

Training interventions to equip healthcare professionals with shared-decision making skills: A scoping review

Abstract

Aim:

Despite numerous initiatives to increase SDM worldwide, SDM has not yet been widely implemented in clinical practice. A key barrier to SDM is that many health professionals have not been trained with the relational and communication skills required for SDM. To support the development and implementation of SDM training programs, this paper maps the evidence in relation to SDM training programs for health professionals and students, in terms of training design and content as well as evaluation outcomes.

Method:

Using a systematic scoping review methodology, quantitative and qualitative evidence were systematically considered to map the literature in relation to SDM training. To identify studies, the databases PubMed, Medline and CINAHL were searched from 2009 to 2019 and reference lists of included studies were examined. Articles were reviewed for inclusion by both authors, and data was extracted using a purposely designed form.

Results:

The review identified 49 studies evaluating 36 unique training programs, of which 18 were for health professionals in tertiary settings, 10 in primary care and 8 for students. Most programs were evaluated descriptively, mostly using mixed methods, and there were 18 RCTs. There was considerable variation in terms of the design and duration of programs. Most programs included an overview of SDM theories and key competencies, and included SDM skill development through role plays. Few or no programs provided training in reflective practice, in identifying and working with patients' individually preferred decision-making style, or in relation to SDM in a context of medical uncertainty or ambiguity. Overall training was feasible, well received, and improved participants' knowledge and skills, but limited in its impact on patients.

Conclusion:

While given the diversity in training programs and evaluation methods used this review is limited in its ability to comment on which types of training programs are more effective than others, there remains a need for longer-term and more in-depth training to embed SDM in practice.

Introduction

With increased emphasis on patient-centred healthcare, over the past decade, shared decision-making (SDM) has garnered policy support worldwide [1-7]. SDM is the philosophy and process of involving patients in decisions about their own care informed by clinical evidence and patient values and preferences [6, 8, 9]. SDM is especially relevant or important when health problems have multiple appropriate treatment options, where there is a close trade-off between harms and benefits or when the evidence is not clear [10-14]. In such situations, clinicians may know more about the risks and benefits of each course of action, but patients know more about their own preferences and values in relation to these consequences [11].

SDM can be supported by tools and strategies, of which the most common is patient decision aids [15, 16]. Patient decision aids provide a summary of the risks and benefits associated with healthcare options and are intended to aid deliberation [15, 16] either by patients alone ahead of a decision-making process or by patients and clinicians together in real time. SDM is associated with improvement in patient satisfaction, health literacy, and outcomes [17] and has been argued to have the potential to reduce the overuse of interventions [18] and unwarranted variations in clinical practice [4, 19, 20].

Despite numerous initiatives to increase SDM worldwide [21], SDM has not yet been widely implemented in clinical practice [4, 9, 13, 22-26], meaning that the theorised and observed benefits described above have not yet been fully realised. There are a number of well-documented barriers to SDM, such as time constraints, resource limitations, clinicians' attitudes, and lack of understanding about the relevance and applicability of SDM [21, 24, 25, 27-30]. Furthermore, in addition to a lack of knowledge, many clinicians have not been trained with the relational and communication skills required for SDM [13, 31-34]. SDM requires high-level communication that involves tailoring information to the individual patients' needs, empowering and coaching patients in constructing a treatment preference, and dealing with patients' emotions [29, 31, 33, 35, 36]. SDM also requires a level of self-awareness and reflective practice that many clinicians may not have [14]. For SDM to become widely implemented, clinicians need training to develop the knowledge, awareness and communication skills required [13, 31, 34, 37]. Unless this skill deficit is addressed widespread adoption of SDM is unlikely [13, 31, 34, 37].

To support the development and implementation of SDM training programs, using a scoping review methodology, this paper maps the evidence in relation to SDM training programs for health professionals and students, in terms of training design and content as well as evaluation outcomes. There has not been a comprehensive mapping of SDM training programs. Previous reviews of SDM training were limited to programs that were evaluated analytically and provided little detail in terms of program design and content [6]. The aim of this paper was to provide an overview of existing programs and their evaluation outcomes to support clinicians and health managers in the development and implementation of SDM training programs.

Method

Using a systematic scoping review methodology [38-41], quantitative and qualitative evidence were systematically considered to map the literature in relation to SDM training for health professionals and students. The aim of a scoping review is to map the literature relevant to a broad research question or topic to gain insight into the nature of the evidence and identify research gaps [38-41]. We followed the PRISMA-ScR reporting guidelines for systematic scoping reviews as outlined in our protocol developed before the review commenced (unregistered).

Eligibility criteria

As per Table 1, studies relevant to the implementation and effectiveness and of training interventions were included (see Table 1).

Insert Table 1: Inclusion and Exclusion.

Table 1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Studies about the implementation and/or evaluation of SDM training for health professionals and/or students/trainees/residents, including interventions in the use of decision aids	Studies about SDM training for patients only, or the implementation of SDM without a specific training program
Studies in relation communication training programs that include SDM as a core component	Studies in relation to communication training more broadly, without a SDM component
Primary qualitative, quantitative (descriptive and analytic) and mixed method studies	Literature reviews, opinion pieces
Published in peer reviewed journals	Non-peer reviewed studies, conference papers and study protocols
Published between 2009 and March 2019	Published before 2009
In English	Not written in English
Full text available	No full text available

Information sources and search

Relevant studies were identified through a range a methods. In the first instance, the databases PubMed, Medline and CINAHL were searched using the key words "shared decision making" or "shared decision-making" AND "education" or "training" OR "supervision" or "mentoring". Following this, the reference lists of articles were examined for further articles (Figure 1).

Insert Figure 1

The databases were searched for the period from January 2009 to March 2019. Retrieved citations were uploaded to an Endnote database.

Selection of sources of evidence

All articles were reviewed by both authors by reading the title, abstract and if required full text for inclusion as per the criteria outlined in Table 1.

Data extraction and charting process

Information relevant to the research question (i.e. training design, training content, training methods, participants, evaluation/research methods, and findings) was extracted from each article using a purposely designed electronic data extraction form. In accordance with the scoping methodology, no formal quality assessment of the included studies was conducted [41, 42].

Synthesis of results

Collation and synthesis of the extracted information was conducted, and results are reported narratively and tabularly (Table 2).

Results

The review process identified 49 studies that met inclusion criteria evaluating 36 unique training programs. Included studies were conducted in the United States (n=13), Canada (n=11), Germany (n=8), the Netherlands (n=4), the United Kingdom (n=5), Denmark (n=1), Australia (n=1), Italy (n=1), and Korea (n=1). The remaining studies were conducted in multiple countries (n=4). The majority of studies (n=41) were of SDM training for health professionals or students only, while eight studies also included SDM training for patients (in addition to health professionals). This paper outlines findings in relation to the training for health professionals only.

The included studies evaluated training programs for health professionals in tertiary settings (25 studies of 18 unique training programs), training in primary care (16 studies of 10 unique training programs) and training for students, registrars or residents through a university of college (eight studies of eight unique programs) (Table XX to Table XX).

Program characteristics

Target audience/clinical specialty

Of the 18 training programs for health professionals in tertiary settings, 10 provided training for multidisciplinary clinicians [27, 29, 31, 43-49], seven were delivered to medical staff only [33, 35, 50-54], and two to nurses only [55, 56]. In relation to the specific target audience, six of the programs were delivered to health professionals across multiple clinical specialties [29, 31, 50, 51, 53, 54], three were for health professionals in oncology [33, 35, 52, 56], two for health professionals providing mental health care [27, 43] and two were within a home care or nursing home care setting [47, 49]. The remaining program were delivered to health professionals providing care to people with chronic or complex health problems [45], within pediatrics [44], diabetes care [46], medical rehabilitation [57] and intensive care [55]. Of the 10 SDM programs in primary care, eight were for primary care physicians only [11, 24, 58-69], one for primary care nurses [70] and one for both primary care physicians and nurses [23]. Of the eight programs for students, all were for medical students or residents [1, 71-77].

Insert Table XX: Program characteristics

	Number of programs (n=36)	Number of studies (n=49)	References
Target audience/clinical specialty			
Oncology	3	5	[33, 35, 52, 56, 78]
Mental health	2	3	[27, 43, 79]
Home care or nursing home care	2	2	[47, 49]
Chronic or complex health problems	1	1	[45]
Pediatrics	1	1	[44]
Diabetes	1	1	[46]
Medical rehabilitation	1	2	[48, 57]
Intensive care	1	1	[55]
Multiple specialties	6	9	[22, 29, 31, 50, 51, 53, 54, 80, 81]
Primary care	10	16	[11, 23, 24, 58-70]

Medical students or residents	8	8	[1, 71-77]
Program content			
SDM specifically	22	30	[1, 11, 22, 24, 27, 29, 31, 33, 43, 44, 49, 50, 52, 54-56, 58-65, 70-73, 79, 80]
Inter-professional approach to SDM	2	3	[47, 48, 57]
Communication skills more broadly with a SDM component as part of the training	9	12	[35, 45, 46, 51, 66-69, 74-76, 78]
Training into the use of a specific SDM tool	3	4	[23, 53, 77, 81]
Training structure, duration and delivery			
Single face-to-face group workshop	8	8	[1, 47, 51, 71-73, 76, 77]
Multiple face-to-face group workshops delivered across multiple days	10	16	[22, 29, 31, 33, 43, 45, 48, 52, 54-57, 63, 64, 75, 79]
Face-to-face group training as well as individual mentoring/reminders	7	10	[24, 27, 35, 53, 58, 59, 65, 70, 78, 81]
Online training only	6	7	[23, 44, 46, 62, 67-69]
Face-to-face group training as well as an online component	1	1	[74]
Face-to face group training, online component and individual mentoring/reminders	1	3	[11, 60, 61]
Individual in situ training delivered at the clinician's place of work	1	2	[50, 80]
Combination of online and individual in situ training	1	1	[66]
Unclear	1	1	[49]
Training facilitation			
Study investigators (no further information provided)	11	18	[11, 24, 31, 44, 45, 47-52, 54, 57-61, 80]
Professional trainer/psychologist with expertise in communication	4	5	[33, 35, 65, 70, 78]
Health professional or clinical academic together with a service user/carer	3	4	[27, 43, 66, 79]
Health professional(s) with relevant medical expertise	2	2	[55, 74]
Health professional(s) with relevant medical expertise as well as training/communication skills	2	4	[53, 63, 64, 81]
Academic teaching the course	7	7	[1, 71-73, 75-77]
Not stated/NA (online training)	7	9	[22, 23, 29, 46, 56, 62, 67-69]

Program content

Twenty-two training programs regarded SDM skills development specifically [1, 11, 24, 27, 29, 31, 33, 43, 44, 49, 50, 52, 54-56, 58-65, 70-73, 78], nine focused on communication skills more broadly with a SDM component as part of the training [45, 46, 51, 66-69, 74-76], two focused on an inter-professional approach to SDM (which linked the participation of patients as well as multidisciplinary colleagues in decision-making) [47, 57], and three focused on training into the use of a specific SDM

tools, including decision boxes [23] and a tool designed to identify patient preferences during discussions about high-risk surgery [53, 77, 81]. Most programs included an overview of SDM theories, characteristics and effects of SDM, how to avoid coercive communication, and overview of the steps involved in SDM (i.e. presentation of treatment options; informing of the options, benefits and risks; investigation of understanding and expectations; identification of patients' preferences; and decision-making). (See Table XXX and Table XX and Table XX).

Training structure, duration and delivery

Eight programs were delivered in a single face-to-face group session [1, 47, 51, 71-73, 76, 77], ten programs were delivered across multiple days [22, 29, 31, 33, 43, 45, 48, 52, 54-57, 63, 64, 75, 79], seven consisted of face-to-face group training as well as individual mentoring/reminders [24, 27, 35, 53, 58, 59, 65, 70, 78, 81], seven were delivered online [23, 44, 46, 62, 67-69], one consisted of a face-to-face and online component [74], one of a face-to-face and online component as well as reminders post training [11, 60, 61], one consisted of individual in situ training delivered at the clinician's place of work [50, 80], and was a combination of in-situ and online training [66]. The structure of one training program was not clearly described [49]. SDM training in tertiary care was most likely to consist of multiple face-to-face workshops, training in primary care was most likely delivered in the form of a single one or half day training session or online, and training within the university settings was most likely to consist of brief (2-hour) single session training.

In relation to training elements, in addition to the use of presentations, group discussions and videos (which were a key component of most training program), most training programs also included role-plays [27, 31, 33, 45, 47, 51, 63, 64, 70-78, 81]. Some programs also included feedback on simulated consultations with actors or consultations with real patients [24, 29, 58, 59, 78, 81], which were sometimes audio- [27, 66, 78], or video-recorded [33, 50, 63, 64].

Eleven of the programs were delivered by the study investigators (without further detail provided) [11, 24, 31, 44, 45, 47-52, 54, 57-61, 80], four programs were delivered by a professional trainer/psychologist with expertise in communication [33, 35, 65, 70, 78], three were facilitated by a health professional or clinical academic together with a service user/carer [27, 43, 66, 79], four were facilitated by health professional(s) with relevant medical expertise [55, 74], of which some also had expertise in training/communication [53, 63, 64, 81], and specific to training in a University setting, seven were delivered by the academic teaching the course [22, 23, 29, 46, 56, 62, 67-69].

Insert Table XX: Overview of SDM training programs for health professionals in tertiary care

Insert Table xx: Overview of SDM training programs in primary care

Insert XX: Overview of SDM training for university students

**Table XX: Overview of SDM training programs for health professionals in tertiary care
(I might merge these three tables into one – Dom address later)**

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Ammentorp et al. (2018) [31]	Denmark	SDM training	Doctors and nurses (multidisciplinary)	SDM skills and theory incl. giving information about possibilities, advantages, and disadvantages; and facilitating a dialogue about expectations, values, concerns, and hopes.	Multiple training modules (exact number NS)	Role plays; videos of consultations; self-reflection exercises	Study investigators
Boland et al. (2019)[44]	Canada	SDM training	Pediatric healthcare providers (multidisciplinary)	Evidence-based decision support strategies (e.g. patient decision aids and decision coaching).	Online training, and 3 hour F2F training	Online training	Study investigators
Lloyd et al. (2013)[29] Joseph-Williams et al. (2017)[22]	UK	SDM training	3 secondary care specialties: head and neck cancer, breast cancer, and pediatric tonsillectomy (multidisciplinary)	SDM theories and skills	2 workshops (duration NS)	Presentations; simulated consultation scenarios; exercises that challenged embedded attitudes	NS
Lovell et al. (2018)[27]	UK	SDM training	Community mental health professional (multidisciplinary)	SDM theories and skills.	2 days (12 hours) plus 6 hours follow-up supervision and 8 hours self-directed learning (optional)	Presentations; audio-recorded consultations; role plays	2 clinical academics and patients and carers. Patient and carers delivering the training attended a four-day 'train the

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
							trainers' course
Stead et al. (2017)[43] Ramon et al. (2017)[79]	UK	SDM training	Mental health professionals (multidisciplinary)	SDM theories and skills applied to medication management.	F2F training in small group settings of 2-12 participants 3 x 1.5 hours; or 2 x 2 hours. Training sessions were delivered at fortnightly or monthly intervals	Videos; online resources	A professional and a service user trainer
Geiger et al. (2017)[50] Kasper et al. (2017)[80]	Germany	SDM training	Medical staff from different specialities	SDM theories and clinician coaching to self-monitor their communication using psychotherapy education techniques (to see the doctor-patient dialogue from a third person's perspective).	In situ training where participants videotape consultations for feedback. 15 minutes of F2F feedback and 2 hours of self-study	Training videos; video-taped decision consultations with patients; video-taped F2F feedback session	Study investigators
Rider et al. (2016)[46]	USA	SDM training	Health professionals providing diabetes care (multidisciplinary)	SDM theories and skills applied to diabetes care	A web-based interactive module	Online training, including video scenarios	NA
Berger-Hoger et al. (2017)[56]	Germany	SDM training/decision coaching	Oncology Nurses providing care to women with ductal carcinoma in situ	Learning for to assess evidence based information (and judging the quality of information); SDM skills incl. the use of a decision aid, and risk communication	2 modules delivered over multiple days	NS	NS
Bernhard et al. (2012)[78]	Australia/ New Zealand	SDM/communication training	Oncology. Medical staff involved in the treatment of	Training in establishing a SDM framework, how to present and structure information, and avoiding coercive communication.	7 hours interactive F2F workshop with one to two follow-up telephone calls over	Presentations; Videos; role-plays with an actor-patient;	Two clinical psychologists with experience in

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Butow et al. (2015)[35]	Switzerland Germany Austria		patients with early breast cancer		2 months to reinforce and extend learning.	individualized feedback on audiotaped consultations with actual patients	interactional skills training (authors)
Henselmans et al. (2019)[33]	The Netherlands	SDM training	Oncologists	SDM knowledge (i.e. definition, rationale, effect, and stages of SDM), attitude (i.e., awareness of preference-sensitive decisions, personal barriers, and motivation), and skills (i.e., ability to apply the four stages using high-quality communication skills).	10 hours of small groups training (3-6) 8.5 hours of F2F contact and 1.5 preparatory reading. Two sessions of 3.5 hours each with approximately 2 weeks in between, followed by a booster session of 1.5 hours 6 weeks later.	F2F feedback on a video-recorded consultation from their actual practice, with the opportunity to repeat parts of the conversation in role-play with professional actors	An experienced trainer (medical psychologist)
Bieber et al. (2009)[54] Bieber et al. (2018)[52]	Germany	SDM training	Doctors across 13 specialities (2009 workshop) and oncologists (2018 workshops)	SDM-related knowledge, attitudes, and skills, incl. patient preferences, the theoretical framework, key competencies, effects, limitations, the pros and cons of the SDM concept, partnership-building with patients, techniques of good communication, special challenges with regard to difficult patients, and consideration of the psychodynamics of the physician-patient interaction. The use of risk charts and decision boards for several exemplary conditions.	Two 4 hours F2F modules, administered to 8-12 physicians over the span of two afternoons within four weeks.	Presentations; videos with standardized patients; role-plays; group discussions; practical exercises	Study investigators

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Jo & An (2015)[55]	Korea	SDM training in relation to end of life care	Intensive care unit nurses	SDM for patients near the end of life within a Korean sociocultural background	F2F workshops of 2x 60 minutes per week, for 4 weeks	NS	Professional panel with one oncology nurse and one ICU nurse at every session
Mariani et al. (2017)[49]	Italy and The Netherlands	SDM training as part of the implementation of a SDM framework in nursing homes	Health professionals working in nursing homes with dementia patients (multidisciplinary)	Communication skills training	NS	NS	Study investigators
Körner et al. (2012)[57] Koerner et al. (2014)[48]	Germany	Inter-professional approach to SDM train the trainer program	Health professionals in medical rehabilitation clinics (multidisciplinary)	The process, characteristics and effects of SDM, incl. the core nine steps: disclosure to the patient that a decision needs to be made, formulation of equality of partners, presentation of treatment options, informing on the options, benefits and risks, investigation of understanding and expectations, identification of both parties' preferences, negotiation, shared decision, arrangement of follow-up, with compiling phrases for each step and role play facilitation for participants to practice the skills recently learned.	2 modules delivered F2F (duration NS)	Training slides and manual	Study investigators
Stacey et al. (2014)[47]	Canada	Inter-professional approach to SDM	Health professionals working in home care	Training in an inter-professional approach to SDM	3.5 hour F2F workshop	Presentation; group discussions;	Study investigators

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
		(multidisciplinary)	(multidisciplinary)			role play with specific decision support tools; a clinical video vignette	
Kaper et al. (2018)[45]	The Netherlands, Italy, Ireland	Comprehensive health literacy communication training	Health professionals providing care for older adults with chronic or complex health problems (multidisciplinary)	Health literacy communication skills; SDM attitudes	5 F2F training workshops (duration NS)	Videos; group discussion; Assessments; video-recorded role plays; participant presentations; peer supervision	Study investigators
Zanini et al. (2015)[51]	Italy	Communication skills training/training in augmentation	Medical staff	SDM skills and knowledge and respecting patients' right to self-determination and autonomous choice	8 hour F2F training workshop (a 5 hour morning session and a 3 hour afternoon session)	Lecture with questions and answer session; role plays based on set scenarios	Study investigators
Kruser et al. (2017)[81] Taylor et al. (2017)[53]	USA	Training in the use of the SDM strategy, 'Best Case/Worst Case'*	Surgeons providing care to frail older patients with acute surgical problems	The use of the 'Best Case/Worst Case' communication framework for decision making during high-risk surgery	2 hour training session, followed by individual coaching	15-minute lecture highlighting the essential tool elements; demonstration with a standardized patient; role plays	Experts in the fields of palliative care, patient-physician communication, and adult education.

SDM=Shared decision-making; NS=not stated; NA=not applicable; F2F=face-to-face

** *Best Case/Worst Case is a SDM strategy that includes the depiction of two or more treatment choices, a narrative about how the patient might experience the outcomes in the best and worst case scenarios, estimation about the most likely outcome, description of how the treatment option affects the larger context of the patient's overall health, and the provision of a treatment recommendation*

Table XX: Overview of SDM training programs in primary care

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Leblanc et al. (2011) [58] Légaré et al. (2011)[59] Allaire et al. (2012)[24]	Canada	DECISION+ SDM training regarding the optimal use of antibiotics for ARIs in primary care	Family physicians	The risks and benefits in relation to the use of antibiotics, effective strategies to communicate this information to patients, strategies to foster active participation of patients in the decision-making process, and training in the use of a decision aid for the treatment of ARIs.	Small group workshops at GP practice (3 workshops of 3 hours each, for a total of 9 hours over 4-6 months), and reminders of the expected behaviours, and feedback.	Videos; reflective exercises; group discussion; training material/a toolkit/a decision aid; reminders; individualised feedback	Two principal investigators of the study
Légaré et al. (2012)[60] Légaré et al. (2013)[61] Couët et al. (2015)[11]	Canada	DECISION+2 SDM training regarding the optimal use of antibiotics for treating ARIs in primary care	Family physicians	Key components of the decision-making process about antibiotic treatment for ARIs.	2-hour online tutorial followed by a 2-hour interactive seminar, and reminders at the point of care.	Videos; exercises; decision aids	A principal investigator of the study or facilitators who were trained in the program
Lenzen et al. (2018)[70]	The Netherlands	SDM training	Primary care nurses working with chronically ill patients	To improve nurses' SDM coaching skills, and to stimulate them to continuously reflect on their work routines and their work-related attitudes.	Two months training period consisting of a one-day training session, individual on-the-job coaching and a 4 hour follow-up meeting. Throughout the training period, the coach could be contacted for questions or further advice.	Presentations; discussions; role-plays; workbook; videos; workplace visit to provide feedback on consultations and coaching	The trainer is a professional coach with 20 years of work experience.

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Volk et al. (2014)[62]	USA	SDM training in relation to prostate cancer screening	Primary care physicians	A to teaching SDM skills using a case-based approach	NS	Online training module	NA
Sanders et al. (2017)[63] Sanders et al. (2018)[64]	The Netherlands	SDM training in relation to lower back pain	Family physicians	Training in the use of SDM skills, a decision aid and a desktop tool containing open-ended questions to support SDM	Two training sessions with 3 to 5 participants that were each 2.5 hours in duration.	Presentations; group discussion, role-plays; exercises to encourage reflection; personalised feedback on videotaped consultation	A peer GP with expertise in training skills
Tapp et al. (2014)[65]	USA	SDM training for the management of poorly controlled asthma in adults	Primary care physicians	Training in the use of SDM material from used a previous SDM trial (The BOAT trial - Better Outcomes of Asthma Treatment)	1 day F2F training followed by training at individual practices	NS	A consultant from the BOAT trial
Tai-Seale et al. (2016)[66]	USA	Communication/SDM coaching training	Primary care physicians	To coach primary care providers to learn their patients' agendas before a visit, acknowledge what is important to the patient, set the agenda jointly, and to check the patient's understanding of next steps and to encourage oral teach-back.	Two minute-animated video; 2x 30 minute individual tailored coaching sessions (one month apart)	Videos; individual workplace coaching; feedback on audio-recorded consultation with real patients	A standardized patient instructor
Feng et al. (2013)[67]	USA	Communication skills	Primary care physicians	Information about limitations of screening; the importance of	30 minute interactive Web-based module.	Online training module	NA

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Wilkes et al. (2013)[68]		training in relation to prostate cancer screening		patient values and preferences; and methods of enhancing SDM		Illustrative video vignettes	
Wilkes et al. (2017)[69]	USA	Counselling training for genetic conditions	Primary care physicians	Information about genetic testing, risk assessment, practice behaviours, attitudes, communication skills, and SDM using a case study approach	6 hour interactive web-based curriculum	Online training module including video-vignettes (e.g. interactions between patients and physicians); interactive exercise; assessments	NA
Giguere et al. (2014)[23]	Canada	Training in the use of decision boxes	Primary care physicians and nurses	Training in the use of eight evidence-based decision boxes* on common primary care interventions.	Online training. Clinicians were e-mailed one decision box weekly for a total of 8 weeks.	A website presenting the decision boxes with a brief tutorial, as well as educational material on patient counselling and assessing the quality of evidence.	NA

SDM=Shared decision-making; GP=general practitioner; ARIs= acute respiratory tract infections; NS=not stated; F2F=face-to-face; NA=not applicable

*Decision boxes are clinical summaries that integrate the evidence to provide information on management options for medical questions that have no single best answer.

Table XX: Overview of SDM training for university students

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Hoffmann et al. (2014)[71]	Australia	SDM training	Surgery residents	SDM theory and skills	1 hour small-group training	Presentations; videos; video-recorded role plays; group discussion	Academics
Morrow et al. (2011)[1]	USA	SDM training	Medical students	SDM theory and skills	7.5 hours of experiential, small-group, and online learning	A mix of experiential, classroom, and online learning	Academic
Stacey et al. (2012)[72]	Canada	SDM training	Medical residents completing residency focused on oncology or palliative care.	SDM theories and skills	2 hour workshop	Role-plays and debriefing	Academic
Simmons et al. (2016)[73]	USA	SDM training in relation to in treatment decisions for four common chronic conditions	Residents in ambulatory medicine	SDM theory, risk communication techniques, and presentation of the "6 Steps to SDM"	2 hour workshop	Presentations; discussions; exercises; role-plays; debriefing	Academic
Yuan et al. (2013)[74]	USA	Intensive care unit communication skills and SDM training	Interns at a medicine residency program	SDM skills incl. assessing the patient/family's values and preferences, providing relevant medical information and a recommendation, and developing a consensus around a treatment plan.	Online module followed by a 4 hour workshop	Presentations; discussions; exercises; role-plays; debriefing	A palliative care and critical care specialist jointly led the interactive large group session
Luttenberger et al. (2014)[75]	Germany	Communications skills training	Medical students	Communication theories and skills, including SDM	12 hours held across 6 days for 2 hours on each day. Groups of about 15 persons	Presentations; discussions; exercises; role-plays	Academic

Citations	Country	Description	Target audience	Training aim/content	Training duration/structure	Teaching tools used	Trainer
Suojanen et al. (2018)[76]	USA	Communications skills training	Physicians and surgeons during the clinical years of medical school.	Communication theories and skills, including SDM	60 minute group lecture, followed by 60 minute discussion Individualised feedback on videotaped mock consultations	Presentations; group discussion; feedback on videotaped role plays	Professor with a Ph.D. in Communication
Chesney & Devon (2018)[77]	Canada	Training in the SDM tool 'Best Case/Worst Case' in relation to surgical emergencies with poor prognosis	Surgery residents	Training in the use of the SDM tool 'Best Case/Worst Case'	2 hour workshop	Presentations; a live demonstration with simulated patient; role-plays; debriefing	Academics

SDM=Shared decision-making; NS=not stated; F2F=face-to-face; NA=not applicable

Study characteristics

Study design

The training programs were evaluated descriptively (n=29) as well as analytically (n=20). Descriptive evaluations consisted of 19 mixed method studies [22-24, 31, 43-45, 51, 53, 56, 65, 69, 70, 72, 73, 77, 79-81], eight survey studies [1, 46, 47, 54, 57, 62, 74, 75], and two interviews/focus group studies [29, 49]. In terms of analytical studies, there were 18 randomised controlled trials (RCT) [11, 27, 33, 35, 48, 50, 52, 58-61, 63, 64, 66-68, 76, 78] and two non-randomised comparative study [55, 71]. Of the RCT, seven studied training programs in tertiary settings [27, 33, 35, 48, 50, 52, 78], ten in primary care [11, 58-61, 63, 64, 66-68] and one for students/residents [76].

Most studies used a range of data types in their evaluation, including observed or recorded consultations with actual patients [22, 33, 35, 53, 56, 61, 63, 66, 69, 70, 73, 76, 80, 81], self-reported participant questionnaires pre- and post-training [27, 43, 45, 47, 48, 51, 54, 55, 71, 75, 77, 79, 80], self-reported participant questionnaires post-training only [1, 22, 31, 33, 35, 44, 46, 56, 57, 62, 74, 81] and interviews and focus groups with participants [22, 27, 29, 31, 43-45, 49, 51, 56, 79, 81].

Study outcomes and measures

Twenty seven studies assessed the feasibility, acceptability or perceived appropriateness of the training from the point of view of training participants [1, 22-24, 29, 31, 35, 43-45, 47, 49, 51, 56-58, 62, 65, 69, 70, 72-75, 77, 79, 80], 21 studies assessed the impact of training on participants' SDM knowledge, confidence and attitudes (including intention to use SDM) [1, 22, 44-47, 51, 54, 55, 57, 59, 61, 62, 68, 70, 71, 74, 75, 77, 79, 81], and 16 studies assessed SDM skill development [33, 35, 50, 53, 56, 63, 67-69, 71, 73, 74, 76, 77, 80, 81]. In relation to patient outcomes, nine studies assessed the impact of training on patient outcomes/patient behaviour [27, 33, 48, 52, 59, 64, 78, 79, 81], 11 studies assessed patients' perceptions of SDM [11, 27, 48, 52, 60, 61, 65, 66, 68, 79, 81], four studies assessed patient decisional conflict (i.e. clarity around treatment decisions) and/or decisional regret [59, 60, 78, 79], and two assessed patient satisfaction [33, 68].

Insert: Table XX: Study characteristics

	Number of studies (n=49)	References
Study design		
Mixed method study	19	[22-24, 31, 43-45, 51, 53, 56, 65, 69, 70, 72, 73, 77, 79-81]
Interview or focus group study	2	[29, 49]
Survey study	8	[1, 46, 47, 54, 57, 62, 74, 75]
Randomised controlled trials (RCT) including secondary analysis of RCT data	18	[11, 27, 33, 35, 48, 50, 52, 58-61, 63, 64, 66-68, 76, 78]
Non-randomised comparative study	2	[55, 71]
Study outcomes and measures		
Feasibility, acceptability or perceived appropriateness of the	27	[1, 22-24, 29, 31, 35, 43-45, 47, 49, 51, 56-58, 62, 65, 69, 70, 72-75, 77, 79, 80].

training from the point of view of training participants		
The impact of training on participants' SDM knowledge, confidence and attitudes (including intention to use SDM)	24	[1, 22, 23, 44-47, 51, 54, 55, 57, 59, 61, 62, 68-71, 73-75, 77, 79, 81].
SDM skill development/changes in SDM behaviour	19	[33, 35, 50, 53, 56, 61, 63, 67-74, 76, 77, 80, 81]
Impact of training on patient outcomes/patient behaviour	4	[11, 59, 60, 64]
Patient-reported SDM/patient involvement in SDM	12	[11, 27, 48, 52, 60, 61, 63, 65, 66, 68, 79, 81]
Patient decisional conflict/decisional regret	4	[59, 60, 78, 79]
Patient satisfaction	2	[33, 68]

Synthesis of study results

The perception and outcomes of SDM training for healthcare professionals and students

Feasibility, acceptability, and perceived appropriateness of training

Studies that assessed the feasibility, acceptability or perceived appropriateness of training found that training was feasible and well received by most healthcare professionals [22-24, 29, 31, 35, 43-45, 47, 49, 51, 56-58, 62, 69, 70, 79, 80], and students [72-75, 77]. In particular, many participants valued the interactive approach with role-plays with face-to-face feedback [22, 31, 35, 49, 77, 80] and reflective exercises [24]. One study found that students particularly valued the opportunity to play both the role of doctor and the role of patient during role plays, and the researchers observed that playing the patient's role seemed to result in a higher degree of empathetic abilities [75].

In terms of feasibility, one study within a mental health setting found that engagement of care coordinators in training was feasible, but psychiatrists were much harder to engage [79]. Participants in a SDM training program that focussed on the use of a decision aid commented that in addition to training in the decision aid, they would have liked more training in SDM skills [23].

SDM attitudes

Most studies found that precipitants demonstrated a positive attitude towards SDM post training [22, 23, 44, 54, 55, 62, 68], intended to use the skills in practice [23, 44-46, 62, 71, 73]. However, these findings were not supported by one RCT which found that SDM training did not impact on physicians' intention to engage in SDM [61]. Specific to training for students, one study found that while overall training improved attitudes towards SDM, attitudes towards viewing a patient's context, expectations and concerns as important elements of SDM did not improve in the intervention group more than the control group [71] and a further study found no difference in student attitudes towards SDM pre- and post-training [77].

SDM knowledge and confidence

Training consistently improved participants' knowledge of SDM [1, 47, 51, 54, 62, 69, 81], and their confidence to apply the skills learned [1, 51, 54, 57, 62, 73, 79]. However, while participants reported improved confidence, a number of studies highlighted that many participants still lacked the confidence to use the skills in practice and wanted more training [23, 44], in particular in relation to discussion the risks and benefits of different treatment options with patients [73]. One study in

relation to training for SDM students found no difference in confidence scores pre- and post-training [77].

SDM behaviour and skills

Studies that assessed SDM skill development through direct observations or video-recording of consultations found that training was associated with improvement in SDM [33, 35, 50, 53, 56, 61, 63, 67, 68, 70, 72, 76, 80, 81]. This is supported by evidence from RCTs in both tertiary [33, 35, 50], and primary health care settings [61, 63, 67, 68] as well as training for medical students [76].

Impact of SDM training for health professionals for patients

Patient-reported SDM/patient involvement in SDM

While most studies found that SDM training for healthcare professionals' increased patient involvement in SDM (as reported by patients or through direct observations or video-recording of consultations) [52, 60, 61, 63, 66, 79, 81], a couple of studies did not find a difference in patients' involvement in decision-making between those in the intervention versus control group [27, 48, 68]. One study reported on patients' individually preferred decision-making style, and found that while the SDM training program led to an increase in patient autonomy, it did not lead to greater consideration of patients' individually preferred decision-making style [52].

Patient outcomes/behaviour

Four studies assessed the impact of SDM training on patient outcomes or behaviour. Studies that assessed the impact of SDM training specific to the use of antibiotics for acute respiratory tract infections (ARIs) found that physician training reduces the use of antibiotics for ARIs without affecting patients' outcomes [59, 60]. A study that assessed the impact of physician SDM training on the recovery of patients with non-chronic low back pain, found that SDM training did not improve symptoms of recovery [64]. A study that assessed the impact of SDM training for physicians on patients' intention to engage in SDM in future consultations, and found no difference between the intervention and control group, suggesting that patient-targeted interventions may be necessary to achieve this purpose [11].

Patient-reported decision conflict

Studies that assessed the impact of training on patient decision-conflict or decision regret reported mixed findings. While one study found that training resulted in less decisional conflict for patients [79], another study did not find little difference between the two groups [59, 60, 78].

Patient satisfaction

The two studies that assessed patient satisfaction did not find a difference between patients' whose physician had been trained in SDM or not [33, 68].

Insert Table X: Studies that evaluated SDM training programs in tertiary care

Insert Table XX: Studies that evaluated SDM training programs in primary care

Insert **Table XX**: Studies that evaluated SDM training as part of student university or college training

Table XX: Studies that evaluated SDM training programs in tertiary care
Maybe merge three tables into one

Citations	Study aim	Design and method	Main findings
Ammentorp et al. (2018)[31]	To develop and assess the effectiveness and implementation of a SDM training program using participatory action research (PAR)	Participatory action research study N= patients, relatives, researchers, communication trainers and health professionals participated in workshops (n=90), evaluation meetings (n=15), post training questionnaires (n=48), and reflection meetings (n=30)	Qualitative and quantitative findings indicated that the training was well-received. The most beneficial aspects of training were reviewing their own videos, role-playing, having discussions. The PAR process showed that health professionals often struggled with addressing existential issues, relationships, meaning, and ability to lead responsive dialogue. The training could benefit from more involvement of patients, and more focus on developing listening skills and being present, and skills in responding to patients' existential concerns.
Boland et al. (2019)[44]	To assess post-training barriers to and facilitators of SDM for paediatric healthcare providers	Mixed method study using post training survey and interviews N=60 paediatric healthcare providers Outcomes= training satisfaction; intention to use SDM; self-reported use of SDM; and SDM barriers and facilitators	Participants demonstrated positive attitudes towards SDM. 92% survey respondent reported SDM as useful. Most survey respondents believed that SDM should involve parents, but not children. After training, 43% of survey respondents and all interviewees said they intended to use SDM. Compared with nursing and medical staff, allied health staff had significantly less intention to use SDM. 64% of participants did not feel confident to use SDM skills post training. 62% of survey respondents and interviewees saw additional training as improving clinicians' ability to use SDM, suggesting booster sessions, team-based retreats, lunch-and-learns. Knowledge and skill-based training alone were considered insufficient to achieve routine use of SDM. Interviewees wanted a team-based training approach and protected team clinical time to practice SDM and develop an implementation plan for their context. 3% of survey and 36% interviewees wanted SDM education for families, such as awareness campaigns, and encouragement to ask for and use SDM tools.
Lloyd et al. (2013)[29]	To evaluate the impact of a SDM program which included a training component	Interview study N=35 front-line health professionals, with a total of 54 interviews Outcome= training satisfaction	While this study assessed SDM more broadly, in relation to the training the workshops were well received, and clinicians particularly liked the experience of developing and implementing tangible tools, such as brief decision support tools (e.g. Option Grids).

Citations	Study aim	Design and method	Main findings
Joseph-Williams et al. (2017)[22]	To summarise the key challenges of implementing a SDM program	Mixed method study within a quality improvement framework using facilitated shared learning events, clinic and consultation observations, interviews with clinicians and patients, patient and public involvement panels, focus groups, and questionnaires. N=clinicians and patients. Sample size not stated. Overview of experience of implementing a SDM program provided with limited details in terms of evaluation methods used.	Training helped improve skills, and promoted a positive attitude towards SDM. Workshop feedback indicated that role play based training, which emphasised practical skills, worked better than theory heavy presentations. The training helped clinicians understand how SDM differed from their current ways of working. In the skills training workshops, role play was particularly effective for showing that tools may support the process but do not replace communication skills.
Lovell et al. (2018)[27]	To test a SDM training intervention in community mental health services	Cluster RCT, including interviews and pre- post training questionnaires N=18 sites with 300 care coordinators, 604 patients (332 in the intervention group and 272 in the control group) and 90 carers Outcomes= patient perceptions of SDM as measured by the Health Care Climate questionnaire (HCCQ-10); and patient perceptions of involvement in care planning decisions using the EQUIP measure.	The training was well attended by care coordinators, but no psychiatrists attended. While the training was well received and acceptable to staff there was no significant effects on patients' experiences of SDM. Participants reported limited opportunity to use the skills derived from the intervention highlighting that training alone is not sufficient to embed SDM in routine care.
Ramon et al. (2017)[79]	To evaluate a SDM training program in psychiatric medication management for service users, psychiatrists and care coordinators	Mixed method, using interviews and pre-post questionnaires N=47 patients, 35 care coordinators, 12 psychiatrists Outcomes = acceptability of training; patient decisional conflict as measured by the Decision Conflict Scale and perceptions of SDM as measured by the OPTION 12 and the Control Preferences Scale (CPS) scale.	The training program was acceptable and well received, with good attendance in particular by care coordinators (and less by psychiatrists). Members of all stakeholder groups gave positive feedback about the group-based training. Care coordinators reported an increased confidence to explore medication experience. Feedback about content and approach from psychiatrists was less positive. Clinicians considered the training relevant to their clinical practice, although they appeared uncertain whether it would influence future practice Statistically significant changes in patients' decisional conflict (feeling more informed and better clarity about personal values underpinning

Citations	Study aim	Design and method	Main findings
			decisions) and perceptions of practitioners' interactional style in promoting SDM occurred at the follow-up.
Stead et al. (2017)[43]	To assess the feasibility of a SDM training program in psychiatric medication management for service users, psychiatrists and care coordinators	Mixed method, using interviews and pre-post questionnaires N=47 patients, 35 care coordinators, 12 psychiatrists Outcomes = acceptability and feasibility of SDM training	The training program was mostly well received, showing feasibility of a SDM training program.
Kasper et al. (2017)[80]	To conduct a pilot evaluation of the in-situ SDM training program doktormitSDM	Mixed method study, including pre- and post-questionnaires and audio-recorded consultations N=10 medical staff, with 40 consultations (4 neurologists, 3 dentists and 3 GPs, each engaging in 4 recorded clinical patient consultations) Outcomes= the extent of patient involvement from observers', doctors' and patients' perspectives; communication performance of doctors assessed by trained observers using the audio-recorded consultations and self-assessed by doctors and patients; and feasibility, usability of training materials and perceived benefit of training from doctor's perspective	Participants considered the training supportive for acquiring SDM skills and recommended more emphasis on the face-to-face feedback. Improvement was observed in the quality of doctor communication, but no improvement was found patients' SDM behaviour.
Geiger et al. (2017)[50]	To evaluate the effectiveness of doktormitSDM in increasing patient involvement in SDM under controlled conditions	Multicentre, double-blind RCT N=38 medical staff and 152 patients (19 medical staff and 76 patients in each group) Outcomes= SDM skills as measured by SDM Questionnaire (SDM-Q) and MAPPIN-Qpatient, MAPPIN-Qdoctor; and rating of the video-	The in situ training was found to be effective and efficient at improving SDM competencies. Compared to other training initiatives and other interventions, the effect size was large, and it remained stable during the follow-up period.

Citations	Study aim	Design and method	Main findings
		recording of the patient consultation using MAPPIN'SDM (which consists of 15 SDM indicators).	
Rider et al. (2016)[46]	To evaluate an eLearning platform to enhance SDM in terms of barriers to effective learning and to explore ways to improve the overall user experience	Post training questionnaire N=390 health professionals	More than 90% of participants agreed that they will be able to apply the knowledge gained from the lesson to their practice. The lesson currently has a 4.7 out of 5-star rating (with 5 stars being the top rating) among users who accessed the training.
Berger et al. (2017)[56]	To evaluate a SDM training intervention for nurses in terms of acceptability and feasibility.	Mixed method study using questionnaires, interviews, focus groups and video-recordings N= 18 oncology nurses, 19 health science students, and 6 breast cancer nurses, and 7 patients. Outcomes=acceptability of training; patient involvement in treatment decision-making as assessed with the MAPPIN'SDM-observer instrument.	Training was well received, acceptable and feasible. A basic level of patient involvement in treatment decision-making was observed for nurses and patient–nurse dyads, and patients demonstrated adequate knowledge of treatment options.
Bernhard et al. (2012)[78]	To assess the effectiveness of SDM training in terms of patient outcomes and satisfaction	Cluster RCT N=62 doctors and 756 patients (21 doctors and 304 patients in intervention and 41 doctors and 390 patients in control). Outcomes= Patient decisional conflict, and patient satisfaction with decision, the consultation and their doctors' consultation skills.	There was no overall effect on patient decisional conflict 2 weeks after the consultation. Overall, patients were satisfied with their treatment decision, their consultation and their doctors' consultation skills.
Butow et al. (2015)[35]	To assess doctors' satisfaction with SDM training and the impact of training on SDM	Cluster RCT using qualitative and quantitative measures including assessment of audiotaped consultations	Overall, satisfaction with the training was high. Participants reported that the workshop was very helpful and all but one participant would recommend the training to others. Qualitative feedback was positive, all but one valued highly the strategies suggested in training as well as

Citations	Study aim	Design and method	Main findings
	communication skills, and confidence	N=62 doctors and 158 patients (31 doctors and 78 patients in intervention group and 31 doctors and 80 patients in control group) Outcomes=changes in SDM behaviours using assessment of 95 audiotaped consultations with patients; self-reported confidence in SDM, stress and burnout and training satisfaction	the opportunity to practice these in role-plays. There was a significant group difference in one element (but not others) of doctors' behaviour: establishing an SDM framework. Participants in both cohorts maintained or slightly increased behaviours designed to establish a SDM framework after training, while the control group declined in this behaviour.
Henselmans et al. (2019)[33]	To measure the effect of SDM training for medical oncologists on observed SDM in standardized patient assessments	RCT using video-recorded patient consultations and questionnaires N=31 medical oncologists and oncologists-in-training in 192 real-life clinical encounters (16 in intervention group and 15 in control group) Outcomes=SDM as measured by the OPTION 12 scale; observed SDM and communication skills using 2 purposefully developed items; patient satisfaction using the Patient Satisfaction Questionnaire; and duration of consultation.	The control group did not differ from the trained group on observed SDM at baseline. Both groups significantly improved over time, yet the improvement in the trained group was significantly larger. The training improved oncologists' information provision skills, skills related to anticipating/responding to patient emotions, and satisfaction with the consultation. There was no difference in patient satisfaction 4 months post-training.
Bieber et al. (2009)[54]	To determine the effectiveness of an SDM training program for medical specialists	Pre-post survey study N=123 doctors from over 13 specialties	Participants (94%) reported positive attitudes towards SDM. Training was well-received, and greatly improved knowledge and confidence in SDM. There was no significant influences of gender or professional attributes (practice setting, specialty, or career choice motives) on training success (quality rating, SDM knowledge test, or competency ratings).
Bieber et al. (2018)[52]	To assess effectiveness of SDM training on patient decision-making roles	Post-hoc analysis of prospective parallel-group cluster RCT N=27 doctors and 107 patients (11 doctors in intervention group and 16 in the control group) Outcomes= Patients' role preferences for involvement in decision-making using the Control Preferences Scale (CPS); patients'	The SDM training program, in combination with the use of decision boards, led to an increase in patient autonomy, but did not lead to greater consideration of patients' individually preferred decision-making style. Patients' desire for involvement in treatment decision-making was high (60% opted for a collaborative SDM approach independent of group condition). 42% patients (even in the control group) felt after consultation that SDM had been achieved. One reason may be physicians' awareness of patient involvement as study focus, which may have resulted in a high motivation to comply.

Citations	Study aim	Design and method	Main findings
		perceptions of what actually occurred in the decision-making process using the Patient Perception Scale (PPS)	Doctors were sensitive and skilled in matching their decision-making style to their patients' desired levels of participation. SDM-intervention was successful in boosting patient autonomy because it significantly raised the extent of involvement patients experienced in their consultations (92%).
Jo & An (2015)[55]	To examine the effects of SDM training on end-of-life care performance, moral sensitivity and attitude towards SDM among Korean nurses	Non randomised controlled trial using a pre-test-post- design N=41 nurses (21 in the intervention group and 20 in the control group) Outcomes= patient-centred care and moral sensitivity measured using the Moral Sensitivity Questionnaire and SDM using a self-developed tool	The experimental group showed significantly higher scores in moral sensitivity and attitude towards SDM after the intervention compared with the control group.
Mariani et al. (2017)[49]	To evaluate the implementation of a SDM framework, which included training, for care planning in two nursing homes	Focus group study N=19 health professionals Outcomes=training appropriateness and satisfaction	The communication training was well received and perceived as of high quality. In particular the usefulness of role playing in learning how to optimally involve residents and caregivers was valued.
Körner et al. (2012)[57]	To evaluate an inter-professional approach to SDM train the trainer program in terms of participant satisfaction and SDM competence	Post training survey N=142 physicians, psychosocial therapists, nursing staff, physical therapists across 6 rehabilitation clinics Outcomes= training satisfaction and SDM competence	The training was well received and SDM competence and satisfaction with training were rated highly.
Koerner et al. (2014)[48]	To evaluate the effect of 'Fit for SDM' inter-professional training on internal (team) and external (patient) participation in medical	Cluster RCT, using a staff and a patient survey pre- and post-intervention, plus a further patient survey six months later. N=195 health professionals (physicians, nursing staff, physical therapists, sport teachers,	The training had a positive effect on external participation for healthcare professionals, who evaluated SDM post-intervention significantly better than before. Patients' results, however, did not confirm greater involvement in treatment planning and decisions after staff training in comparison to before.

Citations	Study aim	Design and method	Main findings
	rehabilitation from patient and staff perspectives	<p>masseurs, psychologists, psychosocial therapists, dietitians, social worker) and 463 patients across eleven medical rehabilitation clinics, divided into intervention and control groups</p> <p>Outcomes= Internal participation using the Internal Participation Scale; SDM using the SDM-Q-9</p>	
Stacey et al. (2014)[47]	To test the appropriateness of an inter-professional (IP) SDM training program using theory-based clinical vignettes	<p>Pre-post- training questionnaire</p> <p>N=29 health professionals working in home care (physicians, nurses, social workers, occupational therapists, dietitians, managers, physiotherapists and an ethicist)</p> <p>Outcomes= satisfaction with workshop; knowledge of IP-SDM before and after the workshop; and confidence in using an IP-SDM approach in clinical practice.</p>	Participants perceived that they had acquired some knowledge during the workshop, which included the video. The video vignette used during training workshops were rated as excellent (n=6), good (n=20), fair (n=0) or weak (n=3). Participants reported higher knowledge of IP-SDM after the workshops compared to before.
Kaper et al. (2018)[45]	To test a comprehensive health literacy communication training for health professionals	<p>Mixed method including focus group and pre-post training questionnaires</p> <p>N=30 health professionals (medical, nursing, physiotherapy)</p> <p>Outcomes = training satisfaction, SDM knowledge and self-reported skills</p>	The training was well received and improved professionals' skills to enhance patient autonomy in decision-making and strengthened intention to apply health literacy communication and improved self-rated skills.
Zanini et al. (2015)[51]	To evaluate a training intervention for doctors in argumentation (a component of SDM) from participants' perspectives	<p>Mixed method including pre- and post- training questionnaires and interviews</p> <p>N=17 doctors</p>	Training was well received and participants reported it taught them techniques to increase their effectiveness in communicating with patients; and provided tools to help address some of the challenges of modern doctor-patient interactions, including dealing with patients' unrealistic expectations and medically inaccurate beliefs.

Citations	Study aim	Design and method	Main findings
		Outcomes= satisfaction with training; satisfaction with communication; and confidence communicating with patients.	
Kruser et al. (2017)[81]	To evaluate a structured training program teaching surgeons how to use Best Case/Worst Case* (decision-aid)	Mixed method, including a survey, interviews with patients and analysis of standardised patient conversations N=25 surgeons and 20 patients Outcomes= SDM attitudes; surgeons' use of the tool	Surgeons and patients endorsed Best Case/Worst Case as a strategy to support complex decision making. This study found that is effective at teaching surgeons to use the tool with high fidelity in clinical practice. The study found moderate variability in presentation of treatment options and description of outcomes. Surgeons reported discomfort providing a specific treatment recommendation because it conflicted with their understanding about how to support patient autonomy. This was reflected in clinical use of the tool as less than half of the participants provided a treatment recommendation for hospitalized patients. Three months after training, 79% of surgeons reported Best Case/Worst Case is better than their usual approach and 71% endorsed active use of the strategy in clinical practice. After a decision-making conversation with trained surgeons, patients and their family members praised their surgeon for providing clarity about treatment options, establishing expectations and facilitating deliberation.
Taylor et al. (2017)[53]	To evaluate a training program to teach surgeons to use Best Case/Worst Case in terms of its impact on communication and SDM	Analysis of audio-recorded consultations with real patients post training N= 17 surgeons, 32 patients, and 30 family members Outcomes= SDM skills as measured by OPTION5 and qualitative analysis of consultations.	Before training, surgeons described the patient's problem in conjunction with an operative solution, directed deliberation over options, listed discrete procedural risks, and did not integrate preferences into a treatment recommendation. After training, surgeons using Best Case/Worst Case emphasised a difficult decision and clearly presented two treatment options, described a range of postoperative trajectories and outcomes including functional decline, and involved patients and families in deliberation. The median OPTION 5 score improved from 41 pre-intervention to 74 after Best Case/Worst Case training.

RCT=randomised controlled trial; IP-SDM=inter professional shared decision-making; SDM=shared decision-making

Table XX: Studies that evaluated SDM training programs in primary care

Citations	Study aim	Design and method	Main findings
Leblanc et al. (2011)[58]	To assess the feasibility and acceptability of the SDM DECISION+ program, among family physicians and their patients regarding antibiotics use in primary care.	Cluster RCT N=39 family physicians Family medicine groups were randomly assigned to either the DECISION+ program (n=18), or a control group (n=21) that had a delayed exposure to the program. Feasibility (delivery) and acceptability (uptake) were the main outcomes measured.	Among 21 family medicine groups contacted, 5 (24%) agreed to participate in the pilot study. The proportion of recruited family physicians who participated in all three workshops was 46% (50% for the experimental group and 43% for the control group), and the overall mean level of satisfaction regarding the workshops was high (94%).
Allaire et al. (2012)[24]	To evaluate family physicians' participation in the SDM training DECISION+	Mixed method study using questionnaires and focus groups N= 5 focus groups with 4–7 family physicians in each group	The training was viewed favourably, particularly because of its interactivity method and use of decision support tool. Participants liked the videos and reflective exercises, which facilitated group discussion. Participants preferred to attend training at or near their practice, ideally during the day on a week day.
Légaré et al. (2011)[59]	To validate the SDM DECISION+ program and estimate its impact on the decision of family physicians and their patients on whether to use antibiotics for ARIs and assess the feasibility of a larger clustered RCT.	Cluster RCT, with questionnaire completed at 3 points during the 3 months of training and post-training N=33 family physicians (from 4 medical practices) and 459 patients. Two practices with 18 physicians in intervention group, and 2 practices with 15 physicians in control group Outcomes= physicians' intention to engage in SDM; decisional conflict; patient decisional regret and health status using a Decision Regret Scale; and number of prescriptions filled by patients extracted from the medication claims database 3 months.	DECISION+ was developed successfully and appears to reduce the use of antibiotics for ARIs without affecting patients' outcomes. Compared to the control group, the experimental group reduced its immediate use of antibiotics (49 vs. 33% absolute difference = 16%; p = 0.08). Decisional conflict agreement was stronger in the experimental group (p = 0.06). Decisional regret and perceptions of the quality of the decision and of health status in the two groups were similar.
Légaré et al. (2012)[60]	To evaluate the effect of DECISION+2 on patients' decisions to take antibiotics for acute respiratory infection	Cluster RCT using questionnaires administered pre-intervention, immediately following the consultation and 2 weeks post consultation N=149 family physicians across 9 medical practices with 365 patients (77 physicians from	DECISION+2 enhanced patient participation in decision-making and led to fewer patients deciding to use antibiotics for acute respiratory infections. The percentage of patients who decided to use antibiotics after consultation was 52.2% in the control group and 27.2% in the DECISION+2 group (adjusted RR 0.48, 95% CI 0.34-0.68). This reduction did not have a negative effect on patient outcomes 2 weeks

Citations	Study aim	Design and method	Main findings
	(ARI) after consultation with a physician	5 practices in intervention group and 72 physicians from 4 practices in control group). Outcomes= proportion of patients deciding to use antibiotics; patient decisional conflict using Decisional Conflict Scale; patient perception that SDM occurred using a modified Control Preference Scale; patient perception of decision quality using a single-question Likert scale; decisional regret using Decisional Regret Scale	after consultation, as patient outcomes 2 weeks after consultation were similar in both groups. DECISION+2 was associated with patients taking a more active role in decision-making ($p < 0.001$).
Légaré et al. (2013)[61]	To evaluate the impact of DECISION+2 on SDM implementation as assessed by patients and physicians on physicians' intention to engage in SDM	RCT using patient and physician questionnaires N=270 physicians across 9 medical practices (162 from 5 sites in intervention group and 108 from 4 sites control group) Outcomes= patient role in consultation (active/collaborative/passive) using a D-Option scale regarding SDM behaviours and physicians' intention to engage in SDM using Theory of Planned Behaviour (pre- and post-intervention).	DECISION+2 positively influenced SDM behaviours as assessed by patients and physicians. After DECISION + 2, patients' D-Option scores were 80.1 ± 1.1 out of 100 in the intervention group and 74.9 ± 1.1 in the control group ($p = 0.001$). Physicians' D-Option scores were 79.7 ± 1.8 in the intervention group and 76.3 ± 1.9 in the control group ($p = 0.2$). More patients reported assuming a more active or collaborative role in the intervention group (67.1%), than in the control group (49.2%) ($p = 0.04$). DECISION + 2 had no impact on the intention of physicians to engage in SDM.
Couët et al. (2015)[11]	To assess the impact of DECISION+2 on patients' intention to engage in SDM for choosing to use antibiotics or not to treat an ARI in future consultations	Secondary analysis of RCT, using pre-intervention, immediately following the consultation and 2 weeks post consultation N=359 patients consulting family physicians about an ARI in 9 medical practices Outcomes= patients' preferred role in the decision-making process as measured by the Control Preference Scale and patients' intention to engage in SDM.	The scores of intention to engage in SDM were high in both study groups before consultation and increased in both groups after consultation. DECISION+2 had no significant impact on patients' intention to engage in SDM for choosing to use antibiotics or not to treat an ARI in future consultations. Patient-targeted interventions may be necessary to achieve this purpose.
Lenzen et al. (2018)[70]	To evaluate the implementation and effectiveness of SDM	Mixed method study using semi-structured interviews, focus groups, survey, audio-recorded nurse-patient consultations	Training was well-received and supported the development of SDM skills. Nurses reported improved SDM skills. However, nurses struggled to integrate the approach in routine care. They experienced

Citations	Study aim	Design and method	Main findings
	nurse coaching training on practice nurses and patients	<p>N=145 nurses and 25 patients</p> <p>Outcomes= the extent to which nurses implemented SDM using items of the SDM Questionnaire-Physician version (SDM-Q-Doc) and observations and nurses' experiences of training.</p>	the approach as complex and especially struggled to apply it in a flexible way. The study concluded that changing practice nurses' role from medical experts to coaches in SDM is very complex and requires paying attention to skills and attitudes, as well as to contextual factors. More time and training might be needed for this role transition.
Volk et al. (2014)[62]	To develop and trial a case-based online SDM program for primary care clinicians	<p>Questionnaire administered post training</p> <p>N=49 health professionals in primary care</p> <p>Outcomes= appropriateness of training, SDM knowledge and confidence and intention to use SDM</p>	The training was well received, led to acquisition of knowledge and confidence, and increased self-reported intention to practice SDM in the future. The information/the case was considered relevant for other equipoise decisions (95.9%). After training, knowledge of SDM was high (over 90% correctly identified the steps in a SDM process). Determining a patient's preferred role in making the decision (62.5% very confident) and exploring a patient's values (65.3% very confident) about the decisions were areas where clinician confidence was lowest. Overall, 34 (69.4%) clinicians indicated they felt very confident in their ability to perform SDM with their patients as a result of the case, and the remaining 15 (30.6%) felt somewhat confident. While the majority of clinicians felt very confident with each step in the SDM process, confidence was lowest for the steps involving exploring the patient's values (65.3% very confident) and determining the patient's preferred role in decision making (62.5% very confident). More than 70% of the clinicians intended to perform SDM in the future.
Sanders et al. (2017)[63]	To evaluate the effectiveness of SDM training for GPs by determining whether GPs trained in SDM showed more trained behaviour during their consultations than untrained GPs	<p>Cluster RCT using videotaped consultations</p> <p>N=68 GPs with 175 videotaped consultations (23 GPs and 86 consultations in the intervention group and 19 GPs and 89 consultations in the control group)</p> <p>Outcomes= SDM as measured by the OPTION scale; positive reinforcement as measured by global observation; the level of autonomy in</p>	Training GPs resulted in more SDM behaviour and more autonomy for the patient. Intervention consultations scored significantly higher on most elements of the OPTION scale, and on the autonomy scale; however, they were three minutes longer in duration, and the mean OPTION score of the intervention group remained below average.

Citations	Study aim	Design and method	Main findings
		decision making and the duration of the consultation	
Sanders et al. (2018)[64]	To evaluate the effectiveness of SDM training on patient-related outcomes in patients with low back pain	Cluster RCT N=68 GP, with 226 patients (34 intervention group and 34 in control group) Outcome = change in physical disability measured with the Roland-Morris disability questionnaire (RMD) during the six-month follow-up after the first consultation	SDM training of GPs did not improve the symptom recovery of patients with non-chronic low back pain, even though the GPs effectively involved patients in the choice of treatment after the training. No significant differences in the mean scores for any outcome were observed between intervention patients and controls during the follow-up, and in multivariate analysis, there was no significant difference in the main outcome during the six-month follow-up. Patients in the intervention group reported more involvement in decision-making.
Tapp et al. (2014)[65]	To evaluate the implementation of a SDM intervention across primary care practice settings	Participatory action research (PAR) including focus groups with clinicians, clinic data, patient feedback N=6 primary care practices Outcomes=participation in training by clinicians and experience of SDM reported by patients	16% of all practice providers across the 6 sites participating in the intervention. One year after initiation, 100% of clinics have sustained the intervention. 90.7% of these patients reported that their visit involved a shared decision about asthma treatment, while 9.3% reported that the provider alone or the patient alone made the decision. About 79.3% reported that their influence on the treatment decision was equal to that of the provider.
Tai-Seale et al. (2016)[66]	To evaluate the effectiveness of a multidimensional SDM intervention (OpenComm) on patients and primary care providers in comparison to an existing intervention, Ask Share Know (ASK), which targets mainly patients' behaviour.	Cluster RCT using surveys, interviews and audio recorded consultations. N=26 primary care providers from 4 clinics; 300 patients randomised to four arms: OpenComm; ASK; OpenComm plus ASK; and usual care. Outcomes= participants' views on their experience with their primary care providers using CollaboRATE, a patient-reported experience with care; patients' perception of how well primary care providers did on facilitation of SDM using an adapted facilitation subscale of the Perceived Involvement in Care scale; and fidelity using SDM tools and experience using audio-recorded visits, post-	Compared to usual care, both patients who received care from a primary care physician trained in OpenComm and those trained in the ASK intervention reported better SDM. Compared with visits in the usual-care clinic, patients in the OpenComm clinic had 1.523 times higher odds of giving their primary care providers the highest possible CollaboRATE score, while ASK clinic patients had 1.647 times higher odds of doing. OpenComm plus ASK clinic patients had the highest odds of giving all top scores (OR: 1.212). No statistically significant results were found across the four arms on the measure gauging respect.

Citations	Study aim	Design and method	Main findings
		intervention interviews with clinic members, and conversations with patients	
Feng et al. (2013)[67]	To evaluate the effectiveness of a web based SDM training intervention for physicians in relation to prostate cancer screening	RCT with three arms N=118 physicians randomised to training only (n=33), training and unannounced actor-patient visits (n=28), control (n=57).	In comparison with control physicians, intervention physicians showed somewhat more SDM behaviours, were more likely to mention no screening as an option (intervention 63% vs control 26%, $p < .05$), to encourage patients to consider different screening options (intervention 62% vs control 39%, $p < .05$) and seeking input from others (intervention 25% vs control 7%, $p < .05$).
Wilkes et al. (2013)[68]	To evaluate SDM training effects on primary care physicians' rates and types of discussions about prostate cancer screening	Cluster RCT with three arms N=120 primary care physicians in 5 medical practices and 712 patients randomised to physician training alone (n=41 physicians, n=246 patients), physician and patient training (n=36 physicians, n=113 patients) and usual care (n=43 physicians, n=353 patients) Outcomes= patients' satisfaction and perception of SDM; standardized patients' reported SDM and physician's recommendation for prostate cancer screening using audio-recordings of the encounter; physicians' perception of SDM pre- and post- training; and intervention physicians' evaluation of the training program.	Patients' ratings of SDM were moderate and did not differ between groups. However, the intervention had a large effect on physicians' attitudes toward screening and in the discussions they had with patients. Trained physicians were more likely than control physicians to engage in prostate cancer screening discussions and more likely to be neutral in their final recommendations. The change in attitude was sustained 3-month post intervention, with a major movement from a pro screening bias toward neutral counselling about prostate cancer screening.
Wilkes et al. (2017)[69]	To evaluate an interactive, web-based genetics curriculum for primary care physicians	Mixed method using pre- and post-questionnaires and standardised patient visit N=121 primary health care physicians, of which 60 allocated to intervention group (online training) and 61 to traditional approach to Continuing Medical Education (review of articles) offering equivalent information.	Physicians in the intervention group showed greater increases in knowledge, were more satisfied with the educational materials, and more confident in their genetics knowledge and skills compared to the group who received the traditional training approach. The intervention group felt that the web-based curriculum covered the material significantly better than those received the traditional curricula. The intervention group felt the online tools offered several advantages and engaged in better SDM with standardized patients,

Citations	Study aim	Design and method	Main findings
		Outcomes= communication style and SDM using an audio recorded and transcribed visit by standardised patients; training satisfaction; changes in patient care	however, there was no difference in behaviour change between the groups in terms of patient discussions.
Giguere et al. (2014)[23]	To evaluate training in the use of decision boxes and identify barriers and facilitators of their use in primary care	Mixed method using pre and post questionnaires, focus groups and interviews N=100 primary care physicians from 6 clinics	54% of participants reported that their practice would be improved after having read the decision boxes, and 40% stated that they would use this information for their patients. Participants found the training content, i.e. the decision boxes, contained too much information and difficult to understand. Participants commented that in addition to training in the decision-boxes, more training in SDM skills is required.

RCT=randomised controlled trial; SDM=shared decision-making; ARIs=acute respiratory tract infections; RR=relative risk; CI=confidence interval; GP=general practitioner

Table XX: Studies that evaluated SDM training as part of student university or college training

Citations	Study aim	Design and method	Main findings
Hoffman et al. (2014)[71]	To evaluate the effectiveness of a brief SDM intervention for undergrad and postgrad student clinicians	Mixed method comparative study using a pre-post- survey and analysis of videorecorded role plays N=107 medical students (physio/occupational therapy) randomly assigned to intervention (n=54) and control group (n=53) Outcomes=baseline skills in SDM and communicating evidence using the videorecorded role-plays and rated with the Observing Patient Involvement (OPTION) scale and items from the Assessing Communication about Evidence and Patient Preferences (ACEPP) Tool; attitudes towards patient and clinician involvement in consultations and confidence in communicating with patients about evidence using the videorecorded role-	The training intervention was effective in developing student clinicians' skills in SDM and communicating with patients about evidence, confidence in these skills, and attitudes towards providing information to patients and involving them in decision making. Attitudes towards viewing a patient's context, expectations and concerns as important elements of the decision-making process did not improve in the intervention group more than the control group.

Citations	Study aim	Design and method	Main findings
		plays and rated with the Patient Practitioner Orientation Scale (PPOS)	
Morrow et al. (2011)[1]	To evaluate a SDM training program for medical students	Survey study consisting of student feedback and self-evaluation post training N=73 medical students Outcomes= training satisfaction; self-reported SDM knowledge and skills	Participants reported an increase in confidence and competence to use SDM. The most important aspects of training from students' perspective were defining SDM, learning about use of the Ottawa Personal Decision Guide (OPDG), viewing selected segments of their own and peers' Simulated Patient Experience (SPE) videos.
Stacey et al. (2012)[72]	To evaluate the feasibility and acceptability of an SDM training intervention for medical residents in oncology	Mixed method using pre- and post-training surveys, scheduled encounters with simulated patients after training and repeated survey 3 months post-training N=11 medical oncology residents Outcomes= training feasibility assessed by number of participants recruited, workshop attendees, and simulated patient encounter completions; acceptability assessed by feedback on amount and quality of information, helpfulness of role playing in recognizing key SDM elements, confidence in engaging in SDM with patients, overall workshop impressions using open-ended questions for best aspects of workshop and suggestions for improvement and quality of SDM provided to simulated patients using Decision Support Analysis Tool (DSAT)	Participants rated the SDM workshop favourably, and training increased participants' SDM skills. The quality of SDM provided to simulated patients was rated median 3.5 out of 10 (range 1–6) at baseline, 8 (4–10) within 1 month, and 4 (2–10) within 3 months of the workshop with higher scores reflecting more elements of SDM demonstrated. 3 months post-workshop, participants reported increased sense of control over providing SDM.
Simmons et al. (2016)[73]	To evaluate a SDM training workshop for residents in relation to in treatment decisions for four common chronic conditions	Mixed method using survey and observations of consultations N=130 postgrad internal medicine and medicine-paediatrics residents	Most participants (89.7%) rated the workshop as excellent or very good, and 93.5% said that they would change their practice based on what they learned. At the end of the workshop, 76.3% of respondents were more confident in their ability to explain what SDM entails and 74.2% were more confident in their ability to frame decisions with patients to improve quality. However, only 40.2% were more

Citations	Study aim	Design and method	Main findings
		Outcomes=training satisfaction and SDM skills	confident in their ability to discuss evidence regarding benefits and risks with patients for common screening and treatment decisions. Over the 8-week observation period, only one consultation was observed, which was positively reviewed.
Yuan et al. (2013)[74]	To test a brief educational intervention to teach residents SDM in the intensive care unit	Post training survey N=29 medical residents Outcomes= communication skills learned using a list of 18 skills, including SDM skills; training satisfaction.	Overall satisfaction with the intervention was high, rated good to excellent (mean 4.45 on a five-point scale; SD = 0.62). Participants reported improved skills associated with giving bad news, discussing goals of care and preferences for life-sustaining treatment, and determining preferences. Key components of SDM learned included assessing the family's understanding of the patient's condition and obtaining an understanding of the patient/family's perspectives, values, and goals. Interns reported significant improvement ($p < 0.05$) in their comfort level in discussing goals of care and treatment preferences.
Luttenberger et al. (2014)[75]	To assess a communication training intervention for medical students	Pre- and post- training questionnaire N=173 preclinical medical students Outcome= training satisfaction and development of communication skills	The training was well received by students. More than 75% felt they had learned important communication techniques and would be better able to handle difficult situations. The evaluation, especially of the qualitative data, suggests the course would be most effective if students could play both the role of doctor and the role of patient. Playing the patient's role additionally seems to result in a higher degree of empathetic abilities in the students. The qualitative data also indicated that the students wanted to be able to prepare for their role play. Thus, not only the "doctors" but also the "patients" should be given enough time to do so, even though this might affect spontaneous communication.
Suojanen et al. (2018)[76]	To evaluate communication training for medical students	RCT, consisting of analysis of videotaped interviews with simulated patients N=19 final year medical students randomised to the intervention group (n=10) and control group (n=9)	The training was shown to improve medical students' communication skills, particularly information giving behaviour and skills in SDM. Students in the intervention group scored higher than controls overall and in each of four subcategories (identification convergence, information seeking, information giving, nonverbal behaviours). The intervention group's sub-score for information giving was also significantly higher.
Chesney & Devon (2018)[77]	To evaluate training in the SDM tool Best Case/Worst Case* for	Mixed method study using training evaluation questionnaire, pre- and post- attitudes and skills	The training was considered well prepared, and the opportunity to role play was a valuable component, although some felt it was difficult to simulate real conversation during the practice session. 89% agreed

Citations	Study aim	Design and method	Main findings
	senior general surgical residents	<p>questionnaire and analysis of a consultation with a recorded standardised patient</p> <p>N=18 senior surgical residents</p> <p>Outcomes= acceptability of the training and the tool using the 15-question Ottawa Decision Support Framework Acceptability questionnaire; attitudes, confidence and actions related to communication with patients; and skill development.</p>	<p>the intervention was useful, had increased their knowledge (83%) and confidence (78%) in having conversations with patients at high risk facing a life-threatening surgical emergency. 83% intended to the skills learned clinically. At the 6-month follow-up 94% reported using the tool at least once in practice; 22% used it often, 50% used it sometimes; 28% used it infrequently. In terms of the observations, residents performed a median of 15 (79%) of the 19 elements on the structured observation form. The 2 best-performed elements, performed by all residents, were presenting 2 explicit treatment options and avoiding medical jargon. The 2 most commonly missed elements were making a recommendation at the end of the encounter and encouraging deliberation after describing the treatment options and possible outcomes. Attitudes and confidence scores were not different pre- and post-intervention.</p>

RCT=randomised controlled trial; SDM=shared decision-making

Discussion

The review process identified 49 studies that met inclusion criteria evaluating 36 unique training programs. The majority of programs were evaluated descriptively, mostly using mixed methods, and there were 18 RCTs. There was considerable variation in terms of the design and duration of programs, but overall training in tertiary care was most likely to consist of multiple face-to-face workshops, training in primary care was most likely delivered in the form of a single one or half day session, and training within the university setting was most likely to consist of a brief single session.

The majority of training programs were for medical staff in tertiary settings, primary care physicians and medical students. While there were some programs for multidisciplinary clinicians, few programs specifically targeted allied health clinicians, nurses or midwives. While a focus on medical staff is not surprising given they are the traditional decision-makers, allied health clinicians, nurses and midwives can also benefit from SDM training and it is increasingly put forward that SDM training is best delivered multidisciplinary [27, 43, 79].

In terms of the program facilitators, the vast majority were delivered by the study investigators, with little to no detail provided on their skills and experience in delivering SDM programs. Some of the programs were facilitated by an individual with expertise in communication or SDM as well as someone with relevant medical expertise. Only three programs were facilitated by a health professional or academic together with a service user or carer, signifying a missed opportunity for consumer engagement.

In terms of training content, most programs included an overview of SDM theories and key competencies, and included SDM skill development through role plays. Some programs applied SDM to a specific medical condition, and these programs included a training component on the relevant evidence-base. Other programs included training on evidence appraisal more broadly. Three programs were limited to the use of a specific SDM tools (i.e. decision boxes and a tool designed to identify patient preferences during discussions about high-risk surgery) [23, 53, 77, 81].

In as far as we could tell from the training descriptions, overall few programs provided training to enhance the reflective capacity of health professionals to develop their ability to reflect on their communication, for example through methods informed by psychotherapy [50, 52]. This is important as there is evidence that shows that despite best intentions to adopt SDM, health professionals unconsciously steer patients towards the option they think is in their patients' best interest [82]. To implement SDM, awareness of one's use of these steering behaviours is important [14, 82]. Furthermore, reflective practice as a component of SDM training may help health professionals become more aware cognisant of the power imbalance in the patient-health professional relationship, and empower patients to make decisions rather than just providing information [36]. To participate in SDM, patients need knowledge and power; knowledge alone is insufficient [36].

Furthermore, as far as we could tell, programs did not include training on identifying and working with patients' individually preferred decision-making style, even though it is increasingly recognised that patients vary in the extent to which they wish to be involved in SDM [52]. While one study reported on patients' individually preferred decision-making styles as an outcome, and found that SDM training did not lead to greater consideration of patients' individually preferred decision-making style [52], how or whether identifying patients' individually preferred decision-making style was included in the training was unclear. Lastly, training did not appear to include specific training on SDM in a context of ambiguity (i.e. when the evidence is unclear or unavailable). How SDM is best

performed in a context of medical uncertainty or ambiguity remains not well understood, and our findings support previous calls for SDM training programs to include a component on how to manage and communicate medical uncertainty [32, 83].

The majority of program were interactive and included role plays. The experiential learning approach was valued by participants, particularly the role plays. While many studies used actors to play the role of patients in the role plays, evidence from one study indicates that there may be value in participants playing both the health professionals' role as well as the patients' role [75]. This study found that playing the patient's role seemed to result in a higher degree of empathetic abilities in the students [75].

Overall, training was feasible and well received, and improved participants' knowledge of SDM, and their confidence to apply the skills learned. However, some studies found that despite an improvement in SDM skills and confidence, many participants still lacked the confidence to use the skills in practice and wanted more training [23, 44], in particular in relation to discussion the risks and benefits of different treatment options with patients [73]. This feedback particularly comes from a training program that was limited to the use of a specific decision aid, where participants commented that they would have liked training in SDM skills more broadly [23].

In relation to the impact of SDM training for healthcare professionals on patients, while most studies found that SDM training increased patient involvement in SDM, some studies found little or no difference. Similarly, while some studies found that training resulted in less decisional conflict for patients, others did not. These findings suggests that the impact of SDM training for health professionals on patients is minimal and that to have a greater impact on patients, SDM training targeting patients may be useful. It is increasingly put forward that to successfully implement SDM into routine care interventions targeting both health professionals and patients are required [78].

Given the diversity in training programs and evaluation methods used, this review is limited in its ability to comment on which types of training programs are more effective than others. However, overall the findings indicate that there is a need for SDM training programs to be multidisciplinary, experiential, with individual follow-up and feedback on the health professionals' communication with their patients.

With an aim to support others in the design and evaluation of SDM training programs, this study provides an overview of the structure and design of SDM training programs for health professionals, the approaches used to evaluate these program and their evaluation outcomes. Our study adds depth and descriptive information not available in the literature.

Conclusion

The review identified 49 studies evaluating 36 unique training programs, with considerable variation in terms of the design and duration of programs. Most programs included an overview of SDM theories and key competencies, and included SDM skill development through role plays. Few or no programs provided training in reflective practice, in identifying and working with patients' individually preferred decision-making style, or in relation to SDM in a context of medical uncertainty or ambiguity. Only three programs were facilitated by a health professional or academic together with a service user or carer, signifying a missed opportunity for consumer engagement. While overall training was feasible, well received, and improved participants' knowledge and skills, there remains a need for longer-term or more in-depth training to embed SDM in practice.

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