

Barriers and facilitators to implementing shared decision making in clinical practice: a systematic review of health professionals' perceptions

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Abstract

Background

Shared decision making is advocated because of its potential to improve the quality of the decision-making process for patients and ultimately, patients' outcomes. However, current evidence suggests that shared decision making has not yet been widely adopted by health professionals. Therefore, a systematic review was performed on the barriers and facilitators to implementing shared decision making in clinical practice as perceived by health professionals.

Methods

Covering the period from 1990 to March 2006, PubMed, Embase, CINAHL, PsycINFO, and Dissertation Abstracts were searched for studies in English or French. The references from included studies were also consulted. Studies were included if they reported on health professionals' perceived barriers and facilitators to implementing shared decision making in their practices. Shared decision making was defined as a joint process of decision making between health professionals and patients, or as decision support interventions including decision aids, or as the active participation of patients in decision making. No study design was excluded. Quality of the studies included was assessed independently by two of the authors. Using a pre-established taxonomy of barriers and facilitators to implementing clinical practice guidelines in practice, content analysis was performed.

Results

31 publications covering 28 unique studies were included. Eleven studies were from the UK, eight from the USA, four from Canada, two from the Netherlands and one from each of the following countries: France, Mexico and Australia. Most of the studies used qualitative methods

exclusively (18/28). Overall, the vast majority of participants (n=2784) were physicians (89%). The three most often reported barriers were: time constraints (18/28), lack of applicability due to patient characteristics (12/28) and lack of applicability due to the clinical situation (12/28). The three most often reported facilitators were: provider motivation (15/28), positive impact on the clinical process (11/28) and positive impact on patient outcomes (10/28).

Conclusions

This systematic review reveals that interventions to foster implementation of shared decision making in clinical practice will need to address a broad range of factors. It also reveals that on this subject there is very little known about any health professionals others than physicians. Future studies about implementation of shared decision making should target a more diverse group of health professionals.

Background

Shared decision making is defined as a decision making process jointly shared by patients and their health care providers.[1] It aims at helping patients play an active role in decisions concerning their health,[2] which is the ultimate goal of patient-centered care.[3] Shared decision making rests on the best evidence of the risks and benefits of all the available options.[4] It includes the following components: establishing a context in which patients' views about treatment options are valued and seen as necessary; transferring technical information; making sure patients understand this information; helping patients base their preference on the best evidence; eliciting patients' preferences; sharing treatment recommendations; and making explicit the component of uncertainty in the clinical decision making process.[5] A Cochrane systematic review of 34 randomized controlled trials of shared decision making programs (also known as decision aids) indicates that, compared to usual care or simple information leaflets, these programs : 1) improved knowledge; 2) produced more realistic expectations; 3) lowered decisional conflict; 4) increased the proportion of people active in decision-making; 5) reduced the proportion of people who remained undecided; and 6) produced greater agreement between values and choice.[6]

Population-based and clinically-based surveys have shown that a significant proportion of respondents would like to play an active role in decisions concerning their health.[7-9] Although the nature of the problem may influence the amount of control patients want in making decisions for themselves,[10, 11] more and more individuals recognize that they are the best judges of their values when deliberating over a health care decision.[12, 13] Indeed, as Deber (1996) pointed out, making decisions about one's own health consists of "problem-solving" and "decision

making that requires the contribution of patients' values and preferences.”[14] While most patients do not wish to be involved in “problem-solving”, most would like to be involved in the decision making process.[14] In a recently published review on optimal matches of patient preferences for information, decision-making and interpersonal behaviour[15], findings from 14 studies showed that a substantial group of patients (26% to 95% with a median of 52%) was dissatisfied with the information given (in all aspects) and reported a desire for more information. In the same review, findings from 6 studies showed that the better the match between the information that was desired and the information that was received, the better the patient outcomes. [15]

Nonetheless, shared decision making has not yet been widely adopted by health care professionals.[10, 16-21] If shared decision making is desirable, more will need to be done to understand what factors hinder or facilitate its implementation in clinical practices.[22] Therefore, we sought to systematically review studies that reported on health professionals' perceived barriers and facilitators to implementing shared decision making in their clinical practice.

Methods

Search strategy

Covering the period from 1990 to March 2006, specific search strategies were developed by an information specialist for the following databases: PubMed, Embase, CINAHL, et PsycINFO (Appendix 1). Overall, the precision of this search strategy was about 10%-20%, depending on

the database. Using the free text words “shared decision making” or “participation of patient in decision” or “decision aids” or “decision support”, Dissertation Abstracts was also searched. References from included studies and review articles[22, 23] were scanned.

Selection criteria

A study was eligible for inclusion in the review if: 1) it was an original collection of data; 2) participants included health professionals; and 3) results included perceived barriers and/or facilitators to shared decision making. Shared decision making was defined in an inclusive manner as a joint process between health professionals and patients to make decisions[5, 24, 25], or as decision support interventions such as decision aids[6], or as the active participation of patients in decision making. We did not restrict our search and inclusion of studies to those reporting as their main objective the assessment of barriers and facilitators to shared decision making. Thus we included studies that provided usable data for either of these two outcomes. No study design was excluded. Only studies in French and English were assessed. When more than one publication described a single study and each presented the same data, we included only the most recent publication. However, when more than one publication described a single study but each presented new and complementary data, we included them all.

Study identification and data extraction

One individual (KG) screened all references. Two reviewers (FL and KG) extracted data independently using a data extraction sheet. At the time this review was conducted and to the best of our knowledge, there was no taxonomy for assessing barriers and facilitators to the implementation of shared decision making in clinical practice. Therefore, a data extraction sheet was created by using a template analytic approach, “beginning with a basic set of codes based on

a priori theoretical understanding and expanding on these codes by readings of the text”.[26] The beginning set of *a priori* codes was based on a taxonomy of barriers and facilitators to implementing clinical practice guidelines in actual practice.[27, 28] This taxonomy had been used successfully to study factors affecting general practitioners' decisions about plain radiography for back pain by Espeland and colleagues (2003), who concluded that it compared well to other taxonomies.[28] Following previous work by one of the authors[29], we further enriched this taxonomy with some of the attributes of innovations (Table 1).[30]

Both reviewers independently read each publication and identified the unit of text (a sentence or paragraph representing one idea) relevant to each of the main outcomes of interest (barriers or facilitators to the implementation of shared decision making in clinical practice). Each unit of text was then coded according to the relevant and pre-established code list and entered into an Excel spreadsheet. Units of text which could not be coded were discussed by the two assessors and new codes were created as necessary, thus refining and expanding the preliminary list of codes. Discrepancies between the coders were resolved through iterative discussions. During the coding process, codes (for example, lack of agreement with the applicability of shared decision making to practice population based on the age of the patient) were aggregated into themes (for example, lack of agreement with the applicability of shared decision making to practice population based on the characteristics of the patient) which in turn were nested under the main theme, lack of agreement with the applicability of shared decision making. Themes were ordered according to the number of studies in which they were identified.

Quality assessment

Study characteristics were abstracted and included: country of origin, year and language of publication, main objective of the study, operationalization of shared decision making, use of a conceptual framework to assess barriers and/or facilitators to the implementation of shared decision making in practice, study design, characteristics of participants, sampling strategy, response rate and methodological approach, including data collection strategies.

Quality assessment of included studies was based on an existing framework and its set of validated tools.[31, 32] This framework was selected because its authors provide reviewers with an extensive manual for quality scoring of quantitative, qualitative and mixed methods studies. The manual also includes definitions and detailed instructions.[31] Two reviewers (KG and FL) independently assessed the quality of each study. Discrepancies between the two coders were resolved through discussion. As the review did not involve human subjects, ethical approval for the study was not sought.

Results

Included studies

From PubMed, Embase, CINHAL, PsycINFO et Dissertation Abstracts, we screened 9580 references and assessed the full text of 170 documents. Thirty one publications[11, 21, 29, 33-60] relating to twenty-eight unique studies met our inclusion criteria among which were two unpublished doctoral dissertations.[33, 42] Three publications presenting complementary but distinct data were from the same randomized controlled trial[21, 35, 36] and two, from the same cross-sectional study.[54, 55] Figure 1 shows trial flow.

Study characteristics

Table 2 shows the characteristics of included studies. Studies were published in English, except for one that was published in French.[53] Most studies originated in the UK (n=11),([21, 35-39, 43, 45, 47-49, 56, 58] followed by the USA (n=8),[11, 33, 40-42, 44, 51, 54, 55] Canada (n=4),[29, 34, 46, 52] Netherlands (n=2),[50, 59] France (n=1),[53] Mexico (n=1),[57] and Australia (n=1).[60] One study from Netherlands had enrolled health professionals from 11 countries (Austria, Belgium, Denmark, France, Germany, Israel, The Netherlands, Portugal, Slovenia, Switzerland, UK).[50] Therefore, included studies reported data from health professionals in 15 countries. More than half of the studies were published in or after 2004 (n=16).[34-36, 43, 49-60]

Only two studies were explicit in their use of a conceptual framework pertaining to the assessment of barriers and/or facilitators to the implementation of best practices in clinical practice.[42, 52] Study designs included: cross sectional (n=24),[11, 29, 33, 34, 37-46, 48-51, 53-55, 58-60] randomized clinical trial (n=3)[21, 35, 36, 47, 52] and before-and-after (n=1).[57] Ten studies were based on a probabilistic sampling frame.[11, 33, 34, 42, 45, 46, 49-52] Response rates were mentioned in 13 studies and varied from 42% to 97%.[11, 29, 33, 34, 37, 38, 41, 42, 46, 48, 52, 53, 58] Two studies did not report the number of participants.[44, 47] In those that did, this number varied from 6 to 914. Overall, in studies that reported the number of participants, most of the participants were physicians (2481 out of a total of 2784 participants).[11, 21, 29, 33-43, 45, 46, 48-51, 53-60] Most studies used qualitative methods exclusively (n=18).[29, 37-39, 41, 43-45, 47-51, 54-56, 58-60] Six used quantitative methods exclusively[11, 33, 34, 40, 46, 53] and four, mixed methods.[21, 35, 36, 42, 52, 57] Data collection strategies included individual interviews (n=15),[21, 29, 35, 36, 39, 42, 43, 45, 47, 49-52, 57-60] self-administered

questionnaires (n=10),[11, 21, 33-36, 40, 42, 46, 53, 56] focus groups (n=10)[21, 35-38, 43, 44, 48, 52, 54, 55, 57, 60] and observation (n=3).[41, 47, 57]

Quality assessment of included studies

Table 3 shows the quality scores of included studies. Except for two studies [44, 56], most qualitative studies (n=16/18) had an average score of 50% or more [29, 37-39, 41, 43, 45, 47-51, 54, 55, 58-60]. It is interesting to note that no qualitative study explicitly provided an account of reflexivity. In other words, researchers did not reflect on the influence that their backgrounds and interests might have had on their results. Overall, quantitative studies had an average score of 50% or more.[11, 33, 34, 40, 46, 53] Mixed methods studies had an average score of 50% or more in both assessments (qualitative and quantitative).[21, 35, 36, 42, 52, 57]

Barriers and facilitators

Six publications focused solely on identifying barriers[21, 40, 45, 48, 53, 59], while two focused solely on identifying facilitators.[46, 58] Most focused on both barriers and facilitators.[11, 29, 33-39, 41-44, 47, 49-52, 54-57] Table 4 summarizes the barriers and facilitators that were reported. In order of frequency, the five most often identified barriers were: time constraints (18/28),[29, 34-39, 41-43, 47, 48, 50, 51, 53-57, 60] lack of applicability due to patient characteristics (12/28),[21, 29, 34, 37, 41, 43, 47-49, 53-55, 59] lack of applicability due to the clinical situation (12/28),[11, 29, 34, 36-38, 47-49, 53-55, 59] perceived patient preferences for a model of decision-making that did not fit a shared decision making model (n=9)[21, 39, 41, 42, 45, 47, 48, 52, 54, 55] and not agreeing with asking patients their preferred role in decision-making (n=7).[11, 38, 40, 42, 43, 50, 59]

In order of frequency, the five most often identified facilitators were: motivation of health professionals (n=15),[33, 35, 36, 38, 39, 41-44, 47, 49, 51, 52, 54, 55, 57, 58] perception that shared decision making will lead to a positive impact on the clinical process (n=11),[11, 29, 33, 34, 36, 41, 42, 50, 51, 54, 55, 57] perception that shared decision making will lead to a positive impact on patient outcomes (n=10),[33, 34, 37, 42, 46, 50-52, 54-56] perceptions that SDM is useful/practical (n=6),[29, 33, 41, 54-57] patient preferences for decision-making fitting a shared decision making model (n=4)[34, 39, 42, 52] and characteristics of the patient (n=4).[29, 35, 51, 54, 55] Removing the two qualitative studies that had an average quality assessment score of less than 50% did not change these results.

Possible positive impacts on process included: believing that involving patients in decision-making promotes trust and honesty and in turn, leads to better diagnosis and care;[51] helping patients address all their concerns;[54] improvement of doctor-patient relationship;[50] and providing health professionals with more background information about patients, which would enable them to judge patient needs and preferences better.[50] Possible positive impacts on outcomes included: patients' acceptance of advice and adherence to medication;[50] patients' satisfaction, either by reducing their worries or by increasing their understanding of disease and treatment options;[50] satisfaction with decision made;[46] and better health outcomes.[51]

Discussion

In 1999, Frosch and Kaplan observed that there were few surveys of large samples of physicians on how they perceived shared decision making.[22] Therefore, results of our systematic review

are important because, to the best of our knowledge, they are the first to attempt to pull together the views of more than 2784 health professionals from 15 countries (most of them physicians) on barriers and facilitators to the implementation of shared decision making in their clinical practice. They should improve our understanding on how to effectively translate shared decision making into health professionals' clinical practice.

Except for “lack of awareness”, that is, the inability of health professionals to state that shared decision making exists, the whole range of barriers initially proposed by Cabana and colleagues (1999) was identified.[27] Time constraint was the most often cited barrier for implementing shared decision making in clinical practice. This is interesting because this was a major concern for health professionals across many different cultural and organizational contexts.[29, 34-39, 41-43, 47, 48, 50, 51, 53-57, 60] However, recent evidence about the time required to engage in a shared decision making process in practice is conflicting.[61, 62] Therefore, it will be important that future studies on the implementation of shared decision making in practice investigate whether engaging in shared decision making actually takes more time or not.

Lack of agreement with some specific aspects of shared decision making was the second and third most often cited theme of barriers for implementing shared decision making in practice. It included the perceived lack of applicability due to the characteristics of patients and the lack of applicability due to the clinical situation. Perceived patient preferences for a decision-making model that does not fit shared decision making and not agreeing with asking patients about their preferred role in decision making were the fourth and fifth most reported barriers. Taken together, these are important because they suggest that health professionals might be screening *a priori* which patients they believe are eligible for shared decision making. This is of some

concern because physicians may misjudge patients' desire for active involvement in decision making.[63] Therefore, in order to not increase inequity in health (patients who are not invited to be involved in decision making regarding their health but who want to be), it will be important to address this barrier when implementing shared decision making. We agree with Holmes-Rovner and her colleagues (2000) that interventions directed at patients and the system will be needed in order for shared decision making to be implemented in actual practice.[41]

The three most frequently reported facilitators clustered under attitude: motivation of health professionals to put shared decision making into practice, their perceptions of patient outcome expectancy (the perception that putting shared decision making into practice will lead to improved patient outcomes) and process expectancy (the perception that putting shared decision making into practice will lead to improved health care processes). These results are congruent with the literature on the changing behaviour of health professionals. [64, 65] Together, they suggest that anticipating positive outcomes before trying a shared decision making approach may influence its implementation in practice. In other words, health professionals need to be able to perceive that the use of shared decision making with their patients will have positive outcomes on the patients themselves or the processes of care. Although this might appear to be a logical approach when implementing shared decision making in actual practice, how it will be achieved is still unclear.

Other interesting results from this systematic review are as follows. Lack of self-efficacy and lack of familiarity with SDM were mentioned as perceived barriers to the implementation of shared decision making in six[21, 34, 37, 48, 50, 53] and five studies[29, 37, 39, 44, 49] respectively. This suggests that strategies to implement shared decision making in clinical practice will need to

include training activities targeting health professionals. Elwyn and colleagues (2004) have shown that it was possible to train physicians in shared decision making[66]. However, future implementation studies in this field will need to focus on improving knowledge of how competencies in shared decision making can be sustained over time.

Notwithstanding its interesting results, our systematic review has some limitations. First, although we searched systematically and thoroughly for articles on perceived barriers and/or facilitators of implementing shared decision making in clinical practice by health professionals, this is not a well-indexed field of research. Therefore, it is possible that some eligible studies were not included in this review. However, our search strategy had an estimated precision of 10%-20% and we were able to show that some of the barriers and facilitators were quite consistent across a large number of studies. Second, like other researchers,[67-71] we believe that mixed methods systematic reviews (MMSR) constitute an emerging field of research that is still in need of tools to help reviewers synthesize results from qualitative as well as from quantitative and mixed methods studies. In this review, as much as possible, we made our overall process explicit,[72] including our quality assessment strategy. In a recently published MMSR on the impact of clinical information retrieval technology on physicians, Pluye and colleagues emphasized that “No one-size-fits-all tool exists to appraise the methodological quality of qualitative research.”[67] In our own review, we decided to use an existing set of tools[31, 32] and provided a justification for our choice. In subsequent “sensitivity analyses”, in which we ranked the studies from the lowest score to the highest score on the quality assessment score, we observed that, in order to experience significant changes in the results, one would need to remove 11 and 8 studies with the lowest score for the assessment of barriers and facilitators respectively. Third, we used an existing taxonomy to classify barriers and facilitators.[27] This taxonomy had

been developed and used to abstract data from previous studies on barriers and facilitators to implementing clinical practice guidelines.[27] It had also been used in original data collection.[28, 73, 74] Other taxonomies have been proposed to perform original data collection in studies aimed at identifying implementation problems.[75] It is possible that the use of another taxonomy to content-analyse the data might have modified our results.[28] However, as mentioned by Espeland and colleagues (2003), the taxonomy that was used compares well with other such taxonomies.[28] Fourth, we did not contact the authors of the included studies to verify data interpretation.[69] However, the use of information from process evaluations and contact with authors does not appear to substantially change the results of systematic reviews of knowledge translation.[76] Lastly, quantification of themes was provided only “to gain a overview of the qualitative material”, including the exploration of variation between studies.[77]

Conclusions

Given that implementation of shared decision making in clinical practice is a relatively recent phenomenon of interest,[23] we believe that the results of our systematic review have implications for the development of theory and for research in this field. The vast majority of the included studies did not report the explicit use of a barriers and/or facilitators assessment tool. In this systematic review, the explicit use of such a tool helped standardize the presentation of the many factors that are likely to influence the uptake of shared decision making into clinical practice and facilitate the comparison between similar studies.[78] This in turn should contribute to the elaboration of a theoretical base for translating shared decision making into practice. As the fields of implementation science [79] and shared decision making[80] mature, we hope that our

understanding of factors that might hinder or facilitate the implementation of shared decision making in clinical practice will improve.

These results can also be used to help target priorities for future implementation studies of shared decision making. For example, future studies on barriers and facilitators to the implementation of shared decision making could target nurses and pharmacists, two disciplines that have not been well studied but that have had a significant impact on the development of shared decision making.[6, 41, 81-87] Overwhelmingly, published studies originated from the UK as well as from the USA, suggesting clear leadership of their health service researchers in this area and possibly of larger contextual variables that will need to be taken into account in future studies. At the same time, this could be another limitation of our findings as we need studies in all types of health care systems to fully understand cross-cultural and health care system impacts on the implementation of shared decision making.

In this review, the same factor was sometimes identified as both a barrier and a facilitator to implementing shared decision making. This situation has been reported previously in a study that explored the gap between knowledge and behaviour of physicians.[88] This points to the importance of developing a comprehensive understanding of the perceived barriers as well as facilitators. Therefore, a more in-depth exploration of these factors should be pursued in future qualitative studies. Quantitative studies could also be used to analyze surveys of large probabilistic samples of health professionals in this area. Items could be derived from the results of our systematic review. Multivariate statistical analyses could then be used to identify the barriers and facilitators that make the largest contribution to the outcome of interest: intention of health professionals to implement shared decision making in their practice. Finally, these results

provide some insight into the type of interventions that could be tested with more robust study designs in order to foster shared decision making.

Competing interest

All authors declare that they have no conflicting financial interests.

One of the authors of this review, IG, is also the author of one of the included studies.

Authors' contribution

FL conceived the study, supervised KG's student project, validated the methods, validated the article selection, assessed the quality of the included studies, second-coded all included articles, analysed the results and wrote the paper. KG selected the articles, assessed the quality of the included studies, first-coded all included articles, analysed the results and reviewed the paper. IG validated the methods, analysed the results and participated actively throughout the writing of the paper. FL is its guarantor.

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References

1. Briss, P, Rimer, B, Reilley, B, Coates, RC, Lee, NC, Mullen, P, Corso, P, Hutchinson, AB, Hiatt, R, Kerner, J, et al: **Promoting informed decisions about cancer screening in communities and healthcare systems.** *Am J Prev Med* 2004, **26**:67-80.
2. Wetzels, R, Wensing, M, Grol, R: **Involving older patients in general/family practice. Concept, tools and implementation.**: European Association for Quality in General Practice/Family Medicine; 2004.
3. Howie, J, Heaney, D, Maxwell, M: **Quality, core values and the general practice consultation: issues of definition, measurement and delivery.** *Fam Pract* 2004, **21**:458-468.
4. Towle, A, Godolphin, W: **Framework for teaching and learning informed shared decision making [see comments].** *BMJ* 1999, **319**:766-71.
5. Elwyn, G, Edwards, A, Kinnersley, P: **Shared decision-making in primary care: the neglected second half of the consultation.** *Br J Gen Pract* 1999, **49**:477-82.
6. O'Connor, AM, Stacey, D, Entwistle, V, Llewellyn-Thomas, H, Rovner, D, Holmes-Rovner, M, Tait, V, Tetroe, J, Fiset, V, Barry, M, et al: **Decision aids for people facing health treatment or screening decisions (Cochrane Review).** Issue 3, 2004, Oxford: Update Software ed. The Cochrane Library; 2004.
7. Martin, S: **"Shared responsibility" becoming the new medical buzz phrase.** *CMAJ* 2002, **167**:295.
8. Magee, H, Davis, LJ, Coulter, A: **Public views on healthcare performance indicators and patient choice.** *J R Soc Med* 2003, **96**:338-42.
9. Chamot, E, Charvet, A, Perneger, TV: **Women's Preferences for Doctor's Involvement in Decisions about Mammography Screening.** *Med Decis Making* 2004, **24**:379-85.
10. McKinstry, B: **Do patients wish to be involved in decision making in the consultation? A cross sectional survey with video vignettes.** *BMJ* 2000, **321**:867-71.
11. McKeown, RE, Reiningger, BM, Martin, M, Hoppmann, RA: **Shared decision making: views of first-year residents and clinic patients.** *Acad Med* 2002, **77**:438-45.
12. Deber, RB: **Physicians in health care management: 8. The patient-physician partnership: decision making, problem solving and the desire to participate.** *CMAJ* 1994, **151**:423-7.
13. Department of Health: **The Expert Patient: A new approach to chronic disease management for the 21st century.** NHS; 2001: 35p.
14. Deber, RB, Kraetschmer, N, Irvine, J: **What role do patients wish to play in treatment decision making?** *Arch Intern Med* 1996, **156**:1414-20.
15. Kiesler, DJ, Auerbach, SM: **Optimal matches of patient preferences for information, decision-making and interpersonal behavior: Evidence, models and interventions.** *Patient Educ Couns* 2006, **61**:319-41.
16. Godolphin, W, Towle, A, McKendry, R: **Challenges in family practice related to informed and shared decision-making: a survey of preceptors of medical students.** *CMAJ* 2001, **165**:434-435.

17. Makoul, G, Arntson, P, Schofield, T: **Health promotion in primary care: physician-patient communication and decision making about prescription medications.** *Soc Sci Med* 1995, **41**:1241-54.
18. O'Connor, AM, Drake, E, Wells, G, Tugwell, P, Laupacis, A, Elmslie, T: **A Survey of the Decision-Making Needs of Canadians Faced with Complex Health Decisions.** *Health Expectations* 2003, **6**:1-13.
19. Guimond, P, Bunn, H, O'Connor, AM, Jacobsen, MJ, Tait, VK, Drake, ER, Graham, ID, Stacey, D, Elmslie, T: **Validation of a tool to assess health practitioners' decision support and communication skills.** *Patient Educ Couns* 2003, **50**:235-45.
20. Elwyn, G, Edwards, A, Wensing, M, Hood, K, Atwell, C, Grol, R: **Shared decision making: developing the OPTION scale for measuring patient involvement.** *Qual Saf Health Care* 2003, **12**:93-99.
21. Davis, RE, Dolan, G, Thomas, S, Atwell, C, Mead, D, Nehammer, S, Moseley, L, Edwards, A, Elwyn, G: **Exploring doctor and patient views about risk communication and shared decision-making in the consultation.** *Health Expect* 2003, **6**:198-207.
22. Frosch, DL, Kaplan, RM: **Shared decision making in clinical medicine: past research and future directions.** *Am J Prev Med* 1999, **17**:285-94.
23. Scheibler, F, Janssen, C, Pfaff, H: **[Shared decision making: an overview of international research literature].** *Soz Präventivmed* 2003, **48**:11-23.
24. Charles, C, Gafni, A, Whelan, T: **Shared decision-making in the medical encounter: what does it mean? (or it takes at least two to tango).** *Soc Sci Med* 1997, **44**:681-92.
25. Towle, A, Godolphin, W: **Framework for teaching and learning informed shared decision making.** *BMJ* 1999, **319**:766-71.
26. Crabtree, B, Miller, W: **A Template Approach to Text Analysis: Developing and Using Codebooks.** In: *Doing Qualitative Research* Edited by B Crabtree, W Miller. pp. 93-109. CA: Sage Publications; 1992: 93-109.
27. Cabana, MD, Rand, CS, Powe, NR, Wu, AW, Wilson, MH, Abboud, P-AC, Rubin, HR: **Why don't physicians follow clinical practice guidelines? A framework for improvement.** *JAMA* 1999, **282**:1458-65.
28. Espeland, AA, Baerheim, AA: **Factors affecting general practitioners' decisions about plain radiography for back pain: implications for classification of guideline barriers - a qualitative study.** *BMC Health Serv Res* 2003, **3**:8.
29. Graham, ID, Logan, J, O'Connor, A, Weeks, KE, Aaron, S, Cranney, A, Dales, R, Elmslie, T, Hebert, P, Jolly, E, et al: **A qualitative study of physicians' perceptions of three decision aids.** *Patient Educ Couns* 2003, **2055**:1-5.
30. Rogers, EM: **Diffusion of innovations,** Fourth ed. New York: The Free Press; 1995.
31. Kmet, L, Lee, R, Cook, L: **Standard quality assessment criteria for evaluating primary research papers from a variety of fields.** Alberta Heritage Foundation for Medical Research; 2004: 22p.
32. Lee, RC, Kmet, L, Cook, LS, Lorenzetti, D, Godlovitch, G, Einsiedel, E: **Risk assessment for inherited susceptibility to cancer: a review of the psychosocial and ethical dimensions.** *Genet Test* 2005, **9**:66-79.
33. Araki, SS: **Shared decision making in the treatment of endometriosis pain.** Cambridge, Massachusetts: Harvard University; 2003.
34. Charles, C, Gafni, A, Whelan, T: **Self-reported use of shared decision-making among breast cancer specialists and perceived barriers and facilitators to implementing this approach.** *Health Expect* 2004, **7**:338-48.

35. Edwards, A, Elwyn, G: **Involving patients in decision making and communicating risk: a longitudinal evaluation of doctors' attitudes and confidence during a randomized trial.** *J Eval Clin Pract* 2004, **10**:431-7.
36. Edwards, A, Elwyn, G, Wood, F, Atwell, C, Prior, L, Houston, H: **Shared decision making and risk communication in practice: a qualitative study of GPs' experiences.** *Br J Gen Pract* 2005, **55**:6-13.
37. Elwyn, G, Edwards, A, Gwyn, R, Grol, R: **Towards a feasible model for shared decision making: focus group study with general practice registrars.** *BMJ* 1999, **319**:753-6.
38. Elwyn, G, Edwards, A, Kinnersley, P, Grol, R: **Shared decision making and the concept of equipoise: the competences of involving patients in healthcare choices.** *Br J Gen Pract* 2000, **50**:892-9.
39. Ford, S, Schofield, T, Hope, T: **What are the ingredients for a successful evidence-based patient choice consultation?: A qualitative study.** *Soc Sci Med* 2003, **56**:589-602.
40. Hammond, K, Bandak, A, Williams, M: **Nurse, physician, and consumer role responsibility perceived by health care providers.** *Holist Nurs Pract* 1999, **13**:28-37.
41. Holmes-Rovner, M, Valade, D, Orłowski, C, Draus, C, Nabozny-Valerio, B, Keiser, S: **Implementing shared decision-making in routine practice: barriers and opportunities.** *Health Expect* 2000, **3**:182-191.
42. Howell, JW: **Physicians' opinions about patient involvement in health and medical care decisions and telephone-based decision support.** Denver: University of Colorado; 1999.
43. Jones, IR, Berney, L, Kelly, M, Doyal, L, Griffiths, C, Feder, G, Hillier, S, Rowlands, G, Curtis, S: **Is patient involvement possible when decisions involve scarce resources? A qualitative study of decision-making in primary care.** *Soc Sci Med* 2004, **59**:93-102.
44. Keefe, CW, Thompson, ME, Noel, MM: **Medical students, clinical preventive services, and shared decision-making.** *Acad Med* 2002, **77**:1160-1.
45. Lewis, DK, Robinson, J, Wilkinson, E: **Factors involved in deciding to start preventive treatment: qualitative study of clinicians' and lay people's attitudes.** *BMJ* 2003, **327**:841.
46. O'Connor, AM, Llewellyn-Thomas, HA, Sawka, C, Pinfold, SP, To, T, Harrison, DE: **Physicians' opinions about decision aids for patients considering systemic adjuvant therapy for axillary-node negative breast cancer.** *Patient Educ Couns* 1997, **30**:143-53.
47. Stapleton, H, Kirkham, M, Thomas, G: **Qualitative study of evidence based leaflets in maternity care.** *BMJ* 2002, **324**:639.
48. Stevenson, FA: **General practitioners' views on shared decision making: a qualitative analysis.** *Patient Educ Couns* 2003, **50**:291-3.
49. Thistlethwaite, J, van der Vleuten, C: **Informed shared decision making: views and competencies of pre-registration house officers in hospital and general practice.** *Education for Primary Care* 2004, **15**:83-92.
50. Wetzels, R, Geest, TA, Wensing, M, Ferreira, PL, Grol, R, Baker, R: **GPs' views on involvement of older patients: an European qualitative study.** *Patient Educ Couns* 2004, **53**:183-8.
51. McGuire, A, McCullough, L, Weller, S, Whitney, S: **Missed expectations? Physicians' views of patients' participation in medical decision-making.** *Medical Care* 2005, **43**:466-70.

52. Stacey, D, Graham, I, O'Connor, AM, Pomey, M: **Barriers and facilitators influencing call center nurses' decision support for callers facing values-sensitive decisions: a mixed methods study.** *Worldviews on Evidence-Based Nursing* 2005, **2**:184-195.
53. Andre, N, Gaudart, J, Bernard, JL, Chabrol, B: **[How pediatric residents involve children during medical decision-making?].** *Arch Pediatr* 2005, **12**:1068-74.
54. Naik, AD, Schulman-Green, D, McCorkle, R, Bradley, EH, Bogardus Jr., ST: **Will older persons and their clinicians use a shared decision-making instrument?** *Journal of General Internal Medicine* 2005, **20**:640-643.
55. Schulman-Green, DJ, Naik, AD, Bradley, EH, McCorkle, R, Bogardus, ST: **Goal setting as a shared decision making strategy among clinicians and their older patients.** *Patient Educ Couns* 2006.
56. Thomson, P, Dowding, D, Swanson, V, Bland, R, Mair, C, Morrison, A, Taylor, A, Beechey, C, Niven, CA: **A computerised guidance tree (decision aid) for hypertension, based on decision analysis: Development and preliminary evaluation.** *Eur J Cardiovasc Nurs* 2005.
57. Kim, YM, Kols, A, Martin, A, Silva, D, Rinehart, W, Prammawat, S, Johnson, S, Church, K: **Promoting informed choice: evaluating a decision-making tool for family planning clients and providers in Mexico.** *Int Fam Plan Perspect* 2005, **31**:162-71.
58. Seale, C, Chaplin, R, Lelliott, P, Quirk, A: **Sharing decisions in consultations involving anti-psychotic medication: A qualitative study of psychiatrists' experiences.** *Soc Sci Med* 2005.
59. Suurmond, J, Seeleman, C: **Shared decision-making in an intercultural context: Barriers in the interaction between physicians and immigrant patients.** *Patient Education and Counseling* 2006, **60**:253-259.
60. Bajramovic, J, Emmerton, L, Tett, SE: **Perceptions around concordance - focus groups and semi-structured interviews conducted with consumers, pharmacists and general practitioners.** *Health Expectations* 2004, **7**:221-234.
61. Stacey, D, O'Connor, A, Graham, I, Pomey, M: **Randomized controlled trial of the effectiveness of an intervention to implement evidence-based patient decision support into a nursing call centre.** *Journal of Telemedicine and Telecare.* (in press).
62. Whelan, T, Sawka, C, Levine, M, Gafni, A, Reyno, L, Willan, AR, Math, JJM, Dent, S, Abu-Zahra, H, Chouinard, E, et al: **Helping patients make informed choices: a randomized trial of a decision aid for adjuvant chemotherapy in node-negative breast cancer.** *Journal of the National Cancer Institute* 2003, **95**:581-587.
63. Bruera, E, Willey, JS, Palmer, JL, Rosales, M: **Treatment decisions for breast carcinoma: patient preferences and physician perceptions.** *Cancer* 2002, **94**:2076-80.
64. Walker, AE, Grimshaw, JM, Armstrong, EM: **Salient beliefs and intentions to prescribe antibiotics for patients with a sore throat.** *Br J Health Psychol* 2001, **6**:347-360.
65. Légaré, F, Godin, G, Ringa, V, Dodin, S, Turcot, L, Norton, J: **Variation in the psychosocial determinants of the intention to prescribe hormone therapy: a survey of GPs and gynaecologists in France and Quebec.** *BMC Med Inform Decis Mak.* 2005, **5**:31.
66. Elwyn, G, Edwards, A, Hood, K, Robling, M, Atwell, C, Russell, I, Wensing, M, Grol, R, The Study Steering, G: **Achieving involvement: process outcomes from a cluster randomized trial of shared decision making skill development and use of risk communication aids in general practice.** *Fam Pract* 2004, **21**:337-46.

67. Pluye, P, Grad, RM, Dunikowski, LG, Stephenson, R: **Impact of clinical information-retrieval technology on physicians: a literature review of quantitative, qualitative and mixed methods studies.** *Int J Med Inform* 2005, **74**:745-68.
68. Hardeman, W, Griffin, S, Johnston, M, Kinmonth, AL, Wareham, NJ: **Interventions to prevent weight gain: a systematic review of psychological models and behaviour change methods.** *Int J Obes Relat Metab Disord* 2000, **24**:131-43.
69. Mills, EJ, Seely, D, Rachlis, B, Griffith, L, Wu, P, Wilson, K, Ellis, P, Wright, JR: **Barriers to participation in clinical trials of cancer: a meta-analysis and systematic review of patient-reported factors.** *Lancet Oncol* 2006, **7**:141-8.
70. Vermeire, E, Hearnshaw, H, Van Royen, P, Denekens, J: **Patient adherence to treatment: three decades of research. A comprehensive review.** *J Clin Pharm Ther* 2001, **26**:331-42.
71. Littlewood, S, Ypinazar, V, Margolis, SA, Scherpbier, A, Spencer, J, Dornan, T: **Early practical experience and the social responsiveness of clinical education: systematic review.** *BMJ* 2005, **331**:387-91.
72. Mulrow, CD: **Rationale for systematic reviews.** *BMJ* 1994, **309**:597-9.
73. Cruz-Correa, M, Gross, CP, Canto, MI, Cabana, M, Sampliner, RE, Waring, JP, McNeil-Solis, C, Powe, NR: **The impact of practice guidelines in the management of Barrett esophagus: a national prospective cohort study of physicians.** *Arch Intern Med* 2001, **161**:2588-95.
74. Cabana, MD, Rand, CS, Becher, OJ, Rubin, HR: **Reasons for pediatrician nonadherence to asthma guidelines.** *Arch Pediatr Adolesc Med* 2001, **155**:1057-62.
75. Wensing, M, Grol, R: **Methods to identify implementation problems.** In: *Improving patient care. The implementation of change in clinical practice* Edited by R Grol, M Wensing, M Eccles. pp. 109-21. Oxford: Elsevier Butterworth Heinemann; 2005: 109-21.
76. Farmer, A, Grimshaw, J, Mayhew, A, McGowan, J, Graham, I, Driedger, M, Shojania, K: **Systematic reviews of knowledge translation interventions: contributions of process evaluations and contact with authors.** *CCOHTA Final Performance Report*: University of Ottawa; 2006: 36p.
77. Malterud, K: **Qualitative research: standards, challenges, and guidelines.** *Lancet* 2001, **358**:483-8.
78. Saillour-Glenisson, F, Michel, P: **[Individual and collective facilitators and barriers to the use of clinical guidelines by physicians: a literature review.** *Revue Épidémiologique de Santé Publique* 2003, **51**:65-80.
79. Werner, A: **A Guide to Implementation Research** Washington, DC: The Urban Institute; 2004.
80. Elwyn, G: **Idealistic, impractical, impossible? Shared decision making in the real world.** *Br J Gen Pract* 2006, **56**:403-4.
81. O'Connor, AM: **Validation of a decisional conflict scale.** *Med Decis Making* 1995, **15**:25-30.
82. O'Connor, AM, Tugwell, P, Wells, GA, Elmslie, T, Jolly, E, Hollingworth, G, McPherson, R, Bunn, H, Graham, I, Drake, E: **A decision aid for women considering hormone therapy after menopause: decision support framework and evaluation.** *Patient Educ Couns* 1998, **33**:267-79.
83. Rothert, ML, Talarczyk, GJ: **Patient Compliance and the Decision-Making Process of Clinicians and Patients.** 1987: 55-71.

84. Rotherth, M, Padonu, G, Holmes-Rovner, M, Kroll, J, Talarczyk, G, Rovner, D, Schmitt, N, Breer, L: **Menopausal women as decision makers in health care.** *Exp Gerontol* 1994, **29**:463-8.
85. Rotherth, ML, Holmes-Rovner, M, Rovner, D, Kroll, J, Breer, L, Talarczyk, G, Schmitt, N, Padonu, G, Wills, C: **An Educational Intervention as Decision Support for Menopausal Women.** *Research in Nursing and Health* 1997, **20**:377-87.
86. Holmes-Rovner, M, Kroll, J, Schmitt, N, Rovner, D, Breer, L, Rotherth, M, Faan, R, Padonu, G, Talarczyk, G: **Patient Satisfaction with Health Care Decisions: The Satisfaction with Decision Scale.** *Med Decis Making* 1996, **16**:58-64.
87. Lalonde, L, O'Connor, AM, Drake, E, Duguay, P, Lowensteyn, I, Grover, SA: **Development and preliminary testing of a patient decision aid to assist pharmaceutical care in the prevention of cardiovascular disease.** *Pharmacotherapy* 2004, **24**:909-22.
88. Kennedy, T, Regehr, G, Rosenfield, J, Roberts, SW, Lingard, L: **Exploring the gap between knowledge and behavior: a qualitative study of clinician action following an educational intervention.** *Acad Med* 2004, **79**:386-93.
89. Green, LW, Kreuter, MW, Deeds, S, Schor, E: **Health Education Planning: A Diagnostic Approach**, Second edn. Mountain View, CA: Mayfield Press; 1980.
90. Logan, J, Graham, ID: **Toward a Comprehensive Interdisciplinary Model of Health Care Research Use.** *Science Communication* 1998, **20**:227-46.

Figure Legend

Figure 1. Trial flow

Table 1. Taxonomy of barriers and facilitators and their definitions

Knowledge	
Lack of awareness	Inability to correctly acknowledge the existence of shared decision making[27]
Lack of familiarity	Inability to correctly answer questions about shared decision making content, as well as self-reported lack of familiarity[27]
Forgetting	Inadvertently omitting to implement shared decision making[41]
Attitudes	
Lack of agreement with specific components of shared decision making	
• Interpretation of evidence	Not believing that specific elements of shared decision making are supported by scientific evidence[27]
• Lack of applicability	
○ Characteristics of the patient	Lack of agreement with the applicability of shared decision making to practice population based on the characteristics of the patient[27]
○ Clinical situation	Lack of agreement with the applicability of shared decision making to practice population based on the clinical situation[27]
• Asking patient about his/her the preferred role in decision-making	Lack of agreement with a specific component of shared decision making such as asking patients about their preferred role in decision-making[27]
• Asking patient about support or undue pressure	Lack of agreement with a specific component of shared decision making such as asking patients about support and/or undue pressure[27]
• Asking about values/clarifying values	Lack of agreement with a specific component of shared decision making such as asking patients about values[27]
• Not cost-beneficial	Perception that there will be increased costs if shared decision making is implemented[28]
• Lack of confidence in the developers	Lack of confidence in the individuals who are responsible for developing or presenting shared decision making[27]
Lack of agreement in general	
• “Too cookbook” – too rigid to be applicable	Lack of agreement with shared decision making because it is too artificial[27]
• Challenge to autonomy	Lack of agreement with shared decision making because it is a threat to professional autonomy[27]
• Biased synthesis	Perception that the authors were biased[27]
• Not practical	Lack of agreement with shared decision making because it is unclear or impractical to follow[28]
• Total lack of agreement with using the model (not specified why)	Lack of agreement with shared decision making in general (unspecified)[27]
Lack of expectancy	
• Patient’s outcome	Perception that performance following the use of shared decision making will not lead to improved patient outcome[27]
• Health care process	Perception that performance following the use of shared decision making will not lead to improved health care process[28]
• Feeling expectancy	Perception that performance following the use of shared decision making will provoke difficult feelings and/or does not take into account existing feelings[28]
Lack of self-efficacy	Belief that one cannot perform shared decision making[27]
Lack of motivation	Lack of motivation to use shared decision making or to change one’s habits[27]

Behaviour

External barriers

- Factors associated with patient
 - Preferences of patients Perceived inability to reconcile patient preferences with the use of shared decision making[27]
 - Factors associated with shared decision making as an innovation
 - Lack of triability Perception that shared decision making cannot be experimented with on a limited basis[30]
 - Lack of compatibility: Perception that shared decision making is not consistent with one's own approach[30]
 - Complexity Perception that shared decision making is difficult to understand and to put into use[30]
 - Lack of observability Lack of visibility of the results of using shared decision making[30]
 - Not communicable Perception that it is not possible to create and share information with one another in order to reach a mutual understanding of shared decision making[30]
 - Increased uncertainty Perception that the use of shared decision making will increase uncertainty (for example, lack of predictability, of structure, of information[30])
 - Not modifiable/way of doing it Lack of flexibility in the degree to which shared decision making is not changeable or modifiable by a user in the process of its adoption and implementation[30]
 - Factors associated with environmental factors
 - Time pressure Insufficient time to put shared decision making into practice[30]
 - Lack of resources Insufficient materials or staff to put shared decision making into practice[28]
 - Organizational constraints Insufficient support from the organization
 - Lack of access to services Inadequate access to actual or alternative health care services to put shared decision making into practice[28]
 - Lack of reimbursement Insufficient reimbursement for putting shared decision making into practice[28]
 - Perceived increase in malpractice liability Risk of legal actions is increased if shared decision making is put into practice[28]
 - Sharing responsibility with Pt* Using shared decision making lowers the responsibility of the health professional because it is shared with patient
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* Only for the facilitator assessment taxonomy

Table 2. Characteristic of included studies (n=29)

Country of origin, language, year of publication	Principal objective of the study	Operationalization of shared decision making	Conceptual framework for barriers/facilitators assessment	Study design	Participants	Response rate	Methods
Canada, English, 1997[46]	To examine the variations in physicians' opinions about the appropriateness and content of patient decision aids for women with node-negative breast cancer and the criteria for evaluating the effectiveness of such aids.	Decision aids provide a structure for making a choice by systematically presenting information on treatment alternatives, risks, and benefits tailored to the patient's particular clinical profile.	No	Cross-sectional	144 oncologists	87%	Quantitative. Self-administered questionnaire.
United Kingdom, English, 1999[37]	To explore view of general practice registrars about involving patients in decisions and to assess the feasibility of using the shared decision making model by means of simulated practice.	Informed choice is at the opposite end of the spectrum, where the patient is provided with "sufficient" information and the clinician withdraws from the decision process. Shared decision making describes the middle ground.	No	Cross-sectional	39 general practice registrars	87 %	Qualitative. Focus group.
United States, English, 1999[40]	To explore the perceptions of health care providers regarding who is responsible for selected role functions in decision making.	Collaboration between nurses, physicians, and consumers in current health care delivery systems in decision making.	No	Cross-sectional	5 administrators, 47 nurses, 11 physicians, 15 psychologists, social worker, 37 psychiatric technicians and 5 therapists	Not reported	Quantitative. Self-administered questionnaire.
United States, English, 1999[42]	To ascertain primary care and specialty physicians' about more informed, actively involved patients as partners in health and medical care decisions and the impact they believe consumers/patients being more informed and taking a more active partnership role in health and medical care decisions will have.	Demand management has been defined as the use of decision and self-management support systems to enable and encourage consumers to make appropriate use of medical care.	Yes[30, 89]	Cross-sectional	a) 914 physicians (379 in primary care and 535 specialists) b) 13 primary care physicians, 7 specialty physicians and 1 clinical psychologist	a) 42% b) Not reported	Mixed methods. a) Self-administered questionnaire. b) Interviews.
United Kingdom, English, 2000[38]	To explore and understand what constitutes the appropriate involvement of patients in decision-making within consultation, to consider previous theory in this field and to propose a set of competences and steps that would enable generalists to undertake "shared decision making" in their clinical practice.	Involvement of patients in decisions.	No	Cross-sectional	6 general practitioners	80%	Qualitative. Focus group.
United States, English, 2000[41]	To determine the feasibility of shared decision-making programmes in fee-for-service hospital systems including physicians' office and in-patient facilities.	A model that brings patients into the decision-making process. It brings together consumer involvement in health care, evidence based decision-making and egalitarian models of the doctor-patient relationship.	No	Cross-sectional	13 nurses, 7 social workers and administrators and 14 physicians	97%	Qualitative. Observation.
United States, English, 2002[44]	To enhance medical student learning about common clinical preventive services and to teach students how to inform and involve patients in shared decision making about those services.	Patient involvement in shared decision making.	No	Cross-sectional	Medical students	Not reported	Qualitative. Focus group.
United States, English, 2002[11]	To explore patients' and physicians' views of their roles in decision making and to determine perspectives of residents and patients on the amount of control each should have in health care decisions.	Decisions made jointly by the patient and the physician.	No	Cross-sectional	45 residents in seven residency programs	63%	Quantitative Self-administered questionnaire.

United Kingdom, English, 2002[47]	To examine the use of evidence- based leaflets on informed choice in maternity services.	Evidence-based leaflets to support consumer choice.	No	Randomized control trial	Health professional in 13 maternity units	Not reported	Qualitative. Observation and interviews.
United States, English, 2003[33]	To elicit physicians' opinions about the notion of a patient decision aid that could be used in shared decision making.	Process of interaction between patients who wish to be involved in making clinical decisions and their providers. It involves providing relevant clinical information, eliciting patient preferences, and arriving at a joint clinical decision that is consistent with the patient's revealed personal values.	No	Cross-sectional	248 endometriosis specialists and 112 generalists in gynaecology	42%	Quantitative. Self – administered questionnaire.
United Kingdom, English, 2003, 2004 and 2005 [21, 35, 36]	To explore, from paired doctor-patient interviews, participants' perceptions of shared-decision making in the consultation and the level of consensus between the participants in the consultation process and to identify the experiences and views of professionals skilled in shared decision making and risk communication, exploring the opportunities and challenges for implementation.	A partnership between professionals and patients.	No	Randomized controlled trial	20 general practitioners	Not reported	Mixed methods. Questionnaires, interviews and focus group.
United Kingdom, English, 2003[39]	To identify the elements and skills required for a successful evidence-based patient choice consultation.	Evidence-based patient choice is defined as patient involvement in decision-making.	No	Cross-sectional	11 general practitioners, 10 hospital consultants, 5 nurse practitioners, 11 academics, 8 lay people	Not reported	Qualitative. Interviews.
Canada, English, 2003[29]	To investigate physicians' perceptions of three patient decision aids and to identify factors perceived to encourage or discourage their possible uptake.	Decision aids are interventions designed to assist individuals confronted with therapeutic decisions; provide a structure for making a choice; present information on the options available, and the risks and benefits of these options using probabilities tailored to the individual's risk profile; describe what it would be like to live with the consequences of each choice; and may also clarify the personal importance or values individuals assign to the risks and benefits of therapy.	No	Cross-sectional	20 family physicians, 12 gynaecologists, 16 respirologists and 19 medical specialists	48%	Qualitative. Interviews.
United Kingdom, English, 2003[45]	To explore the views of clinicians and lay people about the minimum benefit needed to justify drug treatment to prevent heart attacks, and to explore the rationale behind treatment decisions.	Most lay people want to make decisions for themselves, based on information provided by health professionals.	No	Cross-sectional	4 general practitioners, 4 practice nurses and 18 lay people	Not reported	Qualitative Interviews.
United Kingdom, English, 2003[48]	To explore the views of general practitioners of the practical application of shared decision making in their own and other participants' real life practice.	Shared decision making implies that the doctor-patient relationship is moving towards a more active partnership with active involvement of patient.	No	Cross-sectional	11 general practitioners	55%	Qualitative. Focus group.

Canada, English, 2004[34]	To explore the extent to which Ontario breast cancer specialists report practising shared decision-making with their patients, their comfort level with this approach, and perceived barriers and facilitators to implementation.	Shared decision-making implies the simultaneous participation of physicians and patients in all phases of the decision-making process.	No	Cross-sectional	232 surgeons and 102 oncologists	Surgeons : 72% Oncologists : 79%	Quantitative. Questionnaire.
United Kingdom, English, 2004[43]	To explore the way in which general practitioners in the UK manage the dual responsibilities of treating individual patients and making the most equitable use of National Health Service resources in the context of the policy of greater patient involvement in decision-making.	Private participation refers to the involvement of individuals in their own care and treatment while public participation refers to involvement in decision-making processes concerning service planning and delivery, service evaluations and consultations over future service provision.	No	Cross-sectional	24 general practitioners	Not reported	Qualitative. Focus group and interviews.
United Kingdom, English, 2004[49]	To explore whether newly qualified doctors feel adequately trained to discuss management with patients, their attitudes to the concept of sharing decisions about treatment with patients and their strategies for coping with managing patients.	Both patients and doctors disclose treatment preferences for a particular problem based on available evidence and personal preferences; negotiation then follows to build a consensus about the best treatment to follow.	No	Cross-sectional	36 pre-registration house officers	Not reported	Qualitative. Interviews.
Netherlands, English, 2004[50]	To determine specific barriers to the involvement of older patients in general practice care and to identify variations between countries.	Patient involvement is defined as enabling patients to take an active role in deciding about and planning their care.	No	Cross-sectional	233 general practitioners in 11 European countries	Not reported	Qualitative. Interviews.
United States, English, 2005 [51]	To identify and characterize physicians' attitudes toward patient participation in decision-making and to gain insight into how they consequently think about and structure the decision-making process.	Involving patients actively in the clinical decision-making.	No	Cross-sectional	53 academic and private practice physicians from primary care and surgical specialties	Not reported	Qualitative. Interviews.
Canada, English, 2005[52]	To elicit the barriers and facilitators influencing the provision of decision support by call center nurses for callers facing values-sensitive health decisions and to explore the magnitude of these barriers and facilitators as perceived by the nurses.	Decision coaching is one-to-one guidance through a stepped process by someone who is supportive but neutral with respect to the decision.	Yes[90]	Randomized controlled trial	108 registered nurses	Barriers survey: 52,8%	Mixed methods. Interviews, focus groups, and self-administered questionnaires. Quantitative. Self-administered questionnaire. Focus groups.
France, French, 2005[53]	To describe how paediatric residents involve children during medical decision-making and evaluate the relationship between practice patterns and residents' characteristics.	To involve children during medical decision-making.	No	Cross-sectional	45 paediatric residents	75%	Quantitative. Self-administered questionnaire. Focus groups.
United States, English, 2005 et 2006[54, 55]	To examine experiences of older persons and their clinicians with shared decision making and their willingness to use an SDM instrument.	Shared decision-making models are increasingly advocated to improve the process and outcomes of clinical decision making for patients with serious and chronic illnesses.	No	Cross-sectional	5 nurses and 6 physicians	Not reported	Qualitative. Focus groups.
United Kingdom, English, 2005[56]	To pilot test a decision aid for hypertension treatment based on decision analysis that incorporated guidance on the best options for patients, based on their personal preferences.	To provide individualised information to patients in a way that promotes their involvement in treatment decisions.	No	Cross-sectional	2 consultant cardiologists, 2 general practitioners, 2 specialist nurses, 2 practice nurses	Not reported	Qualitative. Self-administered questionnaire.

Mexico, English, 2005[57]	To report on a field test in Mexico that assessed the tool's effectiveness in changing the counseling and decision-making process, and collected feedback from providers and clients.	A decision was considered shared when it emerge from the verbal exchange between the provider and the client, with each contributing.	No	Before-and-after	9 doctors, 2 nurses and 2 social workers	Not reported	Mixed methods. Interviews, observation and focus group.
United Kingdom, English, 2005[58]	To report the views of 21 general adult psychiatrists working in UK about their experiences of consultations involving discussion of antipsychotic medication.	Shared decision making involves choices that reflected patient's wishes, negotiated agreements and a sense of partnership.	No	Cross-sectional	21 consultant psychiatrists	66%	Qualitative. Interviews.
Netherlands, English, 2006[59]	To describe several barriers in shared decision making in an intercultural context.	Physicians are expected to inform their patients about all the possible benefits and risks of treatment options. In turn, patients are supposed to put forward their preferences, expectations, and concerns about the options suggested by the physician.	No	Cross-sectional	18 physicians	Not reported	Qualitative. Semi-structured interviews.
Australia, English, 2004[60]	To explore beliefs and expectations of general practitioners, consumers and pharmacists in relation to concordance to allow further exploration of the implementation of principles of concordance in Australia.	Concordance is an agreement or partnership between patient and prescriber about obtaining the best use of treatment, compatible with what a patient desires and is capable of achieving.	No	Cross-sectional	9 pharmacists and 10 general practitioners	Not reported	Qualitative. Focus group and semi-structured interviews.

Table 3. Quality assessment of included studies

Qualitative studies

Criteria	Study identification																		
	[60]	[37]	[38]	[39]	[29]	[41]	[43]	[44]	[45]	[51]	[54, 55]	[58]	[59]	[47]	[48]	[49]	[56]	[50]	
Question/objective sufficiently described?	2	2	2	2	2	1	2	0	2	2	2	2	1	2	2	2	2	2	2
Study design evident and appropriate?	2	2	2	2	2	2	2	0	2	2	2	1	1	1	1	2	1	2	2
Context for the study clear?	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2
Connection to a theoretical framework/wider body of knowledge?	2	2	2	2	2	2	2	0	1	1	2	2	2	1	1	2	2	2	2
Sampling strategy described, relevant and justified?	1	1	1	1	1	2	1	0	2	2	1	1	1	1	1	2	1	2	2
Data collection methods clearly described and systematic?	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	1	2	2
Data analysis clearly described and systematic?	2	2	2	2	2	2	2	0	2	2	2	2	1	2	1	2	0	2	2
Use of verification procedure(s) to establish credibility?	0	2	2	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Conclusions supported by the results?	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	2	2
Reflexivity accounted for?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total score/possible maximum score	15/20	17/20	17/20	15/20	16/20	15/20	16/20	3/20	16/20	14/20	14/20	14/20	12/20	13/20	12/20	16/20	9/20	16/20	16/20

Quantitative studies

Criteria	Study identification					
	[53]	[33]	[34]	[40]	[11]	[46]
Question/objective sufficiently described?	2	2	2	2	2	2
Study design evident and appropriate?	2	2	2	2	2	2
Method of subject/comparison group selection or source of information/input variables described and appropriate?	1	2	2	1	2	2
Subject (and comparison group, if applicable) characteristics sufficiently described?	2	2	2	2	2	2
If interventional, and random allocation was possible, was it described?	N/A	N/A	N/A	N/A	N/A	N/A
If interventional, and blinding of investigators was possible, was it reported?	N/A	N/A	N/A	N/A	N/A	N/A
If interventional, and blinding of subjects was possible, was it reported?	N/A	N/A	N/A	N/A	N/A	N/A
Outcome and (if applicable) exposure measure(s) well defined and robust for measurement/misclassification bias? Means of assessment reported?	2	2	2	2	2	2
Sample size appropriate?	N/A	N/A	N/A	N/A	N/A	N/A
Analytic methods described/justified and appropriate?	2	2	2	2	2	2
Some estimate of variance is reported for the main results?	N/A	2	0	2	2	1
Controlled for confounding?	N/A	N/A	N/A	N/A	N/A	N/A
Results reported in sufficient detail?	2	2	2	2	2	2
Conclusions supported by the results?	2	2	2	2	2	2
Total score/possible maximum score	15/16	18/18	16/18	17/18	18/18	17/18

Mixed methods studies

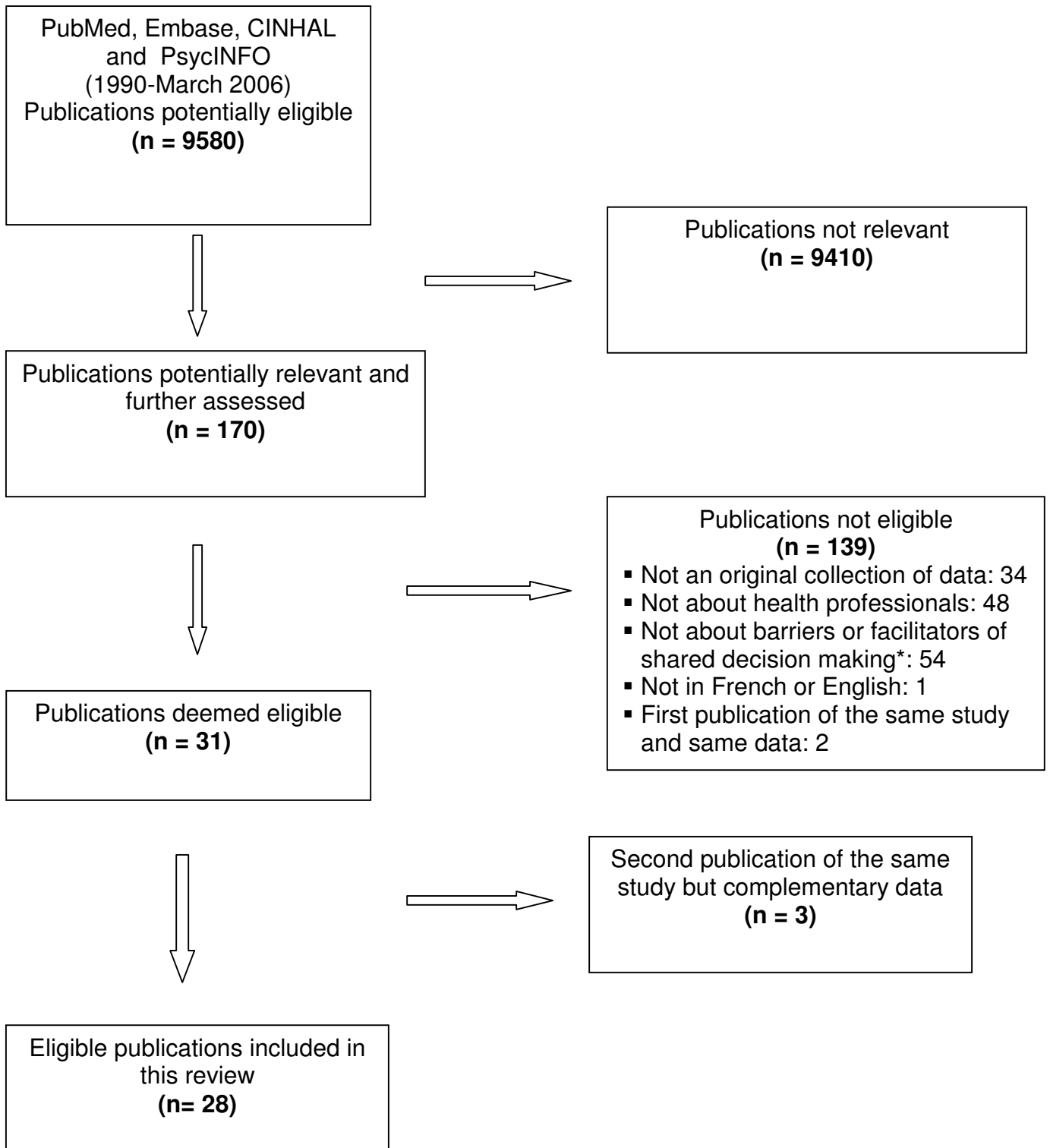
	[21, 35, 36]	[42]	Study identification [57]	[52]
Assessment of the qualitative component of the study				
Criteria				
Question/objective sufficiently described?	2	2	2	2
Study design evident and appropriate?	2	2	2	2
Context for the study clear?	2	2	2	2
Connection to a theoretical framework/wider body of knowledge?	2	2	2	2
Sampling strategy described, relevant and justified?	1	1	1	1
Data collection methods clearly described and systematic?	2	2	2	2
Data analysis clearly described and systematic?	2	2	2	2
Use of verification procedure(s) to establish credibility?	0	2	0	0
Conclusions supported by the results?	2	2	2	2
Reflexivity of the account?	0	2	0	0
Assessment of the quantitative component of the study				
Question/objective sufficiently described?	2	2	2	2
Study design evident and appropriate?	2	2	2	2
Method of subject/comparison group selection <u>or</u> source of information/input variables described and appropriate?	1	2	1	2
Subject (and comparison group, if applicable) characteristics sufficiently described?	2	2	2	2
If interventional, and random allocation was possible, was it described?	2	N/A	N/A	N/A
If interventional, and blinding of investigators was possible, was it reported?	2	N/A	N/A	N/A
If interventional, and blinding of subjects was possible, was it reported?	2	N/A	N/A	N/A
Outcome and (if applicable) exposure measure(s) well defined and robust for measurement/misclassification bias? Means of assessment reported?	2	2	2	2
Sample size appropriate?	2	N/A	2	N/A
Analytic methods described/justified and appropriate?	2	2	1	N/A
Some estimate of variance is reported for the main results?	2	2	1	N/A
Controlled for confounding?	1	N/A	1	N/A
Results reported in sufficient detail?	2	2	2	2
Conclusions supported by the results?	2	2	2	2
Total score/possible maximum score	41/48	37/38	33/42	29/34

2: Yes
 1: Partial
 0: No
 N/A: Not applicable

Table 4. Perceived barriers and facilitators to implementation of shared decision making in clinical practice

Factor as a barrier/facilitator	Barriers (number of studies in which this factor was identified as a barrier)[reference number]	Facilitators (number of studies in which this factor was identified as a facilitator)[reference number]
Knowledge		
Lack of awareness/awareness	0	0
Lack of familiarity/familiarity	5[29, 37, 39, 44, 49]	0
Forgetting	1[41]	Not applicable
Attitude		
Lack of agreement with specific components of shared decision making/agreement with specific components of shared decision making		
• Interpretation of evidence	1[29]	
• Lack of applicability/applicability		
○ Characteristics of the patient	12[21, 29, 34, 37, 41, 43, 47-49, 53-55, 59]	4[29, 35, 51, 54, 55]
○ Clinical situation	12[11, 29, 34, 36-38, 47-49, 53-55, 59]	3[37, 46, 51]
• Asking patient about his/her preferred role in decision-making	7[11, 38, 40, 42, 43, 50, 59]	2[42, 50]
• Asking patient about support or undue pressure	0	1[34]
• Asking about values/clarifying values	0	0
• Not cost-beneficial/Cost-beneficial	3[21, 29, 45]	1[42]
• Lack of confidence in the developers/Confidence in the developers	0	1[29]
Lack of agreement in general/Agreement in general		
• “Too cookbook” – too rigid to be applicable	2[29, 48]	0
• Challenge to autonomy	1[11]	0
• Biased synthesis	1[29]	0
• Not practical/Practical	2[29, 54, 55]	6[29, 33, 41, 54-57]
• Total lack of agreement with using the model (not specified why)	2[47, 50]	0
Lack of expectancy/expectancy		
• Patient’s outcome	1[33]	10[33, 34, 37, 42, 46, 50-52, 54-56]
• Process expectancy	1[56]	11[11, 29, 33, 34, 36, 41, 42, 50, 51, 54, 55, 57]
• Feeling expectancy	0	1[34]
Lack of self-efficacy/Self-efficacy	6[21, 34, 37, 48, 50, 53]	0
Lack of motivation/Motivation	4[21, 37, 51, 52]	15[33, 35, 36, 38, 39, 41-44, 47, 49, 51, 52, 54, 55, 57, 58]
Behaviour		
External factors		
• Factors associated with patient		
○ Preferences of patients	9[21, 39, 41, 42, 45, 47, 48, 52, 54, 55]	4[34, 39, 42, 52]
• Factors associated with shared decision making as an innovation		
○ Lack of triability/Triability	2[29, 49]	1[29]
○ Lack of compatibility/Compatibility:	2[29, 33]	2[29, 33]
○ Complexity/Ease of use	3[21, 29, 45]	2[29, 56]
○ Lack of observability/Observable	1[29]	1[29]
○ Not communicable/Communicable	3[29, 38, 49]	0
○ Increase uncertainty/Decrease or manage one’s own uncertainty	1[45]	1[37]
○ Not modifiable/Modifiable	1[37]	1[29]
• Factors associated with environmental factors		
○ Time pressure/Save time	18[29, 34-39, 41-43, 47, 48, 50, 51, 53-57, 60]	3[29, 42, 54, 55]
○ Lack of resources/Resources	4[35, 47, 50, 53]	1[50]
○ Organizational constraints/Organizational support	0	0
○ Lack of access to services/Access to services	2[41, 60]	0
○ Lack of reimbursement/Reimbursement	0	0
○ Perceived increase in malpractice liability/Perceived decrease in malpractice liability	2[47, 48]	0
○ Sharing responsibility with Pt	Not applicable	3[37, 42, 51]

Figure I. Trial Flow



Additional files provided with this submission:

Additional file 2 : QUOROM Statement Checklist.doc : 49Kb

<http://www.implementationscience.com/imedia/1492770815102513/sup2.DOC>

Additional file 1 : Appendix 1 Search strategies.doc : 52Kb

<http://www.implementationscience.com/imedia/9306025751025092/sup1.DOC>