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Does patient coaching make a difference in patient-physician communication during specialist consultations? A systematic review

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ABSTRACT

Objective

To systematically review the literature on the effectiveness of a patient coach intervention on patient – physician communication in specialists consultations.

Methods

PubMed, Cochrane, PsycInfo, Cinahl and Embase were searched until November 2015. Included were papers describing interventions directed at adult outpatients in secondary care with a variety of somatic diseases. Outcomes had to be measured in communication effectivity from a patient's perspective.

Results

Seventeen publications met the inclusion criteria (involving 3787 patients), describing 13 unique interventions. Most interventions were single one-on-one sessions taking between 20 and 40 min before consultation. Research quality in ten studies was high. These studies showed significant improvement on immediate, intermediate and long term patient – physician communication.

Conclusion

We found limited evidence suggesting an improvement of patient – physician communication by having multiple patient coaching encounters during which questions are prepared and rehearsed and consultations are evaluated and reflected upon, sometimes supported by audio recording the consultation.

Practice implications

The results of this review contribute to the (re-)design of an effective model for patient coaching, a profile and training approach of patient coaches. Future

research should aim at determining which patients will benefit most from coaching interventions.

1. INTRODUCTION

Research shows that patients want to be heard and to be taken seriously in consultations with physicians [1]. Patients with a chronic illness are increasingly expected to self-manage their disease, which implies being involved in treatment decisions as well. In most cases, treatment is initiated by a medical specialist, therefore a patient's ability to communicate effectively during these consultations is essential [2], [3] and [4]. Patients need to be aware of and skilled to disclose relevant personal information about preferences, values and concerns [5]. Several factors reduce the likelihood that patients get the communicative approach they want and need during medical consultations, even though healthcare providers are doing their best to serve the patient's needs [6].

Barriers to communication have been reported in a systematic review on shared decision making [7]. Thirty three papers concerned studies in secondary care. Patients in these studies were diagnosed with various diseases, like cancer, cardiac diseases, diabetes, osteoporosis, hernia or asthma. Reported barriers related to how the healthcare system is organized and the interaction between patient and physician during consultation [7].

The complex hospital environment with full waiting rooms, difficult navigation through departments and clinic, dealing with many different healthcare professionals, and time constraints imposed by busy healthcare professionals, challenges communication during clinical consultations [8] and [9].

In the interactional context barriers relate to the power imbalance between patient and physician. This involves, from a patient's perspective, presumptions about their role and undervalued expertise in relation to the physician's knowledge [7].

Furthermore, the communication style of individual healthcare professionals may hinder effective communication with patients, for example by being hasty or by communicating in an excessively technical and instrumental way [8]. Patients also perceive several barriers within themselves, for example being overwhelmed by emotions, counterproductive values and beliefs [8], and lacking conversational skills or cognitive abilities, to be an active participant during healthcare visits [10].

The influence of barriers declines as patients become more experienced in their treatment trajectory. Van Bruinessen et al. identified a pattern of three states in patients communicating with healthcare professionals: 1) being overwhelmed and passive, 2) being pro-active and 3) being self-motivated, proficient and empowered. In line with the 'conscious competence learning' - model by Maslow, moving towards a next state in this trajectory might be facilitated by increasing patients' awareness on the role patients can play and the benefits of active participation [11], and additionally acquire the skills to communicate about their values, concerns and context in a participatory manner. Although most chronically ill patients move to subsequent states as time evolves after diagnosis, some patients remain in the first state of being unconsciously incompetent [8] during their treatment trajectory.

To increase the number of patients that move from the first state to the second or even third, or accelerate this transition Van Bruinessen et al. suggested interventions should focus on creating awareness about the role patients can play during consultations and on training their communication skills [8]. Joseph-Williams et al.

suggested to use alternative ways to prepare a patient for the shared decision making encounters: in addition to decision aids supporting the patient's ability to participate in the shared decision making process, focus should also be on how to handle the power imbalance between patient and physician [7].

Standardized communication and educational strategies to achieve patient empowerment are challenging, because patients' support needs are complex (influenced by health literacy level, social and cultural differences), can change over time and vary between contexts [12]. The identification in clinical practice of patients who will benefit most from coaching is challenging as well and requires further investigation.

Personal attention may be best suited to adapt to changing needs and circumstances. After all, human connection is fundamental in person centered patient care, and patients require human connection to feel respected and equal [13]. In a study among patients visiting medical specialists in Dutch hospitals, 16.6% of patients stated that they would appreciate a personal coach to help them prepare, execute, and evaluate medical consultations. Patients expressed the need for support to inform the provider about their preferred position in the process of medical decision-making, and help them to articulate their most important values and concerns at different stages during the treatment trajectory [14].

Previous reviews investigated such patient coaching interventions in different healthcare settings [15], [16], [17], [18], [19], [20], [21], [22] and [23]. The majority of these studies however, were limited to interventions provided before consultations [20] and [23], to patients with cancer [18], or directed only at practitioners [22]. The effects of personal, patient directed interventions for patients consulting a medical specialist, aiming to improve communication, and its effective components have not yet been systematically reviewed. This review therefore aims to increase understanding in these interventions and their effect on communication during consultation.

We performed a systematic review according to the PRISMA guidelines [24] to address the following research questions:

- (1) Which patient coaching interventions have been developed and studied with respect to effectiveness on communication?
- (2) How are these interventions provided (what elements are included, at what moment related to the consultation, how often and by whom)?
- (3) Do coaching interventions significantly influence patient communication in specialist consultations?

Answers to these questions can be used to develop new or adapt existing patient coaching interventions.

2. METHODS

2.1. Search strategy

We conducted a systematic literature search in PubMed, Cochrane, PsycInfo, Cinahl and Embase until November 2015. The search strategy was developed by the first author (IA), with librarian support, primarily for PubMed (Appendix A) and adjusted accordingly for the other databases.

The search was divided into three aspects to find relevant references on (1) patient coaching interventions (Intervention) to improve (2) patient-physician communication (Outcome) with medical specialists, in (3) secondary care (Setting). Studies had to be designed with a control condition.

Because 'patient coaching' is not a MeSH term in PubMed, we conducted a sensitive search to cover patient-directed personal support that aimed at enhancing patient-specialist communication during consultation. For this review we used a broad definition of coaching as used in education of Dutch nurses, and adjusted it to the context of a patient [25]. Patient coaching then has the following characteristics: 1) develops potential in a patient methodologically; 2) focuses on the patient and realization of his or her goals; 3) enhances learning and acting; 4) provides measurable results in attitude, knowledge and skills; 5) comprises dialogue on positive and negative aspects of the situation; 6) aims at improvement in consciousness and responsibility in a patient's healthcare and 7) is applied consciously in a restricted period of time. The goal of the patient coaching is determined by the patient, and the coach merely facilitates the process to reach it. No restrictions on timing of the intervention in the treatment trajectory were used. Outcomes had to be defined in communication effectivity from the patient's perspective during consultation, including patient participation, question asking behavior, stating values and concerns and expressing preferences

We did a broad search on adult outpatients consulting a medical specialist. No restrictions were made in kind of somatic disease, social economic status, education, ethnicity and (health) literacy levels.

Details of the search strategy are presented in Appendix A. Titles and abstracts of retrieved studies were checked by two independent reviewers against predefined inclusion criteria (Table 1). Studies not fulfilling one or more inclusion criteria were excluded. Disagreements were resolved by discussion.

[TABLE 1]

2.2. Inclusion

Studies were included if they investigated effects on communication in an empirical controlled study (parallel controlled: randomised controlled trial (RCT) or sequentially controlled: self-control or cross over) of personal support interventions given to an adult outpatient (≥ 18 years of age) with no cognitive impairment. The intervention could have been provided groupwise or individually and had to be related to consulting a medical specialist. Communication support in curative trajectories may differ from support in palliative trajectories [26] and [27], therefore we limited our search to interventions in curative settings (Table 2).

[TABLE 2]

Interventions were excluded if they only focused on advocating a patient's interest by taking over instead of improving empowerment, translation, therapy or prevention.

2.3. Study selection

The search resulted in 12761 unique publications. Fig. 1 shows the selection process. The inclusion process was piloted on three random samples of 50 retrieved articles each by two researchers (IA and SvD). Differences were resolved by consensus, and

the process resulted in the final list of in- and exclusion criteria and practical guidelines for selection (see).

[FIGURE 1]

Sixty-five articles were reviewed full text by IA and CS. In case of disagreement the other authors (SvD and PB) were consulted until agreement was reached. Forty eight references were excluded after reading full text, because they did not meet the inclusion-criteria after all. For example: it became clear the consultation was with a general practitioner instead of a medical specialist, or communication effectivity was not an outcome.

The few systematic reviews we found were checked for additional studies beyond our search, which resulted in two additional studies [28] and [29].

2.4. Quality assessment

Studies meeting the inclusion-criteria were assessed for methodological quality. This was completed by two reviewers (IA and SvD, PB or CS) using the Cochrane assessment tool (Appendix B) [30] and [31].

Studies were considered of high quality if six of the eleven criteria were scored as 'done' instead of 'unclear' or 'not done'. Disagreement was resolved by discussion.

2.5. Data extraction

Data were extracted by two independent reviewers using a self-made data extraction form, including study design, patient population, disease type, intervention (name, description, type, additional materials, frequency, timing, time period, control group), coach (background, training duration, training frequency, training methods), outcomes (primary outcome(s), secondary outcome(s), including used measurements), and study limitations.

Communication outcomes were qualified as 'immediate' if consultations were audiotaped and coded on communication aspects. Outcomes were qualified as 'intermediate' when measured directly after the consultation and as 'long term' measured after weeks or months. To investigate intermediate or long term effects patients were interviewed (face-to-face or by telephone) or asked to fill out questionnaires (validated and non-validated).

3. RESULTS

3.1. Included studies on patient coaching interventions.

Seventeen articles were included, describing thirteen unique interventions on a total of 3787 patients. Three interventions were investigated in multiple studies: Expanding Patient Involvement in Care (EPIC) [32], [33] and [34], Tailored Education and Counselling (TEC) [35] and [36] and Consultation Planning (CP) [37] and [38].

Research quality in ten studies was high. Control conditions varied in the included studies. Most studies compared a single intervention to a control group [28], [29], [32], [33], [39], [40], [41] and [42], some compared two interventions to a control group [35], [43], [44] and [45], one study compared three interventions to a control group [34] and some had a pre-post design [28], [32], [38], [40], [46] and [47].

3.2. Patient characteristics

Details on clinical and demographic characteristics of patients in the included studies are given in Table 3. Although most studies ($n = 11$) involved patients with cancer, others involved a range of other chronic diseases.

[TABLE 3]

3.3. Descriptions of the interventions

Most coaching interventions involved a single individual session taking between 20 and 40 min before consultation, given in the waiting room or a separate room in the hospital. Individual interventions were sometimes offered multiple times (2–5 times) [29], [33], [42], [43] and [45] or were combinations of individual session, telephone, mail or a group meeting [29] and [42].

All group workshops involved multiple meetings of varying duration [39], [40], [42] and [46].

Patients were coached on a variety of subjects, related to question asking (identifying, information recall, communication skills), decision making, conversation control (agenda setting, negotiation skills) and challenged to act by rehearsal and role-playing. In Mishel et al. [45] the patient support person (partner, relative, or friend) was also approached in the intervention. Consultation Planning and Recording [38] was the only intervention in which the coach accompanied a patient during the medical consultation. In this study two different coach roles were investigated: the coach helped to structure and record the consultation, compared to a coach who just recorded the consultation and only spoke when asked to by the patient or physician (Table 4).

[TABLE 4]

In all but one intervention additional material was described, like a Question Prompt List (or similar question support instrument), an audiotape of the consultation, an educational DVD, booklet, algorithm, flow/reminder chart, or combinations of these (Table 5).

[TABLE 5]

Coaching was provided by coaches of different backgrounds. They could be lay persons [35], [36], [39] and [46], healthcare professionals [29], [32], [42] and [45], researchers [28], [33], [34], [38], [40] and [48], social workers, or other professionals with a psychosocial education [41] and [43]. Two studies on Tailored Education and Counselling (TEC) [35] and [36] included a short description of the training of the coaches, e.g. 3–80 h of training and reinforcement over a period of 3–6 months. Fidelity of the intervention was tested in three studies [35], [43] and [45].

3.4. EFFECTS ON COMMUNICATION (RQ3)

Studies were too heterogeneous to pool the data, therefore results of the studies will be discussed separately, starting with the studies of high methodological quality.

Various outcome measures on communication were used: question asking behavior; perceived problems or barriers in communication; discussion with physician; active role in decision making; intensity of conversation (for example: the proportion of personal involvement by both physician and patient behavior in affect and opinion

sharing) and involvement in conversation (for example: patient's conversational acts per minute); conversation controlling behaviors (questions, interruptions and directions by patients); obtaining information; self-efficacy (in asking questions); number of questions asked; change in satisfaction; or agreement with decision. All ten studies of high methodological quality showed significant effects on immediate, intermediate or long term communication outcomes. Coaches in these studies had a variety of backgrounds from lay educators to trained professionals or nurses. Three studies investigated group workshops that were in some interventions combined with phone calls and mail. Workshops were all given multiple times (3–6 times).

3.4.1. Immediate effects

Four of the ten studies of high methodological quality showed that patients assumed a significantly more active role in treatment decision making during consultation with medical specialists when they had seen a patient coach prior to the consultation: by actually participating [28], they were more involved in the conversation [32], improved their conversational controlling behavior [33] and showed more pain-specific active participation [36]. These were all individual coaching sessions, three of which were given once and one twice [33].

3.4.2. Intermediate effects

In the study of Mishel (2009) patients reported a significant improvement in patient-provider communication measured directly after specialist consultation [45]. This intervention consisted of four phone calls to patient alone by a specially trained nurse, or to patient and primary support person both, separately, by the same nurse, over a period of 7–10 days. There was no significant difference in intermediate effect whether the primary support person was approached or not [45].

Two interventions (individual, once given, 20–30 min, just before specialist consultation) significantly improved elicitation of the number of factual statements from the physician [32] or led to a significant decline in perceived barriers about pain [41] in comparison to the control group.

3.4.3. Long term effects

Long term effects were measured after one to twelve months in half of the high quality studies. Significant improvements were found in patient-physician communication [39], [42] and [45], discussion with physicians [43] and sharing of information by patients [29] and [45]. Participation in planning treatment significantly improved in the intervention which was directed both at patients and patient support persons. It was not explained why the inclusion of a patient support person in the intervention made a difference specifically in this outcome [45].

In the low methodological quality studies, two out of seven studies showed no significant effects [40] and [44].

Sepucha (2000 and 2002) showed immediate significant improvement in decision quality and intersubjective agreement between physician and patient [38], and a reduction in communication barriers [37]. Kidd (2004) showed a significant intermediate improvement in self-efficacy in question asking especially when it was a familiar doctor [34]. Communication self-efficacy improved significantly in Kravitz (2011), but those groups already differed at baseline. Ory (2013) found long term improved communication with physician sustaining up to twelve months [46].

4. DISCUSSION AND CONCLUSION

4.1. Discussion

This systematic review of studies on personal coaching interventions directed at improving patient-physician communication during specialist consultations showed that personal support is able to improve patient communication (1) immediately, i.e. during consultation, (2) intermediately, i.e. as perceived after consultation, and (3) at the long term follow-up, i.e. the effect was sustainable. Even though these outcomes are promising, it was not possible to be conclusive about the effectiveness of the interventions or specific elements, because of the heterogeneity of the studies, the outcome measures and the intervention designs.

Comparable conclusions were drawn in the systematic reviews [15], [16], [17], [18], [19], [20], [21], [22] and [23] that included patient coaching interventions in specialist consultations in different patient groups (cancer [18], multiple sclerosis [17], chronic heart failure [15] and miscellaneous other groups). In addition to the reasons for inconclusiveness of the results described earlier, these reviews highlighted the complexity of the interventions and the low quality of the evidence [16] and [17]. The difficulty of determining the right outcome measures [15] and [18] (for example quality of questions, reduction of anxiety [20]) for effective communication to indicate increased patient participation [21] has been recognized before. These reviews were also inconclusive about whom to direct, though Legaré (2014) concluded that an intervention directed at both patient and healthcare professional showed to be more promising [16]. It was recommended to underpin interventions with a theoretical framework [22], design interventions that can be integrated into practice [19] and identify specific patient groups to target the intervention to [21].

All interventions included in our review were complex. Complex interventions comprise a number of interacting components, depend largely on the fidelity of coaches, are influenced by the context in which they are given and differ often in the number and variability of outcomes. These factors make the working mechanisms difficult to evaluate [49]. Evaluation of effective components in an RCT would strengthen the evidence if it were possible to disentangle components and study them as separate variables. Valuable information on what seems to be effective might be collected from qualitative studies and nonrandomized studies instead.

The outcomes in the included studies were related to the goal of the interventions, which primarily aimed to increase self-management skills, self-efficacy, active participation in decision making or interaction with physician, provision of knowledge on the disease and, only in some studies in particular, improve communication skills. Different pathways to reach these goals were chosen, resulting in a variety of intervention designs.

Different definitions for patient coaching are used in literature. As there is no uniform definition of coaching, we adopted a definition of coaching that is used in education of Dutch nurses [25] and adjusted it to the context of a patient. Main characteristics are that (1) the goal is provided by the patient and (2) the coach works methodologically (3) within a restricted period of time.

Since the coach is a crucial intervention component, information on background and training is essential, as well as the fidelity to the coaching method. However, information on the training of coaches (like training duration, training frequency and

training methods) was limited. The fidelity to the coaching method was assessed in three studies [35], [43] and [45].

Comprehensive assessment of patients' needs, values and preferences as a foundation for person centered care (PCC), for example in Chronic Heart Failure, is beneficial in the tailoring of care [15]. A 'one size fits all' approach is not likely to meet patients' preferences as well as during the various stages of their trajectory for participation, because this varies among patients [50]. Personal attention and support by a patient coach might fit in well in this concept.

The frequency within which the intervention is provided also seems to have a positive influence on communication outcomes. Multiple encounters provide the opportunity to evaluate and reflect on behavior, thus creating a learning cycle in concordance with the 'conscious competence learning'- model by Maslow, other adult learning theories [51] and behavioral change theories [52] and [53]. This effect might be the largest when coach-patient encounters are at least provided before and after specialist consultations. Factual evaluation and reflection of patient's behavior and communication might also be facilitated when the coach attends the consultation with the patient [38]. Because most interventions were given only once before a consultation, the effectiveness of multiple encounters is not yet substantiated.

Workshops were all given multiple times, but are challenging preparation and evaluation of the consultation and reflection on actual behavior during consultation, because they were not directly related to the consultation.

Awareness on important issues for patients to address during specialist consultations like values, concerns and questions, can be developed by preparation (e.g. using a question prompt sheet on common issues), though it is hard to cover all relevant issues. Actual communication on these issues can be facilitated by rehearsal with a coach, which was provided in three studies of high methodological quality [29], [32] and [36].

Besides personal contact with a coach, another element that might be effective is audio recording, as used in some interventions [29] and [38]. Audio recordings are highly valued by patients in some situations and a majority benefits from listening to the recordings of their consultations [54]. Audio recordings improve recall and satisfaction in specialist consultations, but are more valued by younger patients [55]. Whether audiotapes are beneficial depends on a patient's preferences. In the article of Sepucha et al. (2000) [38] the coach arranged audiotaping the consultation. This facilitated the use of an audiotape, because patients are reluctant to do so themselves or use them covertly [56].

The complexity of the interventions in our review is further substantiated by the different contexts in which they were provided. Not only did they differ in number of participants (i.e. provided individually or in a group), but also in different places which may have different impacts on anxiety and learning ability (e.g. in hospital [28], [32], [33], [34], [35], [36], [37], [38], [41], [44] and [45] – in waiting room, unspecified space or private space, workshop location [39] and [40], at home [29], [42], [43] and [46]).

Only a few patient coaching interventions have been investigated in multiple studies and different contexts, which might be helpful to get a better understanding on effective elements.

Due to the factors mentioned above a conclusive evaluation on effective elements is not possible.

Professional communication skills tend to decline over time unless they are regularly recalled and practiced [57] and [58]. Empowered (‘coached’) patients might challenge physicians with every consultation to practice trained skills [59]. Although communication skills training is mandatory for most healthcare professionals, many health care professionals encounter difficulties practising these skills in the consultation room [57], [60] and [61]. In some studies the effect of a patient coach intervention on physician behavior (immediate) was examined as well. As a result of patients actively communicating about their pain, physicians communicated more informatively [36]. Also Greenfield’s study [32] showed a significant improvement in eliciting the number of factual statements from the physician.

The studies we reviewed included patients with different chronic diseases. The effect of coaching on patient communication did not appear to be disease-specific. There was no evidence in the studies in our review that the beneficial effects of coaching was mediated by demographic, socio-economic or health literacy status variables. It is recommended that healthcare professionals should tailor their information and support to the health literacy skills and personal context of their patients [62]. Since clinicians tend to overestimate the health literacy of their patients [63], it is essential that the information a patient provides during consultation is accurate, reflecting their actual issues. Patient coaching showed a significant long-term improvement of health literacy [42] and [46]. Further investigation should aim at exploring which patients will benefit most from a patient coach and whether health literacy is one of the characteristics of these patients.

The strengths of this review are its rigor, as expressed in the use of the PRISMA guidelines to design the search terms and the evaluation of the methodological quality of the included trials, using the Cochrane assessment tool. This is also the first review focusing solely on the effect of a personal coach intervention on patient – physician communication, aiming to further understand in the relationship between this intervention and its effects. We conducted a broad, sensitive search using the search terms “communication” and “relationship” to capture the main components of patient participation.

This review has some limitations. Patient coaching was not a Mesh term in PubMed and has various definitions. Despite our broad search strategy we might have missed some articles on relevant interventions. Bias may have been introduced as the second reviewer (SvD) only screened a small part of the titles and abstracts. Only English abstracts and studies in western countries were included; no information was gathered on possible patient coach interventions in other regions.

Many interventions aim to improve patients’ self-efficacy in managing their disease or health, such as patient activation and patient navigation. We only included studies that used communication or relation with a physician as outcome. The small number of included studies and the use of combined outcome measures on communication call for caution in formulating firm conclusions on the results of this review. On the other hand it highlights the gap of knowledge on the effect of patient coaching on communication with medical specialists.

Self-reported intermediate and long term communication outcomes are less reliable in measuring outcomes than observing the consultation.

Many questions still remain unanswered. What are effective elements of a patient coach intervention? How important is timing of coaching in relation to consultation? What is the cost-effectiveness of a personal coach compared to non-personal

support? What is the influence on the care process (knowledge necessary to inform the clinical practice) to facilitate implementation of a patient coach? What are the requirements for the provider of personal support (the ‘coach’)? Answers to these questions might help to (re)develop an effective patient coach intervention and the adoption and implementation of personal support for patients by the healthcare system in communicating with medical specialists on the subjects that matter to them.

4.2. Conclusion

Patient coaching seems a promising intervention to support patients in specialist consultations. The relative paucity of studies on the subject and the complexity of the patient coaching interventions limit the conclusions which can be drawn from this review.

Patients appear to benefit most from multiple coaching encounters, repetition and rehearsal of questions, evaluation and reflection on behavior and actions, comprising individual coach-patient encounters and support in audio recording the consultation to establish sustaining improvement in patient – physician communication in specialist consultations.

4.3. PRACTICE IMPLICATIONS

The results of this review contribute to the (re-)design of an effective model for patient coaching, a profile and training approach of patient coaches. Future research should aim at determining which patients will benefit most from coaching interventions.

5. CONFLICT OF INTEREST

The authors declare no conflict of interest.

6. FUNDING

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[APPENDIX A][APPENDIX B]

Methodological quality:

High quality: the study adequately fulfilled 50% or more of the validity criteria (6 or more out of 11 criteria). Low quality: the study fulfilled less than 50% of the validity criteria (< 6 out of 11 criteria)

OPERATIONALISATION OF THE Validity CRITERIA LIST

1) Was the method of randomisation adequate, e.g. at patient level? Examples of adequate methods are computer generated random number table and use of sealed opaque envelopes. Score **yes** if the above is the case. Score **no** if a transparent system is used and score **don't know** when the method of randomization is not described in the article.

2) Was the assignment generated by an independent person not responsible for determining the eligibility of the patients? This person has no information about the persons included in the study and has no influence on the assignment sequence or on the decision about the eligibility of the patients. Score **yes** when the assignment has been taken place by an independent person. Score **no** if the above is not the case and score **don't know** if no information is given about who generated the assignment.

3) Are important prognostic indicators assessed at baseline? Are there no substantial differences between the intervention group and the control group (for example regarding age, sex, type of cancer, duration of the disease, stadium of the disease, cognitive status and type of treatment)? Score **yes** if the above is the case and score **no** if there are differences regarding the prognostic indicators at baseline that could undermine post intervention differences. Score also **no** if no testing has been done to check if there were actual differences (a table with prognostic indicators without explanation is not enough). Score **don't know** when no information had been given about prognostic indicators.

4) Was the patient blinded to the intervention? The reviewer determines if enough information is given in order to score a '**yes**'. Score **don't know** if no information is given.

5) Was the care provider blinded to the intervention? The reviewer determines if enough information is given in order to score a '**yes**'. Score **don't know** if no information is given.

6) Was the outcome assessor blinded to the intervention? The reviewer determines if enough information is given in order to score a '**yes**'. Score **don't know** if no information is given.

7) Were co-interventions avoided in the design or were they similar between the intervention groups and control group? Score **yes** if the above is the case. Score **no** if there were co-interventions, not similar for the different groups. Score also **no** when no information has been given about co-interventions (so, not tested is also **no**). Note. This criterion cannot be decisive in determining low quality of an article.

8) Was the compliance rate among patients evaluated (e.g. did they view the received video or read the written material)? Score **yes** if the percentage of patients that used the intervention is **above 70% in all groups**. Score **no** if this percentage is below 70% and score **don't know** if no information about compliance has been given.

9) Is the number of patients described (and reasons given) that were included in the study but did not complete the intervention or were excluded from analysis? Is this percentage of withdrawals or drop-outs acceptable? Score **yes** if there is **information from 80 to 100% of the randomised patients** about the outcome assessment of recall. Score **no** if there is information from less than 80% of the randomised patients and score **don't know** if no information about withdrawals or drop-outs has been given.

10) Was the timing of the outcome assessment in all groups similar? Score **yes** if the above is the case (score also **yes** if a range is described, provided that this range does not have a large spread, for example more than three months). Score **no** if the timing of outcome assessment was not similar for all groups and score **don't know** if no information about the timing was given.

OPERATIONALISATION OF THE Validity CRITERIA LIST

11) Was all available data included for analysis (**intention to treat**)? This means that all randomised patients were analysed in the group they were assigned to regardless of noncompliance and co-interventions. Score **yes** if the above is the case, score no when the analysis did not include an intention to treat analysis. Score don't know if no information about intention to treat is given.

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TABLES

Table 1. inclusion criteria for studies included in the systematic review.

1. Abstract available in English
2. Empirical study, experimental study
3. Adult patient (>18 years)
4. Curative care
5. Consulting a medical specialist
6. Somatic complaint or disease (not mental)
7. Personal, individual or groupwise, intervention
8. Goal: improving communication during specialist consultation
9. Outcome: patient-physician communication

Table 2. studies, design and quality.

author, year	design	involved hospitals	no. Patients	meth. quality
Barlow, 2000,	pragmatic RCT	community based intervention	544	high
Bloom, 2008	RCT, pre post design 0, 6 months		404	low
Boulware 2013	RCT	multi-site	130	high
Brown, 1999	RCT	1	60	low
Davison, 1997	RCT, pre post interviews	1	60	high
Greenfield, 1985	RCT, pre-post	1	45	high
Greenfield, 1988	RCT	2	73	high
Kidd, 2004	RCT	1	202	low
Kravitz, 2011	RCT	4	258	low
Mishel, 2009	RCT (3 × 2)	6	256	high
Ory, 2013	pre/post longitudinal 0, 6, 12 months	22	1170	low
Sepucha, 2000	sequentially controlled trial	1	24	low
Sepucha, 2002	sequentially controlled trial	2	94	low
Smith, 2010	RCT	5	89	high
Street, 2010	RCT	3	148	high
Van Servellen, 2005	RCT	2	81	high
Wilkie, 2010	RCT, 4 weeks pre post	11	151	high

Fig. 1. flowchart inclusion procedure.

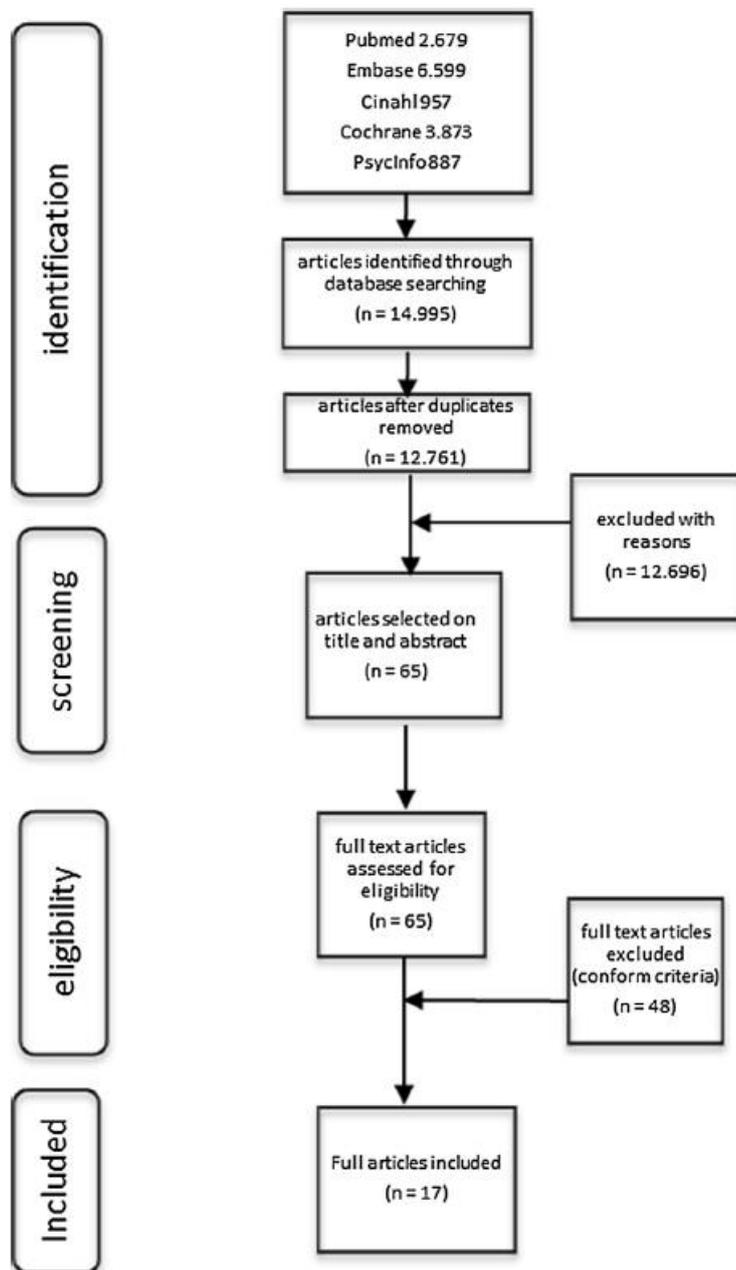


Table 3. patient demographics, diseases.

author, year	country (ies)	no. Patients	% men	age	disease	inclusion criteria
Barlow, 2000,	UK	544	~15%	int. 57.3, control 59.1	rheuma (OA and RA)	> = 18 years; ability to complete questionnaire; diagnosis Arthritis. From GP
Bloom, 2008	USA	404	0	23–50	cancer (breast)	breast cancer, 5 year survivors; < = 50 years; cancer free; contacts from earlier study
Boulware 2013	USA	130	~ 40%	52–67	Chronic kidney disease (CKD)	age 18- 70; English speaking; KDOQI stages 3, 4, or 5 CKD who were deemed to have progressive; not yet initiated dialysis therapy
Brown, 1999	Australia	60	49%	17–77	cancer, various	subsequent patients
Davison, 1997	Canada	60	100%	41–81	cancer (prostate)	newly diagnosed prostate cancer (0–13 weeks) Having been told their diagnosis, not having had their initial treatment consultation; able to read, speak and write English, and no evidence of mental confusion
Greenfield, 1985	USA	45	91%	55	peptic ulcer	visit with clinic physician within 6 months; no record of psych problems; Read English, less than 75 years of age, peptic ulcer
Greenfield, 1988	USA	73	int: 52%, control 48%	int: 49.8, control 49.5	diabetes	at least three previous clinic visits, less than 75 years of age, not blind, English speaking, not on insulin pump, no other major disease
Kidd, 2004	UK	202	56	17–78	diabetes	fluent English; attending diabetic clinic Aug. '94- march '95
Kravitz, 2011	USA	258	22.2	mean 58	cancer (various)	18–80 years; cognitively intact; English speaking; baseline waist pain > = 4 (1–10), moderate functional impairment due to pain
Mishel,	USA	256	99	mean 62	cancer (prostate)	at least ten days before treatment

author, year	country (ies)	no. Patients	% men	age	disease	inclusion criteria
2009					newly diagnosed)	consult appointment; < T2b, Gleason < 10; PSA <20; no major cognitive impairment; ability to read; access to phone; no prior cancer history; PSP (primary support person) willing to participate
Ory, 2013	USA	1170	18,3%	19–80	chronic disease: cancer, COPD, diabetes, arthritis	Min 1 self-reported chronic disease – Enrolling in CDSMP workshop in English or Spanish – Attending at least one of the first 2 class sessions – Not having taken CDSMP classes before – Completing a baseline assessment – Consenting to the study
Sepucha, 2000	USA	24	0	int. 48- control 47	cancer (breast)	breast cancer, read and speak English, consulting specialist about treatment June 1998 – Nov. 1998
Sepucha, 2002	USA	94	0	int. 53, control 52	cancer (breast)	breast cancer, read and speak English, consulting specialist about treatment, Oct. 96 – Mrt. 97
Smith, 2010	USA	89	0	int. 52 –control 49,8	cancer (breast)	adult female 18 plus, confirmed diagnosis of breast cancer, self-reported presence of persistent pain of at least moderate intensity (score of 4 plus on Brief Pain Inventory's worst Pain Intensity item) over prior 2 weeks –absence of any gross cognitive impairment, ability to comprehend, speak and read with basic fluency in either English or Spanish
Street, 2010	USA	148	~ 20%	int. 59,8, control 56,6	Cancer (locally advanced or disseminated, various)	(a) scheduled to see a participating physician, (b) were English-speaking and between the age of 18 and 80, (c) had a diagnosis of locally advanced or

author, year	country (ies)	no. Patients	% men	age	disease	inclusion criteria
						disseminated lung, breast, prostate, head and neck, oesophageal, colorectal, kidney, bladder cancer or melanoma skin cancer, and (d) had a recent worst pain (past two weeks) score of 4 or higher (on a scale of 0–10) or pain in past two weeks that interfered with normal daily activities at least moderately.
Van Servellen, 2005	USA	81	~ 90%	21–78	HIV	Male or female, 18 yrs. plus, problem with medic adherence as charted in medical records, time since diagnosis (3 months) Receiving HAART for min 3 months
Wilkie, 2010	USA	151	~ 70%	62 (10)	cancer (lung)	(a) had a diagnosis of small cell or non-small cell lung cancer; (b) spoke and read English; and (c) had pain related to the lung cancer or to anticancer therapies during the week prior to enrolling

Table 5. effects on communication.

author, year	primary and secondary outcomes	relevant measurements	significant effects	Meth. quality
Barlow, 2000,	1. Arthritis self-efficacy, 2. comprising use of cognitive behavioral techniques for managing arthritis, health status and use of formal health resources;	questionnaires validated; 5 item scale measuring communication with physician (self-developed at Stanford Arthritis Centre, Lorig, 1996)	Long term (4 and 12 months) improved communication with physician.	high
Bloom, 2008	1. Breast cancer and treatment knowledge, physical activity; diet; (life style habits); patient physician communication; communication with family	questionnaires validated and not-validated; Breast cancer problems scale	none	low
Boulware 2013	participants' self-reported achievement of at least 1 of 5 key behaviors important in the process of discussing and pursuing living donor kidney transplantation (ldkt), including: (1) discussing ldkt with at least one family member, (2) discussing ldkt with their physicians, (3) initiating the clinical evaluation for potential ldkt recipients, (4) completing the clinical evaluation for potential ldkt recipients, and (5) identifying a potential live kidney donor; (interest in ldkt)	audiotape, interview (telephone?), social worker sessions, questionnaires validated and non-validated, observation by study staff; fidelity of the intervention was assessed	Long term (6 months): more discussion with physician (TALK and TALK social).	high
Brown, 1999	1. no. of questions asked during oncology visit, 2. anxiety; satisfaction with consultation; psychological adjustment to cancer	audiotape, questionnaires validated; number of questions, patient satisfaction Roter; observation by researcher	none	low
Davison, 1997	1. active role in medical decision making: preferred roles, assumed roles, level of anxiety, levels of depression, 2. more active role in	audiotape: interviews before and after (5–6 weeks) initial treatment consultation	Immediate the intervention group assumed a more active role in	high

author, year	primary and secondary outcomes	relevant measurements	significant effects	Meth. quality
	communication with hcp	using validated questionnaire (CPS)	treatment decision making. Active role: participate in treatment decision making.	
Greenfield, 1985	1. physician-patient interaction, (behavior control, information provision, emotion regulation); preference for active involvement in medical decision making, 2. health status (general health perception; number of health problems; disability days; level of health concern; and physical and role limitations); pain; involvement in medical decision making; knowledge	audiotape, questionnaires validated; tapes, 8 coding systems, interviewing skills measure; three blinded coders	Immediate higher levels of intensity of conversation, involvement (patient utterances per minute, controlling utterances by patient, assertiveness; ratio patient- physician utterances) intermediate: improved elicitation of number of factual statements from the physician.	high
Greenfield, 1988	1. (Effect on physiological health); HbA1; disease severity; health related QoL; Change in treatment regimen; 2. Physician-patient Interaction (involvement in medical decision making; number of conversational acts per minute; number of questions asked by patients; patient satisfaction; number of controlling behaviors by patients); patient satisfaction and knowledge of diabetes	audiotape, coded by five blinded coders (validated coding scheme)	Immediate patient activation in conversational acts per minute. Improved "controlling" behaviors (including questions, interruptions, and directions); improved ratio of patient to physician conversation (patient participation), obtaining information, improved controlling verbal behavior.	high
Kidd, 2004	1. Number of questions asked in consultation (audiotaped recording), 2. self-efficacy in asking questions, satisfaction with the consultation, HbA1C	audiotape: number of questions asked; two item questionnaire on self-efficacy in question asking (not validated);	intermediate self-efficacy in question asking, significantly higher when concerning a known doctor, than unknown doctor	low

author, year	primary and secondary outcomes	relevant measurements	significant effects	Meth. quality
Kravitz, 2011	pain severity; pain impairment; (MOS) functional status (SF-12); pain misconceptions (SBQ); communication self-efficacy (PEPPI); pain control self-efficacy (CPSE-scale)	audiotape; self-administered questionnaires (PEPPI-5) before and immediately after, validated; fidelity of coaches was tested	Intermediate: TEC group improved communication self-efficacy but the groups already differed significantly at baseline.	low
Mishel, 2009	1. Uncertainty management (cancer knowledge; problem solving; patient provider communication); decisional regret; medical communication competence; 2. use of information resources; mood; QoL	audiotape (+ coded); questionnaires validated, Medical communication competence scale, patient provider communication scale; telephone calls were audiotaped for fidelity	Intermediate (directly after diagnosis) improvement in TD and TS group vs control patient provider communication; long term (4 weeks): patient-provider communication (both groups vs control), increased sharing of information (pat tells doctor) both groups vs control; participation in planning treatment; (TS group vs control) Long term (3 months): increase sharing of information (both groups vs control).	high
Ory, 2013	Triple Aim Affordable care Act (1. better health, 2. better healthcare, including communication with Physician Scale, 3. better value)	validated questionnaires; Better Healthcare: communication with physician (Lorig); Baseline and at 6 and 12 months	Long term 0–6 months: improved communication with physician 0–12 months: improved communication with physician.	low
Sepucha, 2000	quality of treatment decisions, the satisfaction with the consultation, and the amount of agreement between patients and physicians, number of FU visits before treatment	validated and non-validated questionnaires: Decision Quality Scale; for Physicians: MD Decision Scale; San Francisco Satisfaction with	Immediate After CR: intervention group increase in decision quality (PDS); intersubjective agreement between physician and patient.	low

author, year	primary and secondary outcomes	relevant measurements	significant effects	Meth. quality
		Consultation Scale (SWC); in control group: observation by researcher;		
Sepucha, 2002	the effects of these interventions on patients' reports of communication barriers and on patients' and physicians' satisfaction with the consultation	validated questionnaires; Community Breast Health Project (CBHP) scale of communication barriers; Satisfaction with interview scale; patient-Doctor Interaction scale; Physician satisfaction scale	Immediate reduction in communication barriers (both groups, not between groups).	low
Smith, 2010	1. Pain barriers; communication skills; patient decision making; 2. patient outcomes; active communication; pain associated outcomes; barriers; facilitative and receptiveness of physicians influence on barriers and pain associated outcomes	validated questionnaires: participatory data: Perceived Involvement with Care Scale (M-PICS = modified; Barriers Questionnaire (BQ); Patient Satisfaction Questionnaire (PSQ18-adapted);	intermediate decline over time of patient barriers about pain in intervention group, no statistically differences in the other parameters	high
Street, 2010	1. active participation: communication on pain: patients questions; acts of assertiveness; expressed concerns; 2. quality of physicians communication	audiotape, coders: communication measures: validated coding system for active participation of patient (overall and pain specific); physicians communication: Kaplan's 3 items participatory decision-making scale (adapted); overall informativeness, 4 items; pain specific informativeness, 3 items	Immediate pain specific active participation in TEC group.	high

author, year	primary and secondary outcomes	relevant measurements	significant effects	Meth. quality
Van Servellen, 2005	1. Health literacy; patient-provider communicational and relation; adherence; perceived quality of relationship/communication with medical staff; perceived quality of relationship/communication with their specific HIV treating physician; 2. health status indicators	Questionnaires validated. Patient self-report. Relation and communication with medical staff (doctors and nurses, 7 items) and treating physician (9 items).	Long term (6 weeks and 6 months) relationships and communications with their treating physicians and medical staff.	high
Wilkie, 2010	1. amount of pain info communicated to medical team (recall of pain elements after one week) elements: pattern, area, intensity, nature; 2. pain prescriptions; pain relief; anxiety; depression; catastrophizing pain coping	audiotapes of three visits (baseline, 2 and 4 weeks) using Audiotape Scoring Tool (developed for this study);	Long term (4 weeks) coached patients communicated more about pain, solicited or unsolicited, and the mean number of pain parameters discussed by patients increased.	high

APPENDIX A. SEARCH STRATEGY PUBMED

November 2015, filters adult (19 +) and abstract available.
(("interventions"[All Fields] OR "intervention"[All Fields] OR "coaching"[All Fields]) AND
((("physician-patient relations"[MeSH] OR "physician-patient relation"[All Fields] OR "physician-patient relations"[All Fields] OR "physician-patient relationship"[All Fields] OR "physician-patient relationships"[All Fields] OR "Doctor-patient relation"[All Fields] OR "doctor-patient relations"[All Fields] OR "doctor-patient relationship"[All Fields] OR "doctor-patient relationships"[All Fields] OR "doctor-patient communication"[All Fields] OR "surgeon-patient communication"[All Fields]) OR ((("communication"[MeSH Terms] OR "communication"[All Fields]) AND ("patients"[MeSH Terms] OR "patients"[All Fields] OR "patient"[All Fields]))) AND
(((((("physicians"[MeSH Terms] OR "physicians"[All Fields] OR "physician"[All Fields]) OR ("physicians"[MeSH Terms] OR "physicians"[All Fields])) OR ((("hospitalists"[MeSH Terms] OR "hospitalists"[All Fields] OR "hospitalist"[All Fields]) OR ("hospitalists"[MeSH Terms] OR "hospitalists"[All Fields] OR "hospitalist"[All Fields]))) OR ((((((("hospitals"[MeSH Terms] OR ("hospitals"[MeSH Terms] OR "hospitals"[All Fields]) OR ("hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields]) OR hospital[Title/Abstract]) OR hospitals[Title/Abstract]) OR ((("medical specialist"[All Fields] OR "medical specialists"[All Fields]) OR ("medical specialist"[Title/Abstract] OR "medical specialists"[Title/Abstract]))) OR ((("outpatient clinic"[All Fields] OR "outpatient clinics"[All Fields])) OR ("secondary care"[All Fields] OR "ambulatory care"[All Fields] OR "outpatient care"[All Fields] OR "outpatient health service"[All Fields] OR "outpatient health services"[All Fields] OR "outpatient clinic"[All Fields])) OR "secondary care"[MeSH Terms]) OR "outpatient clinics, hospital"[MeSH Terms])) AND (hasabstract[text] AND "adult"[MeSH Terms]))

APPENDIX B. COCHRANE ASSESSMENT OF METHODOLOGICAL QUALITY

Assessment of methodological quality (RCT or quasi RCT): yes, no, unclear
1) Was the method of randomisation adequate?
2) Was the treatment allocation concealed?
3) Were the groups similar at baseline regarding the most important prognostic indicators?
4) Was the patient blinded to the intervention?
5) Was the care provider blinded to the intervention?
6) Was the outcome assessor blinded to the intervention?
7) Were co-interventions avoided or similar?
8) Was the compliance acceptable in all groups?
9) Was the dropout rate described and acceptable?
10) Was the timing of the outcome assessment in all groups similar?
11) Did the analysis include an intention-to-treat analysis?