down syndrome: a survey of willingness in women and family physicians to engage in shared decision-making [30]	Légaré F., St-Jacques S., Gagnon S., Njoya M., Brisson M., Frémont P. & Rousseau F.	2011	Prenatal Diagnosis	Canada	To assess both women and their family physicians' willingness (FPs) to engage in shared decision-making (SDM) in prenatal Down-syndrome screening and the factors that might influence on their willingness to do so	Quantitative	Surveys. Control-Preference Scale based on OPTION scale, and the degree to which family physicians involved women in shared-decision making related to prenatal screening	Participants (50) = pregnant women (9) and family medicine physicians (41)	Prenatal screening for Down syndrome	Mild support for SDM	0,77
Early detection of prostate cancer by PSA testing: the results of a qualitative study on barriers caused by physicians in Austria implementing informed decision making* [31]	G. Malli	2013	Das Gesundheitswesen	Austria	To explore factors which help to know GPs' counselling about the prostate specific antigen test	Qualitative	Focus group and deep/ further interviews	Health professionals (42) = general (38) and internal medicine (4) physicians	Prostate cancer	Not reported	0,7
Physician decision making for colorectal cancer screening in the elderly [32]	Lewis C., Esserman D., DeLeon C., Pignone M., Pathman D. & Golin C.	2013	Journal of General Internal Medicine	USA	To analyze whether physicians engage elderly patients in individual decision making for colorectal cancer screening assessment	Quantitative	Surveys by a research team. Not validated	Health professionals (276) = family medicine (158) and internal medicine (118) physicians	Colon cancer	Indifference toward SDM	0,53
Primary care physicians' use of an informed decision-making process for prostate cancer screening [33]	Volk R., Linder S., Kallen M., Galliher J., Spano M. Mullen P. & Spann S.	2013	Annals of Family Medicine	USA	To examine the use of prescreening and discuss on potential benefits and harms of prostate cancer screening by primary care physicians. Analyse the role of physicians' beliefs in prostate cancer screening efficiency, and the contextual factors related to the harms and benefits discussion	Quantitative	Surveys. Beliefs related to cancer screening and identified by Purvis Cooper et al. A group of 17 indicators were found in the literature	Health professionals (246) = family medicine physicians	Prostate cancer	Strong support in favor of SDM	0,86
Are Providers Prepared to Engage Younger Women in Shared Decision-Making for Mammography? [34]	Martinez K., Deshpande A., Ruff A., Bolen S., Teng K. & Rothberg M.	2018	Journal of women's health	USA	To assess readiness to engage younger women in SDM for mammography	Quantitative	Surveys	Health professionals (220) = nurse practitioners (11), internal medicine (100) and family medicine (54) physicians	Breast cancer	Strong support in favor of SDM	0,65

Health Care Providers' Perspectives on Barriers and Facilitators to Cervical Cancer Screening in Vietnamese American Women [35]	Nguyen-Truong C., Hassouneh D., Lee-Lin F., Hsiao C., Vy Le T., Tang J., Vu M. & Truong A.	2018	Journal of Transcultural Nursing	USA	To explore health care providers' perception of barriers and facilitators for cervical cancer screening in American Vietnamese women	Deeply, semi-structured interviews	Health professionals (10) = nurses' practitioners (4), internal/family medicine (3), obstetrics/gynecology/preventive medicine/public health (1), family practice (1)	Cervical cancer	Lack of support for SDM	0.95
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*Original title: Früherkennung von Prostatakrebs mittels PSA test: Ergebnisse aus einer qualitativen Studie zu ärztlichen Barrieren bei der Umsetzung der informierten Entscheidungsfindung in Österreich.
- "not reported": Some of the studies do not mention the tools used in the survey, so one of the researchers (MJH) contacted the corresponding author to clarify this information. However, no response was obtained.
- SDM: Shared Decision Making.

Health Literature, and 289 in the Cochrane Library. After applying the inclusion and exclusion criteria in the different phases, eight articles (28–35) were selected (Fig. 2). Seven of these were in English [28–30,32,34,35] and one was in German [31]. The articles were published between 2007 and 2018. Six studies were performed in the USA [28,29,32–35], one in Austria [31], and one in Canada [30]. Four studies focused on screening for prostate cancer [28,29,31,33], and one for breast cancer [34], cervical cancer [35], colon cancer [31], and Down syndrome [30]. Five used quantitative methodologies [30,31,33,33,34,35], while the remaining three were qualitative studies [28,31,35]. The eight analysed articles included 988 healthcare professionals, of which 76.7 % were physicians. The quality of the articles was valued between 0.53 and 0.95 (range: 0–1) with an average of 0.74 (standard deviation 0.12) points on the *QualSyst* [37] (Table 1).

Barrier codes (n=45) were more than the facilitator codes (n=30). Overall, most of the barrier codes were related to the health system (n=14), while the facilitator codes generally corresponded to the patients' attributes (n=14) (Table 2). All the selected studies reported at least one facilitator [28–35]. However, one study did not mention any barriers [30].

3.2. Barriers to SDM application in screening programmes (Table 2)

3.2.1. Healthcare professionals' perceptions factor

Healthcare professionals' attitudes and beliefs served as obstacles when they did not consider themselves to be experts in SDM [31] or when they were reluctant to accept some aspect of the screening process. In such scenarios, they potentially forgot to recommend screening during clinical meetings [28], held negative perceptions of diagnostic tests [28,31], argued that clinical experience was more useful than scientific evidence with regards to managing screening [33], or maintained their own beliefs regarding the effectiveness of screening [31].

The lack of knowledge about screening and communicative competence was a significant professional barrier [31]. Reportedly, 31.3 % of healthcare professionals were unaware of the risks and benefits of screening [29] and did not have enough information about critical values related to diagnosis [33]. Concerning breast cancer, 21 % and 16 % overestimated and underestimated the risks of screening, respectively [34]. Additionally, 48 % of the healthcare professionals reported inadequate communicative competence to involve patients in their health-related decisions, and only 8 % of those who believed that they possessed these competencies felt sufficiently qualified to implement them [34]. On the contrary, the benefits were over-evaluated in prostate cancer as compared to the risks; thus, early detection substantially reduced mortality [33].

3.2.2. Patients' attributes factor

Healthcare professionals' aversion to incorporating SDM into screening could be due to certain characteristics of their patients. According to healthcare professionals, some patients preferred a paternalistic model and disease-centred care [29,30,32,33,35] or had a passive attitude toward their care. This passivity could be explained by a lack of motivation to get involved in the decisions [31].

Additionally, healthcare professionals identified the health state of the patient as a factor in SDM implementation. About 91 % of the healthcare professionals initiated the discussions when their patients were in a good health condition, which decreased to 44 % otherwise [31]. Multi-morbidity is also a barrier [29,33], especially in people with mental health pathologies [28].

Finally, healthcare professionals mentioned patients' socio-demographic characteristics as a barrier. Poor health literacy or patients' lack of knowledge regarding screening or SDM posed major barriers to SDM implementation [28,33,35]. Specifically,

Table 2
Barriers and facilitators for the SDM practice in screening programs.

Factors	Barriers	Articles	Facilitators	Articles
<i>Healthcare professionals' perceptions</i>	Attitude and beliefs		Attitude and beliefs	
	Negative attitude towards screening	[28,31]	Positive attitude towards screening	[28,30]
	Poor competence in SDM	[31,34]	The professional opinion does not influence adherence to screening	[28,34]
	Not contemplate the application of screening	[31,34]	Subsequent regret when the patients are not involved in the decision	[33]
	Discussion discourages adherence of patients	[29]	The uncertainty treatment allows evaluating the best alternative	[33]
	Skills and competences		Skills and competences	
	Lack of knowledge in screening	[28,30,32,33]	Long working experience	[29,34]
	Lack skills in SDM	[30,33]	Family-medicine training	[34]
	Lack of knowledge in SDM	[33]	Same nationality or language	[35]
			Trustful relationship	[35]
<i>The patient's attributes</i>	Prescribed attitude		Open attitude	
	Passive patients	[28,31]	Interest patients in involved in the decision	[28–31]
	Comorbidity patients removes the focus of preventive care	[28,32]	Patients with longer life expectancy evaluate the future profits and losses	[28,32]
	Assuming a priori the patients' s decision on screening	[28,33]	Personal history of risk sensitizes discussion	[28]
	No decision-making is required when there is a reduced life expectancy patient	[28]	Family history of risk sensitizes discussion	[28]
	Disease-centered care	[28]		
	Sociodemographic		Sociodemographic	
	Limited literacy in patients makes difficult to understand risk and benefits factors	[25,28,30,32]	High literacy patients make easy to understand risk and benefits factors	[28,29,33,35]
	Impaired physical and cognitive function in elderly age	[25,32]	High socioeconomic status increased discussion tools	[28]
			Risky age sensitizes discussion	[28]
<i>Healthcare system performance</i>	Different language makes communication difficult	[26,32]		
	Male sex patients are less participatory	[32]	Structural-organizational	
	Structural-organizational		Assistance time increase	[28]
	Lack of assistance time	[28,29,31,34,35]	Referral to specialized staff of competent professionals	[28]
	Lack of remuneration to new decision-making activities	[29,31]	Reminders system about participation in screening.	[28]
	Complaints and legal conflict	[28,29]		
	Including more activities given the high workload	[28]	Public policies	
	Complexity of screening	[29]	Rigid clinical guides in the application criteria screening	[28]
	Public politics		Lack of scientific consensus for the customization of complex screening programs	[28]
			Standardized screening adherence in at-risk population	[33]

- Qualitative methodology uses an inductive process to agglutinate the main units in complex conceptual [37]. In this case, the “codes” are the phrases that are located in each box associated with the articles that have been mentioned. The “categories” grouped the codes were represent in the title to each box. The categories, according to the healthcare professional perceptions are organized in barriers or facilitators around three factors: patients attributes, healthcare system performance or own healthcare professional perceptions.

- Articles [28,30,31,33] were categorized in barriers or facilitators in their original researcher.

healthcare professionals considered that patients did not have adequate knowledge about SDM [28] or the benefits and harms of screening programmes [33,35]. Then, healthcare professionals also doubted the patients' ability to understand concepts such as false positives [31], false negatives [30], specific symptoms, risk factors, and risk estimation [31,35]. They also mentioned that older age, male gender [28], and idiomatic differences with the interlocutor [35] made SDM more complicated.

3.2.3. Healthcare system performance factor

From the perspective of healthcare professionals, some elements of the structure and organisation of health management could become barriers. The lack of time to apply SDM was the most frequently mentioned barrier [28,30,32,34], accounting for 80.5 % [29]. For example, more than 77 % of healthcare professionals spent less than five minutes of the clinical meeting discussing possible therapeutic options with patients [34]; this is the main limitation to increasing patients' participation in their healthcare [31]. Legal elements were also seen to impact care styles. In two studies performed in the US, the legislative system was mentioned as a threat [28,29]. In one study, this was because 49.6 % of the participants felt responsible and neglectful if a patient refused to undergo screening, resulting in late diagnosis [29]. Consequently,

healthcare professionals requested exams without considering patients' opinions. Additionally, 38.2 % of clinicians, 11 % of interns/residents, and 18.8 % of academicians [29] considered the lack of remuneration for SDM activities as another barrier [29,31].

The barriers related to public policies included guidelines related to the healthcare system and scientific community. About 95.5 % of healthcare professionals believed that the current healthcare system is focused on treatment [29] instead of prevention. This was reflected in screening requests being considered as indicative of care quality, regardless of the patient's opinion [33] to meet coverage goals. Nevertheless, another study identified the general lack of consensus on specific recommendations in clinical guidelines as a barrier [28], for example in colon cancer screening [32].

3.3. Facilitators of SDM application in screening programmes

3.3.1. Healthcare professionals' perceptions factor

According to the healthcare professionals, if they exhibited favourable attitudes and beliefs towards screening, patients felt encouraged to engage in a discussion about whether to undergo screening [28,31]. Therefore, healthcare professionals had to be aware of all the possible unfavourable outcomes [33]. They also

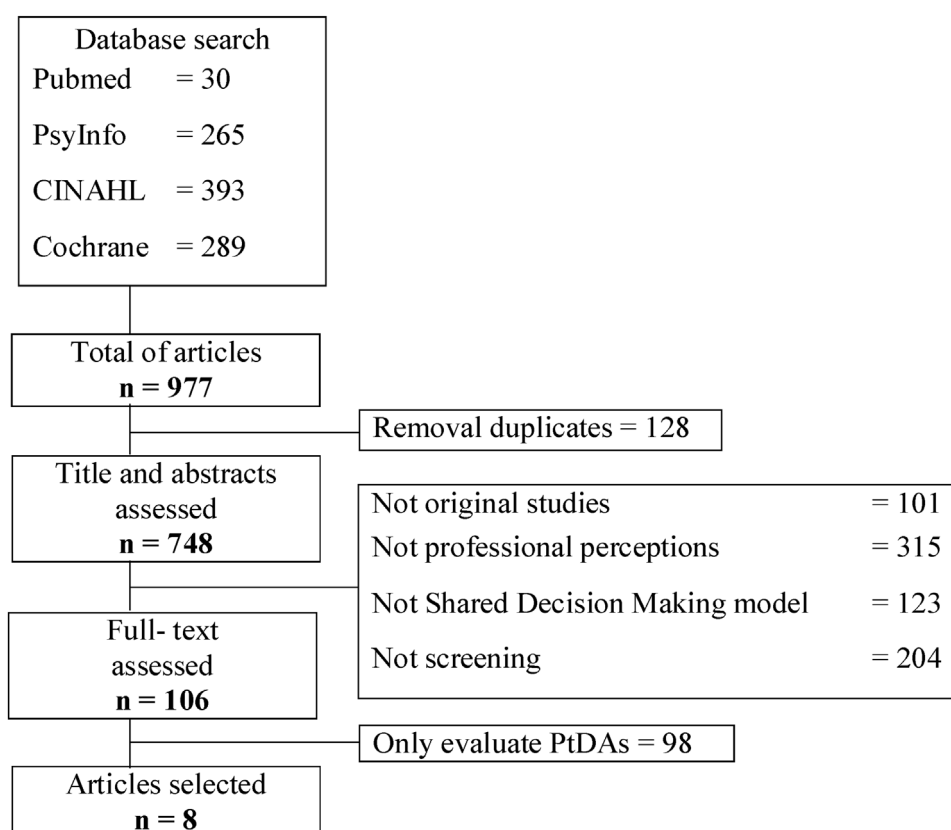


Fig. 2. Selected article flowchart.

Patient decision aids (PtDAs).

stated that the decision to implement SDM should be independent of their personal beliefs [29], even though 21.8 % believed that a discussion could decrease programme adherence [29]. Additionally, failing to adequately facilitate discussions of the decision regarding screening generated feelings of remorse in some of them [33].

It was observed that healthcare professionals' communicative skills and competencies concerning the promotion of SDM had the capacity to lay the foundation of a relationship based on trust, closeness, and sensitivity to cultural beliefs, establishing an optimal space for patients to expose their fears and allowing joint decisions [35]. Thus, being a specialist in family medicine [34], belonging to the same nationality as the patient [35], and having work experience [29,34] of at least five years [35] were factors that facilitated SDM. One study reported that academics and community medicine specialists showed a greater degree of acceptance of SDM than residents or internal medicine physicians [34]. Nevertheless, 96 % of the latter believed that PtDAs are beneficial during clinical encounters [29], compared to their more experienced colleagues (73.5 %) [29].

3.3.2. Patients' attributes factor

The open attitude facilitator corresponded to codes in which the professionals considered the patient's attempts to engage in a detailed discussion about the decision as indicative of a proactive attitude. For example, 69.9 % (29) of the professionals considered patient's interest as one of the pillars of improving participation, leading to a shared decision [28–31]. Those with a family medical report of the disease [28], risky behaviour (e.g., smoking) [28], and a medium/long life expectancy [28] of more than two years [32] showed a greater demand for SDM. Healthcare professionals also

identified some socio-demographic elements that influenced patients' participation in health decisions.

High literacy was observed to be a significant facilitator [28]; 51.9 % of the healthcare professionals believed that knowledge is a key factor [29]. Access and exposure to information make patients more aware of the implications of screening, thereby facilitating discussions [35]. According to healthcare professionals, patients who recognised that screening could lead to the early detection of diseases were more open to SDM [33]. Additionally, healthcare professionals stated that patients considered to be at high risk [28] and who had a high socio-economic level [28] also favoured the implementation of SDM.

3.3.3. Healthcare system performance factor

Elements related to political and scientific guidelines that encourage participation in the healthcare system have been classified into public policies. Concerning prostate cancer, scientific evidence and clinical guidelines support routine screening regardless of the patient's opinion [33]. Nevertheless, another study reported the opposite: scheduled preventive visits enabled periodic meetings that facilitated discussion and access to more specialised health resources [28].

Screening reminders in the clinical file for high-risk patients, consulting more experienced healthcare professionals and having extra time, were facilitating factors under the organisational structure category [28].

4. Discussion

This is the first SR to explore the elements that influence healthcare professionals' decisions to implement SDM in screening

programmes. Eight original research articles were analysed [28–35], with most of the results pertaining to cancer screening [28,29,31,29–35]. Based on the number of articles assigned to each of the codes, time constraints [28,29,31,34,35] and healthcare professionals' lack of knowledge about the benefits and harms of screening [29,31,33,34] were identified as the principal barriers. Regarding the facilitators of SDM, high patient literacy [28–33,35] and interest in participation or having a proactive attitude [28–31] were the most notable ones [16,40]. Unlike other aspects of clinical care, in which patients are unhealthy, on the contrary, they are healthy people who take preventive measures to maintain their healthy condition. Therefore, the application of SDM differs in clinical and screening contexts. To identify these differences, we analysed these three factors together with both barriers and facilitators.

4.1. Perception of healthcare professionals' factor

Health professionals consider aspects of attitude for SDM [28–31,33,34] such as the belief that discussion can discourage adherence [29], while others do not see any relationship [28,33]. On the other hand, some studies find that CDT tends to increase adherence to screening [41]. In any case, the focus of SDM is not adherence to screening, but making the decision jointly by the actors. The health professional has the role of informing in a balanced way about risks and benefits, and in this way promoting the patients' autonomy [42]. Even if there are different opinions between the health professional and the patient, the patient's autonomy should always be respected and the integrity of the professional preserved [43].

A SR, 2019, described that patients with cancer decided on an oncologic treatment. The most significant barriers to the implementation of SDM are related to clinical professionals' specialities and miscommunications [44]. Thus, patients should establish horizontal communicative relationships with healthcare professionals, and healthcare professionals should consider patients' preferences [45]. These results are consistent with our findings [28–32].

4.2. Patients' attributes factor

In our SR, healthcare professionals' beliefs about their patients' behaviour influenced SDM [28–33]. Our results confirm the findings of the previous study [44]. In screening studies there should be a higher concern about adverse effects, since their uncertainty, as well as adverse effects in treatments, which have been studied more rigorously [46].

In the SR mentioned above [44], the concerns of the patients about the adverse effects of cancer treatment were analogous to our results. However, despite the fact that the adverse effects of screening are known by the scientific community, it has been really difficult to transmit balanced information to the population, since it tends to give greater relevance to the benefits (overestimation of benefits) than to the risks (underestimation), which is known as an optimistic bias [47]. In cancer medical treatments both professionals and patients are more aware of the risks.

Previous studies support our results regarding patients' attributes that facilitate SDM, for example: young age [48–50], high educational level [49,50], higher socioeconomic level [50], and existing risk factors (smoking) [51]. Regarding gender, males seemed less participative; this result aligns with the findings of another study [52], in which females had a more active role [49]. However, another study found no such association [51]. Another element found in our study was that active participation indicated the patient's interest in being the protagonist in the clinical encounter [28–31]. Therefore, previous studies recommended that the patient's desired role should be explicitly explored at the

beginning of the relationship because it can vary from passive to active or vice versa during an interview [50,53]. Additionally, if healthcare professionals are aware of the patients' preferences at the outset, it could be easier for them to adapt to their needs, resulting in greater satisfaction and reducing anxiety and confusion [54].

4.3. Healthcare system performance factor

The healthcare system exerts its influence not only through its structure and organisation but also through the health policy. In our case, lack of time was shown to be a major obstacle to the implementation of SDM [28,30,31,34,35]. While there is no consensus regarding whether SDM involves a greater time investment [18], previous studies have reported that it requires an extra 2.6 min [12] beyond 10–15 min reserved for the usual care [55,56]. Thus, 18–20 min would be optimal for an outpatient care meeting [55]. The literature mentions the need to extend the time devoted to clinical meetings, especially in 18 countries, where every patient receives a maximum of five minutes of the healthcare professional's time [57]. Such short durations, apart from being insufficient to correctly assess a patient's condition and establish a doctor-patient relationship, increase the risk of not detecting symptoms or pathological conditions. Additionally, existing evidence supports the inclusion of PtDAs in clinical encounters to improve the quality of care.

An outstanding element in our work revealed that healthcare professionals' fear of malpractice accusations [28,26] leads to defensive medicine. Therefore, healthcare professionals employ more screening, without considering the adverse effects [58]. The literature has established that if patients are involved in the decision and consider it their own, they do not take legal actions [59].

Regarding economic incentives, the studies included in our SR did not specify why they were considered as barriers [29,31]. To date, the payment system has focused on improvements in the remuneration of professionals who incorporate new strategies or achieve better biometric results, which could sometimes be a perverse incentive for professionals (to report better health indicators than the real ones or use invasive procedures to obtain good results) or, on the contrary, be beneficial as it would encourage professionals to create more effective methodologies to keep patients healthy [60]. Another point is that the payment system in the health sector has been changing; in the National Health Service in Britain, indicators incorporating the effect of interventions on well-being and life expectancy are used [61]. However, in the screening context, SDM is focused on facilitating participatory decisions rather than on adherence, or the lack of it, to screening programmes [62]. Therefore, remuneration related to the objective of implementing SDM should be adjusted by evaluating patient participation in decision-making rather than health outcomes. However, for professionals to consider this function as a part of their work, it should be introduced as an ethical and legal professional role [18] right from university training.

While clinical health guidelines based on the effectiveness of screening tests are a framework shared by healthcare professionals, they sometimes do not reflect their effectiveness. Therefore, evidence-based practice (EBP) should not only result into an improvement of biometric or population parameters (such as low mortality in screening) but also focus on the patient's preferences because it is, first and foremost, patients who are responsible for their care and who must evaluate the gains and losses they are willing to bear in each specific case [62]. Thus, the best option is discussing guideline recommendations with patients and making a shared decision using EBP and PtDAs [63,64].

4.4. Experience of other countries in SDM for screening programmes

Countries that have developed SDM in screening programmes emphasize the development of public policies to overcome system (legal) and professional (professional training) barriers besides taking advantage of professional facilitators (PtDAs).

We highlight *Switzerland*, whose success is also due to the training of professionals in SDM in undergraduate and graduate studies of general internal medicine [26]. Additionally, a study raised the possibility of incorporating practice assistants (PAs) who are healthcare professionals and have administrative and clinical functions to overcome some of the barriers described in the system category [26]. The *United States* government has also promoted the implementation of a more participatory model, especially since the enactment of the Law of 2010 (The Patient Protection and Affordable Care Act). In this law, the use of PtDAs is recognized statewide for the first time and legally protects physicians from negligence lawsuits when they choose to use certified PtDAs, a concern that was referred to in our results as a system barrier [65]. PtDAs have been developed for breast, colon, lung, melanoma, prenatal, and prostate cancer screening, among others [23,66]. Finally, research recognizes the need to make professionals aware of the controversies and benefits of screening and to increase SDM strategies for screening, especially for a more participatory model [66], which coincides with our results. Finally, *Canada* has a growing interest in considering SDM in the Canadian healthcare system. CanMEDS calls on physicians to not only inform patients but also actively facilitate their learning for a better physician-patient relationship. Physicians have a legal obligation to allow patient participation, which has prompted the creation of PtDAs

[67], for breast cancer screening and cardiovascular diseases. However, this has not guaranteed its full implementation; therefore, different organizations have been willing to promote it [68], including universities that train undergraduate students or postgraduate programs [67], responding to the barriers of the professionals' factor.

Other countries have also started programs in this direction. *Ottawa Hospital* [23] describes and evaluates many of them. (See [Table 3](#)).

5. Practice implications

Based on the results of this study, together with those reported previously, some proposals can be introduced to overcome the barriers in applying SDM. First, training in SDM should be introduced at the undergraduate level [15,29,69,70]. Consideration should also be given to providing training in communicative skills [65,71], empathy [71], strategies to respond to emotional signals [72], active listening [18,58,70], nonverbal language [59,71], and supportive care [70]. Early training would make it possible to generate a paradigm shift in the healthcare model, strengthening patients' position as active entities who are invested in their health and are aware of the benefits and adverse effects of preventive measures such as breast cancer screening.

Second, by incorporating PtDAs [15,64,73], professionals can effectively involve patients in their health-related decisions [9,53], which would allow the optimisation of the limited time available during clinical meetings. PtDAs have been developed in different formats [12,64]: brochures, booklets, videos, DVDs, web pages, and interactive programmes for online or in-person use [12,73,74].

Table 3
Summary of PtDAs reported at The Ottawa Hospital.

Country	Screening	PtDAs	Year
Argentina	Breast Cancer	Detección precoz del cáncer de mama. Herramienta para la toma de decisiones compartidas. / Early detection of breast cancer screening. A tool for shared decision making.	2020
Australia	Breast Cancer	Should I Continue Having Mammograms to Screen for Breast Cancer? A decision aid for women aged 70 and older at their next screening mammogram	2005
	Cervical Cancer Screening	Making Choices: A decision aid for women with a mildly abnormal pap smear.	2006
	Colorectal Cancer	Making decisions: Should I have a screening test for bowel cancer?	2006
	Prostate cancer	Prostate cancer screening: Decisions for men with a family history of prostate cancer.	2014
Brazil	Prostate Cancer	Apoio à decisão no rastreamento do câncer de próstata. [Decision aid for prostate cancer screening.]	2019
Canada	Prenatal Testing	What are my options regarding prenatal screening tests?; Quelles sont mes options concernant le test de dépistage prénatal?	2017
	Prostate cancer	Le dépistage du cancer de la prostate : une décision qui VOUS appartient! [Prostate cancer screening: It's YOUR decision!]	2013
		Prostate Cancer Screening, Choosing Whether or Not to Screen; Dépistage du cancer de la prostate, choisir de faire ou de ne pas faire le test de dépistage.	2019
Germany	Breast Cancer	Entscheidungshilfe Mammographie-Screening [Decision Aid for Mammography Screening]	2015
United Kingdom	Melanoma	Melanoma: follow-up with regular CT scans - yes or no?	2015
United States	Aortic Aneurysm	Abdominal Aortic Aneurysm: Should I Get a Screening Test?	2015
	Breast Cancer	Breast Cancer Screening and Dense Breasts: What Are My Options?	2015
		Breast Cancer Screening Decision Support Tool.	2017
		Breast Screening Decisions	2016
		Breast Cancer Screening: When Should I Start Having Mammograms?	2016
	Colorectal Cancer	Colon cancer: Which screening test should I have?	2015
	Health Screening	Health Screenings: Should I Buy Commercial Tests?	2016
	Lung Cancer	Is Lung Cancer Screening Right for Me? A Decision Aid for People Considering Lung Cancer	2016
		Screening With Low-Dose Computed Tomography	
		Lung Cancer Screening Decision Support Tool.	2017
		Lung Cancer: Should I Have Screening?	2019
	Melanoma	Melanoma: follow-up with regular CT scans - yes or no?	2015
	Prenatal Testing	Pregnancy: Should I Have Screening Tests for Birth Defects?	2015
	Prostate Cancer	Prostate Cancer Screening with PSA Testing	2012
		Prostate Cancer Screening: Making the Best Choice	2014
		Prostate Cancer Screening: Should I Have a PSA Test? (Healthwise)	2016
		Prostate cancer screening: Should you get a PSA test? (Mayo Clinic)	2015

The table only shows the results of the PtDAs reported and evaluated by The Ottawa Hospital. Therefore, countries and PtDAs may be omitted, this does not mean that any of them are not in development [23].

More recently, the hypothetical goal board model, wherein the objectives are established to guide and strengthen decision-making are aligned with the patient's priorities and values through a practical and realistic approach, has been introduced [56]. The evaluation of PtDAs has been effective in empowering patients, reducing their decision-making conflict [73–78], achieving effective patient-clinician communication [16], improving patients' knowledge related to their health condition [75,78], and resulting in greater satisfaction related to healthcare assistance [12].

Third, EBP must incorporate SDM as a joint strategy for clinical practice. Clinical guidelines, which are usually rigid in their recommendations, become more flexible when professionals consider the reality of each patient, making a joint decision that makes sense for both parties—healthcare professionals and patients. Recently, efforts have been made to determine the individual effect of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) [79] or the participation of patients in the development of clinical guidelines in the United Kingdom by the National Institute for Health and Clinical Excellence [80].

However, to overcome the barriers to SDM implementation, it is necessary to consider the limitations stemming from the system, which are difficult for professionals to change. Limitations such as technological problems [76], time allocated for clinical meetings, and lack of tools for SDM. Changes in the healthcare system structure and health policy objectives, which make it possible to incorporate SDM into normal practice, will become a reality if there are more research and transfer of knowledge between researchers and politicians.

6. Limitations

The scarcity of relevant literature, which indicates a lack of specific research from the perspective of healthcare professionals while applying SDM in screening, constitutes one of the main limitations of this study. Another limitation is that in four studies [28,31,33,35], while the concept was spoken of in different terminology in the main text, the concept of SDM mentioned in the results was similar to that discussed by Elwyn [8]. Finally, most studies were conducted in the USA, which has a private healthcare system; thus, the results may not be representative of countries with public healthcare systems.

7. Conclusions

From the perspective of healthcare professionals, there is a greater perception of barriers than facilitators of SDM. These barriers included lack of time and knowledge about SDM and screening, while the most reported facilitators concerned patients' interest and health literacy. New elements were revealed through the application of SDM to healthy people (screening) instead of patients (treatment); these included fears related to legal action (defensive medicine), rigidity in clinical guidelines, and a lack of remuneration for implementing new activities associated with SDM. Advances in SDM implementation require resources to create exclusive material for professionals, the use of PtDAs, training professionals in communicative competencies, and shifting the focus of clinical interventions from only biometric or population results to the incorporation of patient values as a new variable in the quality of care. This is a new challenge in the structuring and objectives of the healthcare system. Patients have more facilitators of SDM implementation than professionals and the healthcare system. Therefore, healthcare professionals should use this characteristic to promote active patient participation. Further, patients' opinions should be considered when formulating clinical guidelines.

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Declaration of Competing Interest

The authors declare that they have no conflict of interest.

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